ATOMIC ENERGY CENTRAL SCHOOL NO.4

RAWATBHATA

CLASS 10 - ENGLISH LANGUAGE AND LITERATURE

Confidence Examination II (2019-2020)

Time Allowed: 3 hours **Maximum Marks: 80**

General Instructions:

- This paper is divided into three sections: A, B and C. All questions are compulsory.
- Separate instructions are given with each section and question, wherever necessary. Read these instructions very carefully and follow them.
- Do not exceed the prescribed word limit while answering the questions.

Section A

1. **Read the passage given below and answer the questions that follow :** **[8]**

Kausani is situated at a height of 6,075 feet in the central Himalayas. It is an unusually attractive little town. It covers just about 5.2 sq km. It lies to the north of Almora in Uttarakhand's picturesque Kumaon region.

Kausani provides the 300 km. wide breathtaking view of the Himalayas. It is the most striking aspect of this place. Snow-capped peaks are spread in a stately row. They stare at you in silvery-white majesty. The most famous peak on view is Nanda Devi, the second highest mountain in India It is situated at a height of 25,645 feet and 36 miles away as the crow flies. The other famous peaks on view are Choukhamba (23,420 feet) and Tnshul (23,360 feet). Then there are also Nilkanth, Nandaghunti, Nandaghat and Nandakot. On a clear day, the blue of the sky makes a splendid background to these peaks. At sunrise and at sunset, when the colour of the sky changes to a golden orange, the scene gets etched in your memory.

When Gandhiji visited this place in 1929, its scenic beauty held him spellbound. He named it the 'Switzerland of India'. He prolonged his two day stay to fourteen days, making time to write a book, 'Anashakti Yoga'. The place where he was staying was originally a guest house of a tea estate. It was renamed 'Anashakti Ashram' after the book.

Kausani is the birthplace of Sumitranandan Pant, India's poet laureate. Its natural surroundings inspired many of his poems Its tea gardens mingle with dense pine forests and fruit orchards The area is also host to many fairs and religious ceremonies. If Uttarakhand is the abode of Gods, Kausani is God's own backyard. There is no traffic, no one is in a hurry. If serenity could be put on a canvas, the picture would resemble Kausani.

Answer the following questions briefly:

a. Kausani is situated at a height of 6,075 feet in the central Himalayas. (True/False)
b. The most striking aspect of Kausani is that it provides the 30 km wide breathtaking view of the Himalayas. (True/False)
c. Which is the most famous peak on view from Kausani?
d. What name Gandhi Ji gave to Kausani?

e. Kausani is in _____.

f. Anashakti Yoga is written by _____.

g. What makes Kausani a calm and quiet place?

(a) No traffic (b) No hotels (c) No roads (d) No Electricity

h. Why is Kausani's guest house of the tea estate known as 'Anashakti Ashram'?

(a) Gandhi Ji wrote his autobiography there

(b) Gandhi Ji wrote Anashakti Yoga there

(c) Gandhi Ji practiced Anashakti Yoga there

(d) Gandhi Ji loved this place

2. **Read the passages given below and answer the questions that follow them: (12 marks)** **[12]**

Of course, human activity is chiefly responsible for the increasing problem of global warming. In the last century, the rapid increase in the consumption of hydrocarbon as well as the vigorous expansion of the industries and domestic markets for halocarbons have drastically altered the atmospheric concentration of numerous gases. This has altered nature's auto-balancing mechanism. As a result, the world is now stuck with several environmental problems; including the problems of acid rain, melting of glacial ice, large scale evaporation of water in tropics, increase in cloudiness in higher latitudes and so on. The implications of these changes on human life are likely to be enormous and may cause a series of adverse effects.

One of the direct effects of global warming is the altering of the heat budget and its regional variations in the atmosphere, the primary driver of weather systems around the world. The potential impact of warming on the monsoon in India is of serious concern. The warming, though widespread across the country, is more pronounced over northern India. An important effect of global warming on meteorological conditions is an increase in sea surface temperature in the oceans around the subcontinent. Food production and food security, fresh water supply, forest biodiversity, coastal settlements, fishing and more will be adversely affected. India, like most developing countries, is committed to the principle of common responsibility in addressing climate change. India needs to chart multiple strategies to cope with the impending threats of climate change which are additional to the existing environmental stresses. Pursuing a sustainable development model is critical to addressing climate change in India and elsewhere. India should adopt strategies for sustainable development irrespective of the climate change debate. It involves economic growth, social equity and environmental sustainability.

I. **On the basis of your reading of the passage, answer any four of the following questions in 30-40 words each: ($2 \times 4 = 8$)**

a. How is human activity chiefly responsible for increasing problem of global warming?

b. What are the problems the world is facing due to global warming?

c. How has global warming affected India?

d. How should India plan to cope with the danger of global warming?

II. **On the basis of your reading of the passage, answer any four of the following : ($1 \times 4 = 4$)**

i. The opposite of 'Enormous' is.....

a. Tiny
b. Rotten
c. Large
d. Cruel

ii. The opposite of Vigorous' is.....

a. Tall
b. Short
c. Weak
d. Small

iii. The word 'Sustained' means.....

a. Spoil
b. Maintained
c. Kept
d. Destroyed

iv. The word 'Altered' means.....

a. Changed
b. Destroyed
c. Spoilt
d. Used

Section B

3. You are Aryan/Amrita of C/43, Hauz Khas, New Delhi. You have read a report in a magazine mentioning that there are 12 million child workers in your country. It is a national problem. Write a letter to the editor 'The Indian Express', giving your views on why child labour exists and how it can be abolished. **[8]**

OR

Write an article on the topic "Advantages of Co-Education" in not more than 100-150 words.

4. Complete the story given below by using the clues provided: **[10]**

Ravi was too excited as he is going to his favorite place Darjeeling. It was his lifetime wish to be there. Before starting his journey he wanted to make sure that he had not forgotten anything.He got into the train, settled in his seat and looked around.....

OR

Complete the story based on the outline given below in 150-200 words:

A thirsty crow ..... looked for water..... found a pitcher.....very less water in it .....picked up pebbles and put them in the pitcher..... water level raised.

5. **Read the passage given below and fill in the blanks by choosing the most appropriate words from the given options.** **[4]**

Mrs. Chawla (a) _____ teaching in this school since 1996. Before she (b) _____ to Delhi, she (c)_____ in nearby township. She had (d) _____ experience at that time.

a. (i) is (ii) has been (iii) will be (iv) was
b. (i) come (ii) coming (iii) came (iv) comes
c. (i) was living (ii) is living (iii) lives (iv) has been lived

d. (i) little (ii) no (iii) any (iv) some

6. **The following passage has not been edited. There is an error in each line. Write the correct word along with the incorrect word against the correct blank number.** **[4]**

		Error	Correction
We go to the Valley of Flowers	(a)	_____	_____
last month. After taking your dinner	(b)	_____	_____
we relaxed. A man fall from	(c)	_____	_____
the rocks or hurt his head.	(d)	_____	_____

7. **Look at the words and phrases given below. Rearrange them to form meaningful sentences as given in the example.** **[4]**

Example: to be broken / health myths / that need / are / a few / there /

There are a few health myths that need to be broken.

a. contains / only animals / no plant food / cholesterol, / manufacture it /
b. and / are / cholesterol / free from / all dry fruits / oil seeds / so / are
c. cholesterol / free from / made from plants / is / any oil / always /
d. one of the / oil / mustard / best / oil / the / oils / such / best / olive / healthiest / among / etc / are / and

Section C

8. **Read the following extracts and answer the question/complete the sentences that follow:** **[4]**

But he's locked in a concrete cell
His strength behind bars,
Stalking the length of his cage,
Ignoring visitors.

a. Who is 'he' in the poem?
b. Why is he ignoring visitors?
c. Here 'stalking' means _____.
d. Where is the tiger locked?

OR

Read the passage given below and answer the questions that follow it: (4 marks)

He turned his aeroplane slowly to the north, in front of my Dakota, so that it would be easier for me to follow him.

I was very happy to go behind the strange aeroplane like an obedient child.

After half an hour the strange black aeroplane was there in front of me in the clouds.

Now there was only enough fuel in the old Dakota's last tank to fly for five or ten minutes more.

I was starting to feel frightened again.

But then he started to go down and I followed through the storm.

a. In which direction did the other aeroplane take a turn?
b. What was easier for the Dakota aeroplane's pilot?
c. Find out the opposite of ‘familiar' from the passage.
d. Why did the writer feel frightened again?

9. Answer any five of the following questions in 30-40 words each: **[10]**

a) Why is 10th May, 1994 important for South Africa?

b) When did Wanda write a letter? To whom she wrote? What did she write in it?

c) How did the prince become famous as a Buddha?

d) Why does Mrs. Pumphrey think that the dog's recovery is 'a triumph of surgery'?

e) How did Max enter the room? Why did he tell this to Ausable?

f) How did Griffin enjoy himself inside a big London store?

10. Write the character sketch of Anne highlighting intelligence and politeness. **[8]**

OR

Whenever we want to achieve something, difficulties always come in our way. What did Valli have to do to go and ride in a bus?

11. What was the cause of Matilda's ruin? How could she have avoided it? **[8]**

OR

'The story, 'Bholi' throws light on some social evils being practised in our society. Bholi took a stand and succeeded in overcoming social barriers. What can you contribute to change the social attitudes, illustrated in the story.

ATOMIC ENERGY CENTRAL SCHOOL NO.4

RAWATBHATA

CLASS 10 - MATHEMATICS (STANDARD)

Confidence Examination II (2019-2020)

Time Allowed: 3 hours **Maximum Marks: 80**

General Instructions:

1. All the questions are compulsory.
2. The question paper consists of 40 questions divided into 4 sections A, B, C, and D.
3. Section A comprises of 20 questions of 1 mark each. Section B comprises of 6 questions of 2 marks each. Section C comprises of 8 questions of 3 marks each. Section D comprises of 6 questions of 4 marks each.
4. There is no overall choice. However, an internal choice has been provided in two questions of 1 mark each, two questions of 2 marks each, three questions of 3 marks each, and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.
5. Use of calculators is not permitted.

Section A

1. A number when divided by 61 gives 27 as quotient and 32 as remainder, then the number is: **[1]**

   a) 1796 b) 1569

   c) 1679 d) 1967

2. The decimal form of $\frac{5}{8}$ is: **[1]**

   a) 0.625 b) 0.600

   c) 0.750 d) 0.375

3. The wickets taken by a bowler in 10 cricket matches are 2, 6, 4, 5, 0, 2, 1, 3, 2, 3. The median of the data is **[1]**

   a) 2.5 b) 1

   c) 2 d) 3

4. $\sqrt{2}\,x^2 - 3x - 5 = 0$ have **[1]**

   a) Real and Distinct roots b) No Real roots

   c) Real roots d) Real and Equal roots

5. If $\tan\theta = \sqrt{3}$, then $\sec\theta$ = **[1]**

   a) $\sqrt{\frac{3}{2}}$ b) 2

   c) $\frac{2}{\sqrt{3}}$ d) $\frac{1}{\sqrt{3}}$

6. The value of $\sin^6 A + \cos^6 A + 3\cos^2 A \sin^2 A$ is **[1]**

a) 0 b) – 1

c) 2 d) 1

7. A pole 6 m high casts a shadow $2\sqrt{3}$m long on the ground, then the sun's elevation is **[1]**

a) 30° b) 60°

c) 45° d) 75°

8. If the line segment joining the points $A(x_1, y_1)$ and $B(x_2, y_2)$ is divided by a point P in the ratio 1 : k internally, then the co – ordinates of the point P are **[1]**

a) $\left(\frac{x_2-kx_1}{1+k}, \frac{y_2-ky_1}{1+k}\right)$ b) $\left(\frac{x_2+kx_1}{1+k}, \frac{y_2+ky_1}{1+k}\right)$

c) $\left(\frac{x_2+kx_1}{1-k}, \frac{y_2+ky_1}{1-k}\right)$ d) $\left(\frac{x_1+kx_2}{1+k}, \frac{y_1+ky_2}{1+k}\right)$

9. The point (– 3, 5) lies in the _____ quadrant **[1]**

a) IV b) II

c) III d) I

10. The probability that it will rain on a particular day is 0.76. The probability that it will not rain on that day is **[1]**

a) 0.24 b) 0.76

c) 0 d) 1

11. Fill in the blanks: **[1]**

Diagonal of cube = _____ $\times Edge$

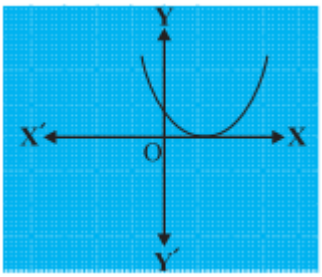
12. Fill in the blanks: **[1]**

The highest power of x in a polynomial f(x), is called the _____ of the polynomial f(x).

OR

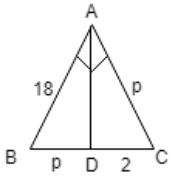
Fill in the blanks:

The graph of y = p(x) is given in the fig. below, for some polynomial p(x). The number of zeroes of p(x) is _____.



13. Fill in the blanks: **[1]**

In the given figure, if $\Delta ADB \sim \Delta ADC$, then the value of p is _____.



14. Fill in the blanks: **[1]**

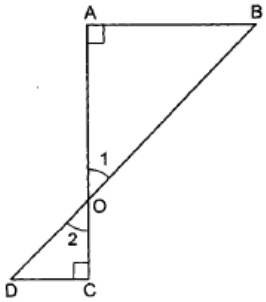
The common difference of the AP: $\frac{1}{p}, \frac{1-p}{p}, \frac{1-2p}{p}, \ldots$is _____.

15. Fill in the blanks: **[1]**

The distance between the points A(-5, 7), B(-1, 3) is _____.

16. State Euclid's division lemma. **[1]**

17. In Fig. if $\angle A = \angle C$, then prove that $\Delta AOB \sim \Delta COD$. **[1]**

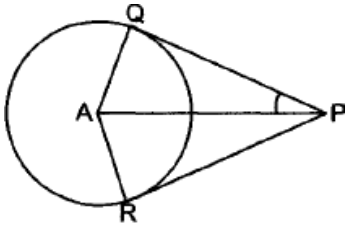


18. The first term of an AP is p and its common difference is q. Find its 10th term. **[1]**

OR

Write the n^{th} term of the A.P. $\frac{1}{m}, \frac{1+m}{m}, \frac{1+2m}{m}, \ldots\ldots$

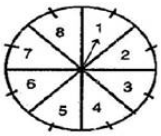
19. In figure, PQ and PR are tangents to circle with centre A. If $\angle QPA = 27°$, then find $\angle QAR$. **[1]**



20. If the roots of the quadratic equation $2x^2 + 8x + k = 0$ are equal roots then find the value of k. **[1]**

Section B

21. A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8 (see figure) and these are equally likely outcomes. What is the probability that it will point at: **[2]**



i. 8?

ii. an odd number?

iii. a number greater than 2?

iv. a number less than 9?

22. If 2 is a root of the equation $x^2 + kx + 12 = 0$ and the equation $x^2 + kx + q = 0$ has equal roots, find the value of q. **[2]**

23. A man goes 10 m due east and then 24 m due north. Find the distance from the starting point. **[2]**

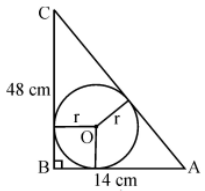
OR

P and Q are the mid-points of the sides CA and CB respectively of a ΔABC, right angled at C. Prove that :

$4\ BP^2 = 4\ BC^2 + AC^2$

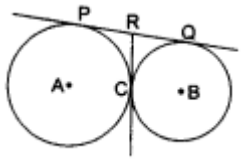
24. The angle of depression of a car, standing on the ground, from the top of a 75 m high tower is 30°. What is the distance of the car from the base of the tower? **[2]**

25. In the given figure, ABC is a triangle in which $\angle B = 90^o$, BC = 48 cm and AB = 14 cm. A circle is inscribed in the triangle, whose centre is O. Find radius r of in-circle. **[2]**



OR

In the given figure, two circles touch each other at the point C. Prove that the common tangent to the circles at C, bisects the common tangent at P and Q.



26. The sum of the radius of base and height of a solid right circular cylinder is 37 cm. If the total surface area of the solid cylinder is 1628 sq. cm, find the volume of the cylinder. **[2]**
$\left[\text{Use } \pi = \frac{22}{7}\right]$

Section C

27. Show that there are infinitely many positive primes. **[3]**

OR

Find the LCM and HCF of 26 and 91 and verify that LCM $\times$ HCF = product of two numbers.

28. A contract on construction job specifies a penalty for delay of completion beyond a certain date as follows: **[3]**
₹ 200 for the first day, ₹ 250 for the second day, ₹ 300 for the third day, etc; the penalty for each succeeding day being ₹50 more than for the preceding day. How much does a delay of 30 days cost the contractor?

29. A fraction is such that if the numerator is multiplied by 3 and the denominator is reduced by 3, we get 18/11, but if the numerator is increased by 8 and the denominator is doubled, we get 2/5. Find the fraction. **[3]**

OR

If x + 1 is a factor of $2x^3 + ax^2 + 2bx + 1$, then find the values of a and b given that 2a -3b = 4.

30. Divide the polynomial $f(x) = 3x^2 - x^3 - 3x + 5$ by the polynomial $g(x) = x - 1 - x^2$ and verify the division algorithm. **[3]**

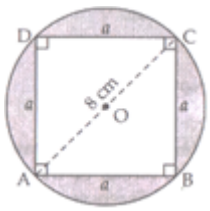
31. Find the co-ordinates of a point P on the line segment joining A(1, 2) and B (6, 7) such that AP = $\frac{2}{5}$ AB. **[3]**

32. Find the acute angle θ, when $\frac{\cos\theta - \sin\theta}{\cos\theta + \sin\theta} = \frac{1-\sqrt{3}}{1+\sqrt{3}}$. **[3]**

OR

In an acute angled triangle ABC, if tan (A+B-C) = 1 and, sec (B+C-A)=2, find the values of A, B and C.

33. In the given figure, a square of diagonal 8 cm is inscribed in a circle. Find the area of shaded region. **[3]**



34. If the mean of the following data is 20.6, find the missing frequency (x). **[3]**

x	f
10	3
15	10
20	x
25	7
35	5

Section D

35. Draw a right triangle ABC in which AC = AB = 4.5 cm and $\angle A$ = 90°. Draw a triangle similar to ΔABC with its sides equal to (5 /4)th of the corresponding sides of ΔABC. **[4]**

OR

Draw a circle of radius 3 cm. From a point P, 7 cm away from the centre of the circle, draw two tangents to the circle. Also, measure the lengths of the tangents.

36. D, E and F are respectively the mid-points of sides AB, BC and CA of △ ABC. Find the ratio of the areas of △ DEF and △ ABC. **[4]**

37. Solve the following pair of linear equations graphically : **[4]**

x - y = 1

2x + y = 8.

Also find the co-ordinates of the points where the lines represented by the above equation intersect Y-axis.

OR

Solve for x and y :

2x - y + 3 = 0

3x - 5y + 1 = 0

38. A lead pencil consists of a cylinder of wood with a solid cylinder of graphite filled into it. The diameter of the pencil is 7 mm, the diameter of the graphite is 1 mm and the length of the pencil is 10 cm. Calculate the weight of the whole pencil, if the specific gravity of the wood is 0.7 gm/cm^3 and that of the graphite is 2.1 gm/ cm ^{3}. **[4]**

OR

An open metallic bucket is in the shape of a frustum of a cone mounted on hollow cylindrical base made of metallic sheet. If the diameters of the two circular ends of the bucket are 45 cm and 25 cm, the total vertical height of the bucket is 30 cm and that of the cylindrical portion is 6 cm, find the area of the metallic sheet used to make the bucket. Also, find the volume of the water it can hold. (Take π = 22/7).

39. A statue 1.46m tall, stands on the top of a pedestal. From a point on the ground, the angle of elevation of the top of the statue is 60° and from the same point, the angle of elevation of the top of the pedestal is 45°. Find the height of the pedestal. [Use $\sqrt{3}$ = 1.73.] **[4]**

40. Calculate the median from the following data: **[4]**

Marks below	10	20	30	40	50	60	70	80
No. of students	15	35	60	84	96	127	198	250

ATOMIC ENERGY CENTRAL SCHOOL NO.4

RAWATBHATA

CLASS 10 - MATHEMATICS(BASIC)

Confidence Examination II (2019-2020)

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General Instructions:

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5. Use of calculators is not permitted.

Section A

1. The decimal expansion of $\frac{21}{24}$ will terminate after: **[1]**

   a) 1 decimal place b) 3 decimal places

   c) None of these d) 2 decimal places

2. Every positive even integer is of the form ____ for some integer 'q'. **[1]**

   a) 2q + 1 b) none of these

   c) 2q – 1 d) 2q

3. Which of the following numbers is a prime number? 233, 147, 253, 377. **[1]**

   a) 233 b) 377

   c) 147 d) 253

4. A circle is inscribed in a quadrilateral ABCD in which $\angle B = 90^o$, if AD = 23 cm, AB = 29 cm and DS = 5 cm, then radius of circle is : **[1]**

   a) 12 cm b) 13 cm

   c) 14 cm d) 11 cm

5. If $x_i's$ are the midpoints of the class intervals of grouped data, $f_i's$ are the corresponding frequencies and $\overline{x}$is the mean, then $\sum\left(f_ix_i - \overline{x}\right)$ is equal to **[1]**

   a) 2 b) 0

   c) – 1 d) 1

6. Cards marked with numbers 1, 2, 3, ..., 25 are placed in a box and mixed thoroughly and **[1]**

one card is drawn at random from the box. The probability that the number on the card is a multiple of 3 or 5 is

a) $\frac{8}{25}$ b) $\frac{12}{25}$

c) $\frac{4}{25}$ d) $\frac{1}{5}$

7. If one zero of the polynomial $p(x) = (a^2 + 9)x^2 + 45x + 6a$ is reciprocal of the other, then the value of 'a' is **[1]**

a) 2 b) 3

c) 0 d) 1

8. If 'α' and 'β' are the zeroes of the polynomial $ax^2 + bx + c$, then the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$ is **[1]**

a) $\frac{b^2-2ac}{ac}$ b) $\frac{b^2}{ac}$

c) $\frac{a^2}{bc}$ d) $\frac{c^2}{ab}$

9. The distance between the points (a, a) and $(-\sqrt{3}a, \sqrt{3}a)$ is **[1]**

a) $2\sqrt{2}\ units$ b) $3\sqrt{2}a\ units$

c) $2\ units$ d) $2a\sqrt{2}\ units$

10. The distance of a point from the x – axis is called **[1]**

a) None of these b) origin

c) abscissa d) ordinate

11. Fill in the blanks: **[1]**

The distance of point P(3, 4) from the origin is _____.

12. Fill in the blanks: **[1]**

$a_1x + b_1y + c_1 = 0$, $a_2x + b_2y + c_2 = 0$ are a system of two simultaneous linear equations. If $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$, then the system has _____ solutions.

OR

Fill in the blanks:

$3x + 4y + 2 = 0$ and $6x + 8y + 4 = 0$ represent _____ lines.

13. Fill in the blanks: **[1]**

The value of trigonometric function $\sqrt{(1 - \cos^2\theta)\sec^2\theta}$ = _____.

14. Fill in the blanks: **[1]**

Two angles are said to be _____ if their sum is equal to 90^o.

15. Fill in the blanks: **[1]**

$\triangle$ABC and $\triangle$DEF are similar. Area of $\triangle$ABC is $9cm^2$ and Area of $\triangle$DEF is $64cm^2$. If DE = 5.1cm, then the value of AB is _____.

16. Find the value of cos 30° cos 60° cos 90°. **[1]**

OR

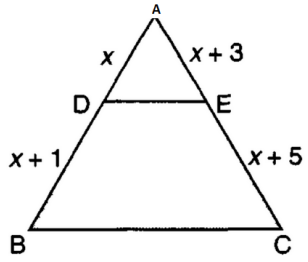
Evaluate $\frac{\tan 45^\circ}{cosec30^\circ} + \frac{\sec 60^\circ}{\cot 45^\circ} - \frac{5\sin 90^\circ}{2\cos 0^\circ}$.

17. If the area of a circle is numerically equal to twice its circumference, then find the diameter of the circle. **[1]**

18. A black dice and a white dice are thrown at the same time. Write all the possible outcomes. **[1]**

What is the probability of obtaining the same number on both dice?

19. In $\triangle ABC$, DE $\parallel$ BC, find the value of x. **[1]**



20. Two APs have same common difference. The first term of one of these is -1 and that of the other is -8 Find the difference between their 4th terms. **[1]**

Section B

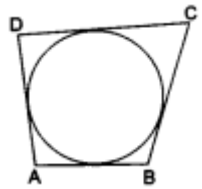
21. A box contains 12 balls out of which 4 are red, 3 are black and 5 are white. A ball is taken out of the box at random. Find the probability that the selected ball is **[2]**

i. not red

ii. black or red.

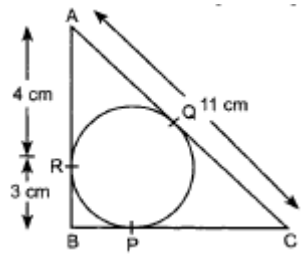
22. Gopi buys a fish from a shop for his aquarium. The shopkeeper takes out one fish at random from a tank containing 5 male fish and 8 female fish. What is the probability that the fish taken out is a male fish? **[2]**

23. In the adjoining figure, a circle touches all the four sides of a quadrilateral ABCD whose sides are AB = 6 cm, BC = 9 cm and CD = 8 cm. Find the length of side AD. **[2]**



OR

In figure, $\triangle ABC$ is circumscribing a circle. Find the length of BC.

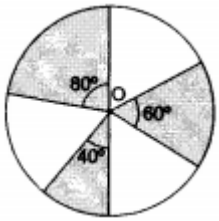


24. Evaluate: $\frac{\sin\theta\cos\theta\cos(90^\circ-\theta)}{\sin(90^\circ-\theta)} + \frac{\sin\theta\cos\theta\sin(90^\circ-\theta)}{\cos(90^0-\theta)}$ **[2]**

OR

If $\sin\theta = \frac{3}{5}$ find the values of other trigonometric ratios.

25. In the given figure, three sectors of a circle of radius 7 cm, making angles of 60°, 80° and 40° at the centre are shaded. Find the area of the shaded region. **[2]**



26. A teacher told 8 students to write a polynomial on the blackboard. Students wrote the **[2]**

following polynomials:

(i) $x^2 + 9$	(v) $x^3 + 5x + 2x + 6$
(ii) $x^3 + 2x^2 + x + 5$	(vi) $5x + 6$
(iii) $2x^4 + 3x^3 + 2x + 7$	(vii) $x^4 + x^3 - 5x^2 + 3x + 8$
(iv) $x^2 + 5x + 6$	(viii) $x^2 - 7x + 12$

i. How many students wrote quadratic polynomials?

ii. If α and β are zeros of the polynomial $x^2 + 5x + 6$, then what is the value of α + β?

Section C

27. Apply the division algorithm to find the quotient and remainder on dividing $f(x) = x^3 - 3x^2 + 5x - 3$ by $g(x) = x^2 - 2$. **[3]**

28. Draw a pair of tangents to a circle of radius 5 cm which are inclined to each other at an angle of 60°. **[3]**

OR

Construct a quadrilateral similar to a given quadrilateral ABCD with its sides $\frac{3}{5}$ the of the corresponding sides of quadrilateal ABCD. It is given that AB = 5.0 cm, BC = 4.8 cm, CD = 4.5 cm, AD = 6 cm and AC = 7.3 cm.

29. A solid metallic hemisphere of radius 8 cm is melted and recasted into a right circular cone of base radius 6 cm. Determine the height of the cone. **[3]**

30. Prove that: **[3]**

$$\frac{\sin^2 20^\circ + \sin^2 70^\circ}{\cos^2 20^\circ + \cos^2 70^\circ} + \frac{\sin(90^\circ - \theta)\sin\theta}{\tan\theta} + \frac{\cos(90^\circ - \theta)\cos\theta}{\cot\theta} = 2$$

OR

Prove the trigonometric identity:

If $a\cos^3\theta + 3a\cos\theta\sin^2\theta = m$, $a\sin^3\theta + 3a\cos^2\theta\sin\theta = n$, prove that $(m + n)^{2/3} + (m - n)^{2/3} = 2a^{2/3}$

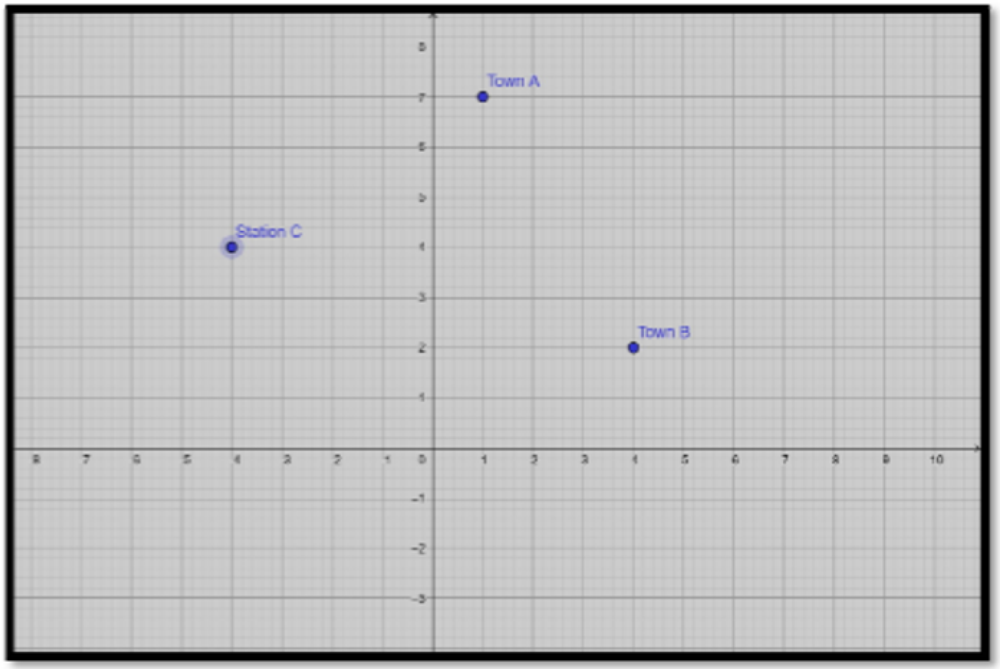
31. Find the HCF of 506 and 1155 and express it as a linear combination of them. **[3]**

OR

Show that $\sqrt{6} + \sqrt{2}$ is irrational.

32. ABC is a right-angled triangle, right angled at A. A circle is inscribed in it. The lengths of two sides containing the right angle are 24 cm and 10 cm. Find the radius of the incircle. **[3]**

33. Two friends Seema and Aditya work in the same office in Delhi. In the Christmas vacations, both decided to go their hometowns represented by Town A and Town B respectively in the figure given below. Town A and Town B are connected by trains from the same station C (in the given figure) in Delhi. Based on the given situation answer the following questions: **[3]**



i. Who will travel more distance, Seema or Aditya, to reach to their hometown?

ii. Seema and Aditya planned to meet at a location D situated at a point D represented by the mid-point of the line joining the point represented by Town A and Town B. Find the coordinates of the point represented by the point D.

iii. Find the area of the triangle formed by joining the points represented by A, B and C.

34. Determine whether the pair of equations 3x + y + 1 = 0, 2x –3y + 8 = 0 is consistent. If so, solve them graphically. **[3]**

Section D

35. Find the values of k for which the equation $(3k+1)x^2+2(k+1)x+1$,has equal roots. Also find the roots. **[4]**

36. In an A.P., the sum of first n terms is $\frac{3n^2}{2}+\frac{13}{2}n$. Find its 25^{th} term. **[4]**

OR

In an AP of 50 terms, the sum of first 10 terms is 210 and the sum of its last 15 terms is 2565. Find the AP.

37. A straight highway leads to the foot of a tower. A man standing at the top of the tower observes a car at an angle of depression of 30^{o}, which is approaching the foot of the tower with a uniform speed. Six seconds later, the angle of depression of the car is found to be 60^{o}. Find the time taken by the car to reach the foot of the tower from this point. **[4]**

38. D and E are the points on the sides AB and AC respectively of a ΔABC such that: AD = 8 cm, DB = 12 cm, AE = 6 cm and CE = 9 cm. Prove that BC = 5/2 DE. **[4]**

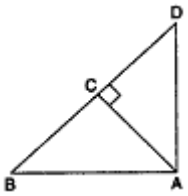
OR

In figure, ABD is a triangle right angled at A and AC ⊥ BD. Show that

i. AB^2 = BC.BD

ii. AC^2 = BC.DC

iii. AD^2 = BD.CD



39. A well, whose diameter is 7m, has been dug 22.5 m deep and the earth dugout is used to form an embankment around it. If the height of the embankment is 1.5 m, find the width of the embankment. **[4]**

OR

A tent is in the shape of a right circular cylinder up to a height of 3 m and conical above it. The total height of the tent is 13.5 m and the radius of its base is 14 m. Find the cost of cloth required to make the tent at the rate of Rs.80 per square metre. [Take $\pi = 22/7$]

40. The following table shows the ages of the patients admitted in a hospital during a year: **[4]**

Age (in years)	**5-15**	**15-25**	**25-35**	**35-45**	**45-55**	**55-65**
Number of patients	6	11	21	23	14	5

Find the mode and the mean of the data given above. Compare and interpret the two measures of central tendency.

ATOMIC ENERGY CENTRAL SCHOOL NO.4

RAWATBHATA

CLASS 10 - SCIENCE

Confidence Examination II (2019-2020)

Time Allowed: 3 hours **Maximum Marks: 80**

General Instructions:

1. The question paper comprises three sections – A, B and C. Attempt all the sections.
2. All questions are compulsory.
3. Internal choice is given in each section.
4. All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
5. All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50 - 60 words each.
6. All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80 – 90 words each.
7. This question paper consists of a total of 30 questions.

Section A

1. What is the significance of$\rightleftarrows$ or $\rightleftarrows$ in a chemical equation ? **[1]**
2. Out of Na, Al, Si, P which element exhibits maximum number of valence electrons? **[1]**
3. **Answer the questions that follow on the basis of your understanding of the following paragraph and the related studied concepts:** **[4]**

   In a process called nuclear fission, the nucleus of a heavy atom (such as uranium, plutonium or thorium), when bombarded with low-energy neutrons, can be split apart into lighter nuclei. When this is done, a tremendous amount of energy is released if the mass of the original nucleus is just a little more than the sum of the masses of the individual products. The fission of an atom of uranium, for example, produces 10 million times the energy produced by the combustion of an atom of carbon from coal. In a nuclear reactor designed for electric power generation, such nuclear 'fuel' can be part of a self-sustaining fission chain reaction that releases energy at a controlled rate. The released energy can be used to produce steam and further generate electricity. The major hazard of nuclear power generation is the storage and disposal of spent or used fuels – the uranium still decaying into harmful subatomic particles (radiations). Improper nuclear-waste storage and disposal result in environmental contamination. Further, there is a risk of accidental leakage of nuclear radiation. The high cost of installation of a nuclear power plant, high risk of environmental contamination and limited availability of uranium makes large-scale use of nuclear energy prohibitive.

Answer the following questions:

i. What are the different types of nuclear reactions?

ii. State True or False, Whether Nuclear energy is a non-conventional source of energy.

iii. What are the uses of nuclear energy?

iv. List advantage and limitations of nuclear energy.

4. You must have noticed many dramatic changes in your appearance as well as that of your friends as you approached 10–12 years of age. These changes associated with puberty are because of the secretion of testosterone in males and oestrogen in females. Do you know anyone in your family or friends who has been advised by the doctor to take less sugar in their diet because they are suffering from diabetes? As a treatment, they might be taking injections of insulin. This is a hormone which is produced by the pancreas and helps in regulating blood sugar levels. If it is not secreted in proper amounts, the sugar level in the blood rises causing many harmful effects. **[4]**

Answer the following questions:

a. Write the name of the hormone which is secreted by the pancreas.

b. Name the hormone which is secreted by male and female during the adolescent.

c. What happens if Insulin is not secreted in the proper amount?

d. From which cells of pancreatic islets insulin and glucagon hormone are secreted?

5. Which of the following statements are incorrect- **[1]**

A. Person who wear spectacles cannot donate eyes

B. Presbyopia is corrected by placing a bifocal lens

C. Hypermetropia is also known as short sightedness

D. Red light has longest wavelength

a) A, B and D

b) A and B

c) A and C

d) A and D

OR

The near point of a hypermetropic person is 75 cm if the person uses eye glasses having power +1.0D, Calculate the distance of distinct vision for him?

a) -300cm

b) +300cm

c) -400cm

d) +400cm

6. Euro I and Euro II are norms for **[1]**

a) Protection against wild life

b) studying in school

c) emission from vehicles.

d) living in a society

7. An electric generator is a device which converts **[1]**

a) Electric energy into mechanical energy

b) Electric energy into potential energy

c) Mechanical energy into electric energy

d) Kinetic energy into potential energy

8. Baking soda is a **[1]**

a) mild non - corrosive base

b) strong corrosive base

c) mild corrosive base

d) mild non - corrosive acid

OR

Sodium bicarbonate solution is added to dilute ethanoic acid. It is observed that

a) the colour of the mixture becomes light yellow

b) the mixture becomes warm

c) a solid settles at the bottom

d) a gas evolves

9. Match the following with the correct response: **[1]**

(1) A man- made ecosystem	(A) Paper, plastic bags, etc
(2) A natural ecosystem	(B) Forest, Pond
(3) Scavengers	(C) Aquarium, Grassland
(4) Recyclable waste	(D) Housekeepers

a) 1-B, 2-D, 3-A, 4-C

b) 1-A, 2-C, 3-B, 4-D

c) 1-C, 2-B, 3-D, 4-A

d) 1-D, 2-A, 3-C, 4-B

10. Match the following with the correct response: **[1]**

(1) Ultimate source of energy	(A) Nutrients
(2) Unidirectional flow	(B) Sun
(3) Cyclic flow	(C) 10% law
(4) Limitation of energy levels	(D) Energy

a) 1-C, 2-B, 3-D, 4-A

b) 1-D, 2-A, 3-C, 4-B

c) 1-A, 2-C, 3-B, 4-D

d) 1-B, 2-D, 3-A, 4-C

11. Element X forms a chloride with the formula XCl_2 which is a solid at a high melting point. X would most likely be in the same group of the Periodic Table as **[1]**

a) Na

b) Si

c) Mg

d) Al

12. Match the following with the correct response: **[1]**

(1) Calcination	(A) Reduction by carbon
(2) Roasting	(B) Absence of air
(3) Smelting	(C) Exothermic
(4) Thermite reaction	(D) Excess of air

a) 1-C, 2-B, 3-D, 4-A

b) 1-A, 2-C, 3-B, 4-D

c) 1-B, 2-D, 3-A, 4-C

d) 1-D, 2-A, 3-C, 4-B

13. **Assertion:** Carbon has four electrons in its valence shell. **[1]**
Reason: Carbon forms covalent bonds.

a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

b) Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.

c) Assertion is CORRECT but, reason is INCORRECT.

d) Assertion is INCORRECT but, reason is CORRECT.

14. **Assertion:** A voltmeter and ammeter can be used together to measure resistance but not power. **[1]**
Reason : Power is proportional to voltage and current.

a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

b) Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.

c) Assertion is CORRECT but, reason is INCORRECT.

d) Assertion is INCORRECT but, reason is CORRECT.

Section B

15. A substance X is used as a building material and insoluble in water. When reacts with dil. HCl, it produces a gas which turns lime water milky. Predict the substance and write the chemical equation involved. **[3]**

16. Balance the following chemical equations and state whether they are exothermic or endothermic. **[3]**

i. $Na + H_2O \rightarrow NaOH + H_2$

ii. $FeSO_4 \rightarrow Fe_2O_3 + SO_2 + SO_3$

OR

Which of the following statement is correct and why?

i. Copper can displace silver from the solution of silver nitrate.

ii. Silver can displace copper from the solution of copper sulphate.

17. From the part of a periodic table, answer the following questions: **[3]**

1 Hydrogen	2	13	14 Carbon	15	16 Oxygen	17 Fluorine
X			P			Q
Y						R
Z						T

i. Atomic number of oxygen is 8. What would be the atomic number of fluorine?

ii. Out of X and Q which element has larger atomic size? Give reason for your answer.

iii. Out of Y and Z which element has smaller atomic size? Give reason for your answer.

18. What are differences between aerobic and anaerobic respiration? Name some organisms that use anaerobic mode of respiration. **[3]**

OR

State differences between artery, vein and capillary.

19. Name the phenomenon responsible for **[3]**

i. advance sunrise

ii. colour of water in deep sea

iii. twinkling of stars

iv. reddish appearance of the Sun at the time of sunrise and sunset.

20. Anita had a huge scar on her cheek after she met with an accident during her school days. She is worried if her baby would inherit the scar she had acquired. Regarding this, she enquired it with her doctor, who upon hearing this said that she need not worry about it as her scar is an acquired trait. Read the given passage and answer the following questions: **[3]**

i. What are acquired traits?

ii. How is it different from inherited traits?

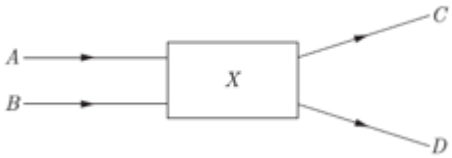
iii. Mention the values of the doctor that is shown in the passage.

21. What is meant by hydrotropic movement (hydrotropism)? give example. **[3]**

22. State Fleming's left-hand rule. **[3]**

23. Draw a circuit diagram of an electric circuit containing of two resistors ammeter, a resistor of 2Ω in series with a combination of two resistors (4 each) in parallel and a voltmeter across the parallel combination. Will the potential difference across the 2Ω resistors be the same as that across the parallel combination of 4Ω resistors? Give reason. **[3]**

24. Light rays A and B fall on the component X and come out as C and D. **[3]**



i. Write the name of optical component.

ii. An object is placed at the radius of curvature of a concave spherical mirror. Where does image is formed by the mirror?

iii. What type of mirror is used in the construction of shaving glass? Why?

OR

"A concave mirror of focal length f can form a magnified, erect as well as an inverted image of an object placed in front of it." Justify this statement stating the position of object with respect to the mirror in each case for obtaining these images.

Section C

25. What happens when: **[5]**

i. $ZnCO_3$ is heated in the absence of oxygen?

ii. a mixture of Cu_2O and Cu_2S is heated?

26. Give an example of each of the following. **[5]**

i. A carbon compound containing two double bonds.

ii. A molecule in which central atom is linked to three other atoms.

iii. A compound containing both ionic and covalent bonds.

iv. An organic compound which is soluble in water.

v. A carbon compound which burns with a sooty flame.

27. With the help of a well labelled diagram explain the structure of human excretory system. **[5]**

28. a. What are homologous structures? Give an example. **[5]**

b. The sex of a newborn child is a matter of chance and none of the parents may be considered responsible for it. Justify this statement with the help of a flow chart showing sex-determination in human beings.

OR

a. What is reproduction? List its two types.

b. Write the difference between modes of reproduction unicellular and multicellular organisms?

29. a. Write the relation between resistance and electrical resistivity of the material of a conductor in the shape of a cylinder of length **l** and area of cross-section **A**. Hence derive the S.I. unit of electrical resistivity. **[5]**

b. The resistance of a metal wire of length 5 m is 100 Ω. If the area of cross-section of the wire is 3×10^{-7} m^2, calculate the resistivity of the metal.

30. An object 5 cm in length is held 25 cm away from a converging lens of focal length 10 cm. Draw the ray diagram and find the position, size and the nature of image formed. **[5]**

OR

i. What is meant by power of a lens? Define its SI unit.

ii. You have two lenses A and B of focal lengths +10 cm and - 10 cm, respectively. State the nature and power of each lens. Which of the two lenses will from a virtual and magnified image of an object placed 8 cm from the lens? Draw a ray diagram to justify your answer.

ATOMIC ENERGY CENTRAL SCHOOL NO.4

RAWATBHATA

CLASS 10 - SOCIAL SCIENCE

Confidence Examination II (2019-2020)

Time Allowed: 3 hours **Maximum Marks: 80**

General Instructions:

1. The question paper has 35 questions in all.
2. Marks are indicated against each question.
3. Questions from serial number 1 to 20 are objective type questions. Each question carries one mark. Answer them as instructed.
4. Questions from serial number 21 to 28 are3 marks questions. Answer of these questions should not exceed 80 words each.
5. Questions from serial number 29 to 34 are 5 marks questions. Answer of these questions should not exceed 120 words each.
6. Question number 35 is a map question of 6 marks with two parts - 35 a. from History (2 marks) and 35b. from Geography (4 marks).

Section A

1. Match the following: **[1]**

(a) This city became the new huh of print culture.	(i) Italy
(b) Edo was the ancient name of this city.	(ii) Strasbourg
(c) This city had the breakthrough of the first printing press.	(iii) Tokyo
(d) Menocchio, a miller belonged to this city.	(iv) Shanghai

2. He composed the song 'Vande Mataram': **[1]**

   a) Rabindranath Tagore b) Sarat Chandra Chatterjee

   c) Bankim Chandra Chattopadhyay d) Natesa Sastri

3. In which year was the Vernacular press act repealed **[1]**

   a) 1882 b) 1890

   c) 1884 d) 1878

4. Rinderpest wiped off _____ of the cattle population of Africa during this period. **[1]**

   a) 60% b) 90%

   c) 80% d) 50%

5. It is the reason for lack of water infiltration in desert soil? **[1]**

   a) low precipitation b) Formation of kanker layer

c) very less rainfall d) high temperature

6. Fill in the blanks: **[1]**

Complete the following table with correct information with regard to the cultivation of Maize:

Maize	**Soil required**	**Cropping season**	**The temperature required for its growth (in degrees)**
	Old alluvial soil	(A)- ?	(B)- ?

7. Why is copper mainly used in electrical cables and electronic industries? **[1]**

OR

Why aluminium metal has great importance?

8. Correct the following statement and rewrite: **[1]**

The system of balances and checks comes under the Vertical form of power-sharing.

OR

Correct the following statement and rewrite:

Moral reasons stress that power-sharing will bring out better outcomes, whereas prudential reasons emphasis the very act of power-sharing as valuable.

9. _____became the 29th State of India. **[1]**

a) Telangana b) Haryana

c) Uttarakhand d) Punjab

10. Fill in the blanks: **[1]**

Women's movement has argued that _____ of all religions discriminate against women.

OR

Fill in the blanks:

Family laws deals with _____.

11. Define the term 'feminist'. **[1]**

OR

Name the process where power is taken away from Central and State Governments and given to local government.

12. How much percent of rural households in India is dependent upon money lenders for credit during 2003? **[1]**

13. Which of the given country is a developing country ? **[1]**

a) Russia b) Brazil

c) Argentina d) USA

14. Fill in the blanks: **[1]**

The money that is spent to buy assets such as land, building, machines and other equipment is called _____.

15. Find the odd one out: **[1]**

a) Tourist Guide b) Tailor

c) Farmer
d) Washerman

16. Fill in the blanks: **[1]**

BMI stands for _____.

OR

Fill in the blanks:

_____ indicates the number of children that die before the age of one year as a proportion of 1000 live children born in that particular year.

17. Banks have to submit the information on how much they are lending to whom at what interest rate, etc. to **[1]**

a) Union Bank of India
b) Indian Bank
c) State Bank of India
d) Reserve Bank of India (RBI)

18. Out of the following which is a mineral-based industry? **[1]**

a) Coffee
b) Sugar
c) Tea
d) Petrochemicals

19. **Assertion (A):** The service sector is gaining more importance in the global economy. **[1]**
Reason (R): As income levels decrease, certain sections of people start demanding many more services like private schools, and hospitals, eating outlets, tourism, etc.

a) Assertion is CORRECT but, reason is INCORRECT.
b) Assertion is INCORRECT but, reason is CORRECT.
c) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.
d) Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.

20. A shoe manufacturer wants to sell shoes in the market and buy wheat. The shoe manufacturer will first exchange shoes that he had produced for money, and then exchange the money for wheat. Which drawback of Barter system is indicated here? **[1]**

a) Lack of Common Measure of Value
b) Lack of Standard of Deferred Payment
c) Lack of Store of Value
d) Lack of Double Coincidence of Wants

Section B

21. How was the Rowlatt Act opposed by the people in India? Explain with examples. **[3]**

OR

Highlight the major facts about the new economic situation created by First Word War in India?

22. What type of economic crisis was experienced in most parts of the world in the 1920s and 1930s? Give examples. **[3]**

OR

Write a note to explain the effects of the decision of MNCs to relocate production to Asian countries.

23. Read the sources given below and answer the questions that follow: **[3]**

Source A:

Further Innovations Printers and publishers continuously developed new strategies to sell their products. Nineteenth-century periodicals serialised important novels, which gave birth to a particular way of writing novels. In the 1920s in England, popular works were sold in cheap series, called the Shilling Series. The dust cover or the book jacket is also a twentieth-century innovation. With the onset of the Great Depression in the 1930s, publishers feared a decline in book purchases. To sustain buying, they brought out cheap paperback editions.

Source B:

The Nineteenth Century: Children As primary education became compulsory from the late nineteenth century, children became an important category of readers. Production of school textbooks became critical for the publishing industry. A children's press, devoted to literature for children alone, was set up in France in 1857. This press published new works as well as old fairy tales and folk tales.

Source C:

Manuscripts before the Age of Print India had a very rich and old tradition of handwritten manuscripts – in Sanskrit, Arabic, Persian, as well as in various vernacular languages. Manuscripts were copied on palm leaves or on handmade paper. Pages were sometimes beautifully illustrated. They would be either pressed between wooden covers or sewn together to ensure preservation. Manuscripts continued to be produced till well after the introduction of print, down to the late nineteenth century.

Questions:

Source A: How did publishers withstand the market during the Great Depression?

Source B: What motivated a large number of children in Europe to become readers?

Source C: Mention the technique of preserving the manuscript in India.

24. Name the type of energy whose per capita consumption is considered as an index of development. Explain the different ways by which this type of energy resource is generated. **[3]**

OR

Describe the importance of coal as a source of energy.

25. How federalism leads to reservation of seats for different caste groups? **[3]**

26. Write down the names of regional political parties dominant in Andhra Pradesh, Karnataka and West Bengal. **[3]**

27. Why do informal lenders give loans to people not having any collateral? **[3]**

OR

Explain the different types of objects used as money before the introduction of coins?

28. Distinguish between, final goods and the intermediate goods. **[3]**

Section C

29. Describe the process of unification of Germany. **[5]**

OR

Explain the various stages of Italian unification.

30. What are resources? Explain factors for resource development in India. **[5]**

31. Evaluate the factors which are responsible for the location of jute industry in West Bengal. **[5]**

32. Describe the population composition of Sri Lanka and the reasons for the formation of Majoritarian government in 1948. **[5]**

33. Explain any four consequences on which democracy has failed. **[5]**

OR

"Democracy stands much superior in promoting dignity and freedom of the citizens". Justify the statement.

34. "Globalisation and greater competition among producers has been advantageous to consumers." Support the statement with examples. **[5]**

Section D

35. (a) Two places A and B have been marked on the given outline map of India. Identify them and write their correct names on the lines drawn near them (any one) **[6]**

A. The place where Indian National Congress session was held in 1927

B. The place associated with the Movement of Indigo Planters.

(b) On the same outline map of India locate and label any four of the following with suitable Symbols. (any two)

i. Kandla - Major Sea Port

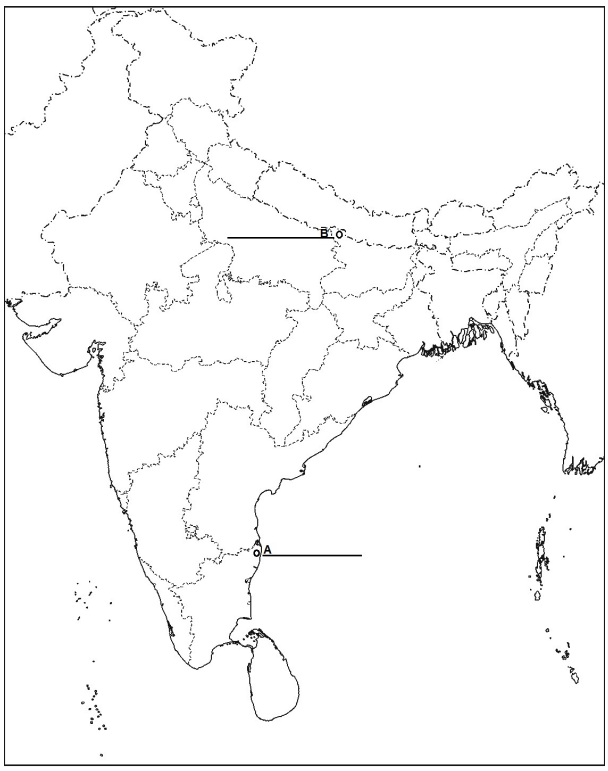
ii. Gandhinagar - Software Technology Park

iii. Talcher – Coal Field

iv. Rawatbhata - Nuclear Power Plant

v. Raja Sansi - International Airport

INDIA – POLITICAL



ATOMIC ENERGY CENTRAL SCHOOL NO.4

RAWATBHATA

CLASS 10 - HINDI A

Confidence Examination II (2019-2020)

Time Allowed: 3 hours **Maximum Marks: 80**

General Instructions:

1. इस प्रश्न-पत्र में चार खंड हैं – क, ख, ग, और घ।
2. सभी खंडों के प्रश्नों के उत्तर देना अनिवार्य है।
3. यथासंभव प्रत्येक खंड के प्रश्नों के उत्तर क्रम से लिखिए।
4. एक अंक के प्रश्नों का उत्तर लगभग 15-20 शब्दों में लिखिए।
5. दो अंकों के प्रश्नों का उत्तर लगभग 30-40 शब्दों में लिखिए।
6. तीन अंकों के प्रश्नों का उत्तर लगभग 60-70 शब्दों में लिखिए।

Section A

1. **निम्नलिखित गद्यांशों को पढ़कर पूछे गए प्रश्नों के उत्तर लिखिए-** **[10]**

किसी भी जीव के शरीर और मानस के सबसे ऊपर मस्तिष्क है। इस मस्तिष्क का स्वभाव कैसे तय होता है? बुद्धि में होने वाले विचार से तय होता है इसका मतलब यह है कि किसी भी व्यक्ति के वंशानुगत स्वभाव को उसकी बुद्धि, उसका विवेक बदल सकता है। इसका मतलब यह है कि हमारे बर्ताव, हमारे कर्म पर हमारा वश है चाहे दुनिया भर पर न भी हो। हम अपने स्वभाव को अपनी बुद्धि में बारीक बदलाव लाकर बदल सकते हैं इसके लिए मस्तिष्क की रूप रेखा पर एक नजर दौड़ानी होगी।

हमारे मस्तिष्क के दो विभिन्न अंश हैं: चेतन और अवचेतन। दोनों ही अलग-अलग प्रयोजनों के लिए जिम्मेदार हैं और दोनों के सीखने के तरीके भी अलग-अलग हैं। मस्तिष्क का चेतन भाग हमें विशिष्ट बनाता है, वही हमारी विशिष्टता है। इसकी वजह से एक व्यक्ति किसी दूसरे व्यक्ति से अलग होता है। हमारा कुछ अलग-सा स्वभाव, हमारी कुछ अनोखी सृजनात्मक शक्ति । ये सब मस्तिष्क के इसी हिस्से से संचालित होती हैं, तय होती हैं। हर व्यक्ति की चेतन रचनात्मकता ही उसकी मनोकामना, उसकी इच्छा और महत्त्वाकांक्षा तय करती है।

इसके विपरीत मस्तिष्क का अवचेतन हिस्सा एक ताकतवर प्रतिश्रुति यंत्र जैसा ही है। यह अब तक के रिकॉर्ड किए हुए अनुभव दोहराता रहता है। इसमें रचनात्मकता नहीं होती। यह उन स्वचलित क्रियाओं और उस सहज स्वभाव को नियंत्रित करता है, जो दुहरा-दुहराकर, हमारी आदत का एक हिस्सा बन चुका है। यह जरूरी नहीं है कि अवचेतन दिमाग की आदतें और प्रतिक्रियाएँ हमारी मनोकामनाओं या हमारी पहचान पर आधारित हों । दिमाग का यह हिस्सा अपने जन्म के थोड़े पहले, माँ के पेट में ही सीखना शुरू कर देता है जैसे जीवन के चक्रव्यूह' में उतरने से पहले ही 'अभिमन्यु' पाठ सीखने लगा हो । यहाँ से लेकर सात साल की उम्र तक वे सारे कर्म और आचरण हमारे दिमाग का यह अवचेतन हिस्सा सीख लेता है जो भावी जीवन के लिए मूल आधार हैं।

i. हम अपने स्वभाव को कैसे परिवर्तित कर सकते हैं?
ii. हमारे मस्तिष्क के कौन-कौन से अंश होते हैं?
iii. मस्तिष्क के चेतन भाग का क्या कार्य है?
iv. अवचेतन मस्तिष्क से क्या अभिप्राय है?
v. लेखक अभिमन्यु के माध्यम से क्या प्रतिपादित करना चाहता है?
vi. उपरोक्त गद्यांश के लिए उचित शीर्षक लिखिए।

Section B

2. **निर्देशानुसार उत्तर दीजिए-** **[4]**

i. जब मन्नू भाषण दे रही थी तब पिताजी के मित्र वहाँ आ निकले। (रचना के आधार पर वाक्य-भेद लिखिए।)

ii. आज सुबह पापा जल्दी उठे और मुझे दवा लाने भेज दिया। (सरल वाक्य में बदलकर लिखिए।)

iii. जेब से चाकू निकालकर दोनों खीरे गोदकर झाग निकाला। (संयुक्त वाक्य में बदलकर लिखिए।)

iv. इसी बालसुलभ हँसी में कई यादें बंद हैं। (मिश्र वाक्य में बदलिए)

3. **निर्देशानुसार वाच्य परिवर्तित कीजिए-** **[4]**

i. बच्चों ने फिल्म की भूरि-भूरि प्रशंसा की। (कर्मवाच्य में)

ii. बाढ़ग्रस्त जम्मू-कश्मीर के लिए अनेक लोगों द्वारा उदारता दिखाई गई। (कर्तृवाच्य में)

iii. मैं अब चुप नहीं बैठ सकता। (भाववाच्य में)

iv. उससे खड़ा भी नहीं हुआ जाता। (कर्तृवाच्य में)

4. **रेखांकित पदों का पद-परिचय दीजिए-** **[4]**

i. पक्षी आकाश में <u>उड़ रहे हैं</u>।

ii. वह <u>निबंध</u> लिखता है।

iii. <u>मोहन</u> दसवीं कक्षा में बैठा है।

iv. हम अपने <u>देश पर</u> मर मिटेंगे।

5. **निम्नलिखित काव्य-पंक्तियों में निहित रस का उल्लेख कीजिए-** **[4]**

i. “तुम्हारी यह दंतुरित मुस्कान।
मृतक में भी डाल देगी जान।'

ii. भरे भौन में करत हैं नैननु ही सब बात।

iii. 'हास्य रस' का एक उदाहरण लिखिए।

iv. 'रसराज' किसे कहा जाता है?

Section C

6. **निम्नलिखित गद्यांशों को पढ़िए और नीचे दिये गए प्रश्नों के उत्तर लिखिए-** **[6]**

बार-बार सोचते, क्या होगा उस कौम का जो अपने देश की खातिर घर-गृहस्थी, जवानी-जिन्दगी सब कुछ होम कर देने वालों पर भी हँसती है और अपने लिए बिकने के मौके ढूँढती है। दुःखी हो गए। पन्द्रह दिन बाद फिर उसी कस्बे से गुजरे। कस्बे में घुसने से पहले ही ख्याल आया कि कस्बे की हृदयस्थली में सुभाष की प्रतिमा अवश्य ही प्रतिष्ठापित होगी, लेकिन सुभाष की आँखों पर चश्मा नहीं होगा।..... क्योंकि मास्टर बनाना भूल गया।..... और कैप्टन मर गया। सोचा, आज वहाँ रुकेंगे नहीं पान भी नहीं खाएँगे, मूर्ति की तरफ देखेंगे भी नहीं, सीधे निकल जाएँगे। ड्राइवर से कह दिया, चौराहे पर रुकना नहीं, आज बहुत काम है, पान आगे कहीं खा लेंगे।

लेकिन आदत से मजबूर आँखें चौराहा आते ही मूर्ति की तरफ उठ गईं। कुछ ऐसा देखा कि चीखे, रोको ! जीप स्पीड में थी, ड्राइवर ने जोर से ब्रेक मारे। रास्ता चलते लोग देखने लगे। जीप रुकते-न-रुकते हालदार साहब जीप से कूदकर तेज़-तेज़ कदमों से मूर्ति की तरफ लपके और उसके सामने जाकर अटेंशन में खड़े हो गए।

मूर्ति की आँखों पर सरकंडे से बना छोटा-सा चश्मा रखा हुआ था, जैसा बच्चे बना लेते हैं। हालदार साहब भावुक हैं। इतनी-सी बात पर उनकी आँखें भर आईं।

i. हालदार साहब की दृष्टि से कैसी कौम देश को अहित करने वाली होती है?

ii. हालदार साहब के मन में कस्बे में घुसने से पहले क्या ख्याल आया?

iii. हालदार साहब के दुःखी होने का क्या कारण था?

7. निम्नलिखित प्रश्नों में से किन्ही चार के उत्तर दीजिये: **[8]**

a) बालगोबिन भगत की दिनचर्या लोगों के अचरज का कारण क्यों थी?

b) लेखक को नवाब साहब के किन हाव-भावों से महसूस हुआ कि वे उनसे बातचीत करने के लिए उत्सुक नहीं हैं?

c) 'मानवीय करुणा की दिव्य चमक' पाठ के आधार पर फादर कामिल बुल्के की जो छवि उभरती है उसे अपने शब्दों में लिखिये।

d) 'मन्नू भंडारी की माँ त्याग और धैर्य की पराकष्य थी-फिर भी लेखिका के लिए आदर्श न बन सकी।

e) डुमराँव और शहनाई से संबंध था-नौबतखाने में इबादत पाठ के आधार पर स्पष्ट कीजिए।

8. **निम्नलिखित काव्यांशों को ध्यानपूर्वक पढ़कर आधारित प्रश्नों के उत्तर दीजिए-** **[6]**

बिहँसि लखनु बोले मृदु बानी । अहो मुनीसु महाभट मानी ।।
पुनि-पुनि मोहि देखाव कुठारु। चहत उड़ावन फूँकी पहारू॥
इहाँ कुम्हड़बतियाँ कोउ नाहीं । जे तरजनी देखि मरि जाहीं ।।
देखि कुठारु सरासन बाना। मैं कछु कहा सहित अभिमाना॥
भृगुसुत समुझि जनेउ बिलोकी। जो कुछ कहहु सह रिस रोकी ।।
सुर महिसुर हरिजन अरु गाई। हमरे कुल इन्ह पर न सुराई ।।
बधे पापु अपकीरति हारे । मारतहू पा परिअ तुम्हारे ।।
कोटि कुलिस सम बचनु तुम्हारा। व्यर्थ धरहु धनु बान कुठारा ।।

i. 'कुम्हड़बतिया कोउ नाहीं' का अभिप्राय स्पष्ट कीजिए।

ii. 'चहत उड़ावन फूँकी पहारू' से लक्ष्मण का क्या अभिप्राय है?

iii. लक्ष्मण ने परशुराम पर क्या व्यंग्य किया?

9. निम्नलिखित प्रश्नों में से किन्ही चार के उत्तर दीजिये: **[8]**

a) कवि निराला की आँख फागुन की सुन्दरता से क्यों नहीं हट रही है?

b) कवि के अनुसार फसल क्या है?

c) 'छाया मत छूना' में कवि 'छाया' किसे कहता है और क्यों?

d) 'कन्यादान' कविता में वस्त्र और आभूषणों को शाब्दिक-भ्रम क्यों कहा गया है ?

e) 'संगतकार' के माध्यम से कवि ने समाज के किस वर्ग के व्यक्तियों की ओर संकेत किया है?

10. निम्नलिखित प्रश्नों में से किन्ही दो के उत्तर दीजिये: **[6]**

a) 'माता का आँचल' के आधार पर लेखक के पिताजी की विशेषताएँ लिखिए।

b) जॉर्ज पंचम की नाक पाठ के आधार पर सरकारी तंत्र की कार्यप्रणाली पर प्रकाश डालिए।

c) देश के प्राकृतिक स्थानों के सौन्दर्य का आनंद लेते समय अधिकांश सैलानी वहाँ के पर्यावरण को दूषित कर देते हैं। इस नैसर्गिक सौन्दर्य की सुरवाजें आप अपने दायित्व का निर्वाह कैसे करेंगे? 'साना-साना हाथ जोड़ि' पाठ के आलोक में उत्तर दीजिए।

Section D

11. जब मैंने डूबते को बचाया विषय पर दिए गए संकेत बिंदुओं के आधार पर लगभग 200 से 250 शब्दो में निबंध लिखिए। **[10]**

- स्थान
- घटना
- आत्म सन्तुष्टि की प्राप्ति।

OR

कम्प्यूटर : आज की आवश्यकता विषय पर दिए गए संकेत बिंदुओं के आधार पर लगभग 200 से 250 शब्दो में निबंध लिखिए।

- भूमिका
- कम्प्यूटर का आगमन
- विविध उपयोग
- लाभ-हानियाँ,
- विश्व की तीसरी आँख
- उपसंहार।

OR

राष्ट्रीय एकता विषय पर दिए गए संकेत बिंदुओं के आधार पर लगभग 200 से 250 शब्दो में निबंध लिखिए।

- राष्ट्रीय एकता का अभिप्राय

- राष्ट्रीय एकता की बाधाएँ
- उपसंहार ।

12. मित्र की माता के आकस्मिक निधन पर एक संवेदना पत्र लिखिए। **[5]**

OR

आपके शहर में सभी प्रकार के खाद्य पदार्थों में मिलावट का धंधा लगातार बढ़ता ही जा रहा है। अपने राज्य के खाद्य-मंत्री को पत्र लिखकर इस समस्या के प्रति उनका ध्यान आकृष्ट कीजिए।

13. मयूर नोबल स्कूल को गणित अध्यापक की आवश्यकता है। इसके लिए 25-50 शब्दों में एक विज्ञापन तैयार कीजिए। **[5]**

OR

आधुनिक तकनीक से तैयार **घड़ी** का विज्ञापन तैयार कीजिये।

Solution

Class 10 - English Language and Literature

Confidence Examination II (2019-2020)

Section A

1. a. True
   b. False
   c. Nanda Devi
   d. Switzerland of India
   e. Uttarakhand
   f. Mahatma Gandhi
   g. No traffic
   h. Gandhiji wrote here a book 'Anashakti Yoga'. So it was renamed 'Anashakti Ashram' after the book.
2. I. a. In the last century, the rapid increase in the consumption of hydrocarbon, as well as the vigorous expansion of the industries and domestic markets for hallo- carbons, have disrupted the atmospheric concentration of numerous gases and nature's auto-balancing system causing an increase in global warming.
   b. Due to global warming, the world is now struck with several environmental problems including the problems of acid rain, melting of glacier ice, large scale evaporation of water in tropics, increase in the cloudiness in the higher latitudes and so on.
   c. The worst impact of global warming is on the monsoon in India and on the meteorological conditions which have caused an increase in sea surface temperature in the oceans. Food production, food security, fresh water supply, forest biodiversity, coastal settlements, fishing and more are adversely affected in India.
   d. India needs to chart multiple strategies to cope with the impending threats to climate change. Pursuing a Sustainable Development Model is critical to addressing the climate change in India which will also help India in economic growth, social equity, and environmental sustainability.

   II. i. (a) Tiny
   ii. (c) Weak
   iii. (b) Maintained
   iv. (a) Changed

Section B

3. C/43, Hauz Khas
   New Delhi
   Dec 1, 2018
   The Editor
   The Indian Express
   New Delhi
   Sir,
   Sub: Problem of Child Labour
   Through the columns of your esteemed daily, I wish to raise my voice against the worst social evil-child labour. Childhood is the best period of one's life but it is unfortunate on the part of children that, despite the ban on child labour, imposed by the government, the practice is still prevalent in our society. Data shows that there are 12 million child workers in our country.
   The root cause of the problem is lack of awareness and poverty. Poor parents send their children to earn, rather than sending them to school. They seek financial support from them but this practice has an adverse impact.
   I hope, through media, the general public should be made aware of the children's plight. Rules against child labour should be followed strictly. Since destitution is the main driver of this issue and implementation alone can't help explain it, the Government has been providing free education to the kids.
   I hope you consider my letter.
   Thanking you,

Yours sincerely,
Aryan.

OR

Advantages of Co-Education

(By XYZ)

Many convent schools and public institutions are co-educational. Co-education is the need of the hour. It has many advantages. It enhances the performance of the children. It is essential for healthy competition. Sending one's child to a school with boys and girls will encourage their self-esteem, social skills and better prepare them for a diverse world where both genders play important roles. Co-ed environments teach students to have respect for their opposite sex peers, expose them to different viewpoints, help to break down the gender stereotypes and provide students with the practice they need to master the social skills which better prepare them for success in university and the workforce. Co-educational schools are indispensable for the harmonious growth of a child. Students who are not given opportunities to work together to develop the skills needed to interact with each other are often left wondering at the reason for their gender-segregated classrooms and may struggle with the seeming inequality.

4. **Cherry On The Top**

Ravi was too excited as he is going to his favourite place Darjeeling. It was his lifetime wish to be there. Before starting his journey he wanted to make sure that he had not forgotten anything. He got into the train, settled in his seat and looked around, there were very few people. He did not bother and his main focus was outside the train. He was wondering what he would do first after reaching there. But suddenly some strange voices were coming from somewhere in the train. He got up from his seat and moved outside his coach. His eyes could not believe what he saw. He was mesmerized to see that Ranbeer Kapoor was there in his train with his crew for the shooting of his upcoming movie. He was overwhelmed with joy, but he was confused about his presence in such a small train. He wanted to ask him personally but he was out of his reach. The people were gathered around him and asking for selfies and autographs from him. After a few minutes, people settled down and he went to him and nervously asked for a selfie with him. He, too, asked him what he was doing there in such a small train. He told him that he was going to Darjeeling for his upcoming film and actually, he wanted to enjoy the train trip to Darjeeling and also, to enjoy all the scenic beauty of nature outside the train. Ravi got too contented after listening to him. Ravi took a selfie with him and came back to his seat and started enjoying his journey. He was wondering what this journey had doubled his happiness.

OR

A Thirsty Crow

It was a hot summer’s day. A thirsty crow flew into a village in search of water. The crow flew over the houses, fields, and trees. But he didn’t find any water. After a long time, he came across a farm. Under one of the trees on the farm was a pitcher of water. Happy that he found some water finally, he swooped down to the tree and then down to the ground. He quickly moved towards the pitcher and looked inside. There was very little water in the pot. The crow put his beak inside the pitcher but could not reach the water. The water level was too low, and the narrow opening prevented his neck from going all the way down. He tried to push the vessel down to let the water out, but it was too heavy. The crow was disappointed. He was really thirsty and needed a drink of water badly. He could have given up and flown to another farm, looking for water. But he didn’t. Instead, he looked around and thought, “What else can I do?” He saw that there were a lot of pebbles on the farm. And, he had an idea! He collected a pebble and put it into the pitcher. He collected another pebble and another and put them all in the pitcher. As he added more and more stones, the water level came up to the brim. He drank water, quenched his thirst and flew away. Hence, with his will-power, he found a way to quench his thirst. So the moral of the story is that'where there is a will, there is a way.'

5. a. has been
   b. came
   c. was living
   d. no

6.

	Error	Correction
(a)	go	went

(b)	your	our
(c)	fall	fell
(d)	or	and

7. a. No plant food contains cholesterol; only animals manufacture it.
   b. So all dry fruits and oilseeds are free from cholesterol.
   c. Any oil made from plants is always free from cholesterol.
   d. Olive oil, mustard oil etc. are one of the best and the healthiest among such oils.

Section C

8. a. 'He' here refers to the tiger.
   b. He is ignoring the visitors because he is locked in the cage and is angry.
   c. Here 'stalking' means 'pacing'.
   d. The tiger is locked in a concrete cell.

OR

   a. The other aeroplane took a turn in the northern direction.
   b. It was easier for the Dakota aeroplane's pilot to follow the black aeroplane.
   c. The opposite of ‘familiar' is 'strange'.
   d. There was only enough fuel in the old Dakota aeroplane's last tank to fly for five or ten minutes more. So, the writer started feeling frightened again.

9. Answer any five of the following questions in 30-40 words each:
   a) "10th May 1994 " is important for South Africa as on this day the first democratic government was installed. It was an end of more than three centuries of the white rule. Nelson Mandela became the first Black President of South Africa.
   b) It was the time of Christmas, the last day of the school before holidays, when Miss Mason brought a letter which she got on that morning from Wanda. Miss Mason read it for all the students. Wanda wrote that her new teacher was not like Miss Mason and wrote that the girls could keep her hundred dresses, i.e. green dress with red trimming for Peggy and blue for Maddie. At last she wished merry Christmas to all.
   c) The Prince heretofore was shielded from the sufferings of the world. At the age of twenty-five, he chanced upon a sick man, then an aged man, then a funeral procession, and finally a monk begging for alms. He was so moved after seeing the sorrows of life that he became a beggar and went out into the world to seek enlightenment. He wandered for seven years. Finally, he acquired enlightenment under a Peepal Tree. He started preaching and became famous as a Buddha.
   d) Mrs. Pumphrey thinks that the dog’s recovery is ‘a triumph of surgery’ because its condition is very critical when it gets admitted to Mr. Herriot's hospital. It is not able to even walk properly. But after the treatment, it recovers fully.
   e) Max had got a passkey. So he entered Ausable's room through the door. He told this to Ausable because the latter had fabricated a story that it was the second time in a month that somebody had got into his room through the balcony. Max said that he had no idea about the balcony.
   f) Griffin slipped into a big London store to save himself from the unbearable cold. He drank and wore shoes, an overcoat and a wide-brimmed hat. He became a fully dressed and visible person. He found cold meat, coffee and sweets there. Finally, he slept on a pile of quilts.

10. Anne was a sober, witty and intelligent girl of Otto Frank. She was a Jewish girl born in German. She was very intelligent and perceptive, and she wanted to be a writer. Anne grew from an innocent, tempestuous, precocious, and somewhat petty teenage girl to an empathetic and sensitive thinker at age fifteen. Over the course of the diary, she grew from a spoiled, somewhat naive young girl of thirteen to a self-aware young woman of fifteen. Her book written in Dutch become one of the world's most readable books. Many films, television and opera had been produced based on her diary. She felt lonely at not having a real friend. So, She dedicated her feelings to a diary named Kitty. Her teachers had a good view of her except her talkative nature. She had an intense love for her grandmother and her teacher, Mrs. Kuperus. Only Mr. Keesing, her maths teacher punished her for her talkative nature by assigning essays.

OR

It is indeed true that whenever we want to achieve something, difficulties do come in our way. Achieving goals require perseverance. Valli wanted to ride the bus. However, she neither had the money nor the required information about the timings and the routes to do so. The challenge in front of her was to arrange the required amount of money and to gather information about the timings of the bus. Valli had carefully saved whatever stray coins came her way, resisting every temptation to buy peppermints, toys, balloons etc. She didn't even go the fair. Finally, she saved sixty paise for the bus ride by suppressing her strong desires. She also collected all the information about the timings and routes of the bus by listening to other people's conversations and asking discreet questions.

11. Matilda’s pride and her materialistic aspirations coupled with her dishonesty paved the way for her ruin. She could avoid it by learning to accept her current situation and being content with what she had but she was not ready to accept her reality. She was a day-dreamer. She never behaved like a mature woman. She loved to have new and luxurious dresses. She liked to have jewellery. She was never satisfied. She did not follow her husband’s good advice. Thus, Matilda’s unrealistic dreams were the cause of her ruin. Another way could have been to try getting a job or starting a business. One should either try to work hard to realise one’s dreams or stop dreaming altogether.

OR

Social discrimination against women has been highlighted in the narrative of 'Bholi' where women are considered as a liability, a burden to be borne till they are eventually disposed of in marriage.
The family in particular and the society at large have no faith in their capabilities and hence do not consider it essential to educate them. But Bholi's story proves that daughters are capable and responsible in supporting the family same as the menfolk In the story also the main concern of Bholi's family was her marriage. Her family was more concerned about her looks instead of about her health or studies. The story shows many evils of society like the position of girls in the family, the importance of beauty and dowry. But a confident and educated girl face all of these with lots of courage. This shows the importance of education in a girl's life. A significant change in social attitudes can be brought about by a girl herself. We can spread awareness by educating the girls about their basic rights in society. Mass media such as television is very influential and significant work is already being done to initiate a change in attitude towards the girls.

Solution

Class 10 - Mathematics

Confidence Examination II (2019-2020)

Section A

1. **(c)** 1679
   Explanation: Dividend = Divisor$\times$Quotient + Remainder
   $\rightarrow$ Number(dividend) = D $\times$ Q + R
   Therefore the number (Dividend) = 61$\times$27 + 32
   = 1647 + 32
   = 1679

2. **(a)** 0.625
   Explanation: Use long division:

$$\begin{array}{r} 0.625 \\ 8\overline{)5.0000} \\ 48 \\ 20 \\ 40 \\ 0 \end{array}$$

   Thus '$\frac{5}{8}$=0.625'.

3. **(a)** 2.5
   Explanation: Arranging the given data in ascending order, we get
   0, 1, 2, 2, 2, 3, 3, 4, 5, 6
   Here, n = 10, which is even.
   $\therefore$ Median = $\frac{1}{2}\left[\left(\frac{n}{2}\right)^{th}\text{ term} + \left(\frac{n}{2}+1\right)^{th}\text{ term}\right]$
   = $\frac{1}{2}\left[5^{th}\text{ term} + 6^{th}\text{ term}\right]$
   $\Rightarrow$ Median = $\frac{1}{2}[2+3] = \frac{5}{2}$
   = 2.5

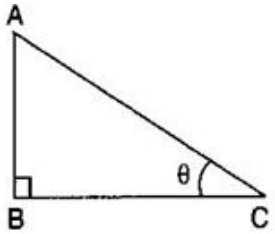
4. **(a)** Real and Distinct roots
   Explanation: D = (-3)^2 - 4$\times\sqrt{2}\times$(-5)
   D = 9 + 20$\sqrt{2}$
   D > 0. Hence Real and Distinct roots.

5. **(b)** 2
   Explanation: Since $\sec\theta = \sqrt{1+\tan^2\theta}$
   $\therefore \sec\theta = \sqrt{1+\left(\sqrt{3}\right)^2}$
   = $\sqrt{1+3} = \sqrt{4}$ = 2

6. **(d)** 1
   Explanation: $\sin^6 A + \cos^6 A + 3\cos^2 A\sin^2 A$
   $=\left(\sin^2 A\right)^3 + \left(\cos^2 A\right)^3 + 3\cos^2 A\sin^2 A$
   $=\left(\sin^2 A + \cos^2 A\right)\left(\sin^4 A + \cos^4 A - \sin^2 A\cos^2 A + 3\cos^2 A\sin^2 A\right)$
   $=\left(\sin^4 A + \cos^4 A + 2\cos^2 A\sin^2 A\right)$
   $= \left(\sin^2 A + \cos^2 A\right)^2$
   $= 1^2$
   =1

7. **(b)** 60°

Explanation:



Given: the height of the pole = AB = 6 m and the length of the shadow = BC = $2\sqrt{3}$ m

$\therefore \tan\theta = \frac{AB}{BC}$

$\Rightarrow \tan\theta = \frac{6}{2\sqrt{3}}$

$\Rightarrow \tan\theta = \frac{3}{\sqrt{3}}$

$\Rightarrow \tan\theta = \frac{\sqrt{3}\times\sqrt{3}}{\sqrt{3}}$

$\Rightarrow \tan\theta = \sqrt{3}$

$\Rightarrow \tan\theta = \tan 60^\circ$

$\Rightarrow \theta = 60^\circ$

8. **(b)** $\left(\frac{x_2+kx_1}{1+k}, \frac{y_2+ky_1}{1+k}\right)$

Explanation: Let coordinates of P be (x, y) .which divides the line joining A(x_1, y_1) and B(x_2, y_2) in the ratio 1:k

$m_1 : m_2 = 1 : k$

$\therefore x = \frac{m_1x_2+m_2x_1}{m_1+m_2}$

$= \frac{1\times x_2+k\times x_1}{1+k} = \frac{x_2+kx_1}{1+k}$

And $y = \frac{m_1y_2+m_2y_1}{m_1+m_2}$

$= \frac{1\times y_2+k\times y_1}{1+k}$

$= \frac{y_2+ky_1}{1+k}$

$\therefore P\left(\frac{x_2+kx_1}{1+k}, \frac{y_2+ky_1}{1+k}\right)$

9. **(b)** II

Explanation: Since $x-$coordinate is negative and $y-$coordinate is positive.

Therefore, the point $(-3, 5)$ lies in II quadrant.

10. **(a)** 0.24

Explanation: Given: P (It will rain on a particular day) = 0.76

$\therefore$ P (It will not rain on a particular day) = 1 – P (It will rain particular day)

= 1 – 0.76 = 0.24

11. $\sqrt{3}$

12. Degree

OR

1

13. 6 units

14. -1

15. $4\sqrt{2}$

16. Euclid's Division Lemma: If we have two positive integers a and b,
then there exists unique integers q and r which satisfies the condition
a = bq + r (where 0 ≤ r ≤ b)
Example: If we have two integers a=27 b=4
Then $27 = 4 \times 6 + 3$,
Here q = 6 and r = 3

17. In triangles AOB and COD, we obtain
$\angle$A = $\angle$ C (Given)
and, $\angle$1 = $\angle$ 2 [Vertically opposite angles]

Therefore, by AA- criterion of similarity, we obtain

$\Delta AOB \sim \Delta COD$

18. Here, $a = p \; and \; d = q$

We know that $a_n = a_1 + (n-1)d$

a_{10} = p + (10 - 1)q = p+ 9q

Hence, 10th term of the AP is p + 9q.

OR

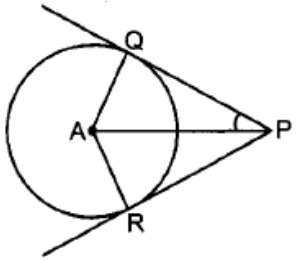
We have, a = $\frac{1}{m}$

d = $\frac{1+m}{m} - \frac{1}{m} = \frac{1+m-1}{m} = \frac{m}{m} = 1$

$\therefore a_n = \frac{1}{m} + (n-1)1$

Hence, $a_n = \frac{1}{m} + n - 1$

19. PQ and PR are tangents to circle with centre A.



$\angle \text{QPA} = \angle \text{RPA}$

$\Rightarrow \angle \text{RPA} = 27^\circ$

$\angle \text{QPR} = \angle \text{QPA} + \angle \text{RPA}$

$= 27^\circ + 27^\circ = 54^\circ$

Now, $\angle \text{QAR} + \angle \text{QPR} = 180^\circ$

$\Rightarrow \angle QAR = 180^\circ - 54^\circ = 126^\circ$

20. Since the roots of the equation $2x^2 + 8x + k = 0$ are equal

Discriminant, D = 0

$\Rightarrow b^2 - 4ac = 0$

$\Rightarrow (8)^2 - 4(2)(k) = 0$

$\Rightarrow$ 64 - 8k = 0

$\Rightarrow$ 8k = 64 $\Rightarrow$ k = 8

Section B

21. Out of 8 numbers, an arrow can point any of the numbers in 8 ways.

$\therefore$Total number of outcomes = 8

$Proabibilty \; of \; the \; event = \frac{Number \; of \; favourble \; outcomes}{Total \; number \; of \; possible \; outcomes}$

i. Favourable number of outcomes = 1

Hence, P (arrow points at 8) = $\frac{1}{8}$

ii. Favourable number of outcomes = 4

Hence, P (arrow points at an odd number) = $\frac{4}{8} = \frac{1}{2}$

iii. Favourable number of outcomes = 6

Hence, P (arrow points at a number greater than 2) = $\frac{6}{8} = \frac{3}{4}$

iv. Favourable number of outcomes = 8

Hence, P (arrow points at a number less than 9) = $\frac{8}{8} = 1$

22. we are given that 2 is a root of the equation x^2 + kx + 12 = 0 and the equation x^2 + kx + q = 0 has equal roots, find the value of q.

If 2 is the root of $x^2 + kx + 12 = 0$,then

$(2)^2 + 2k + 12 = 0$

or, 2k + 16 = 0

k = - 8

Put k = -8, in $x^2 + kx + q = 0$,we get

$x^2 - 8x + q = 0$

For equal roots

$(-8)^2 - 4(1)q = 0$

64 -4q = 0

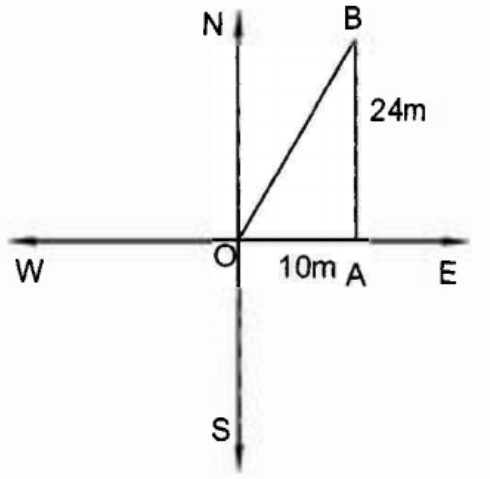
4q = 64

q = 16

23. Let us suppose that the initial position of the man be O and his final position be B. Since the man goes 10 m due east and then 24 m due north. Therefore, ΔAOB is a right triangle right angled at A such that OA = 10 m and AB= 24 m.

Now, we have to find the distance between the starting point and the end point i.e. OB

Therefore by using Pythagoras theorem, we have



$OB^2 = OA^2 + AB^2$

$\Rightarrow OB^2 = 10^2 + 24^2 = 100 + 576 = 676$

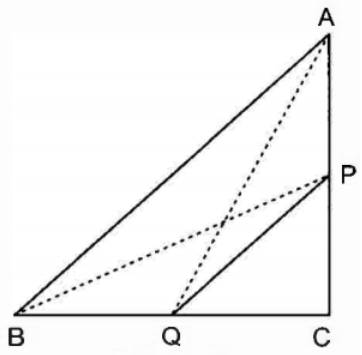
$OB = \sqrt{676} = 26m$

Hence, the man is at a distance of 26 m away from the starting point.

OR

Given: ABC is a right triangle right angled at C. P and Q are the mid-points of the sides CA and CB respectively

To prove: $4BP^2 = 4BC^2 + AC^2$



$\therefore$ By Pythagoras theorem

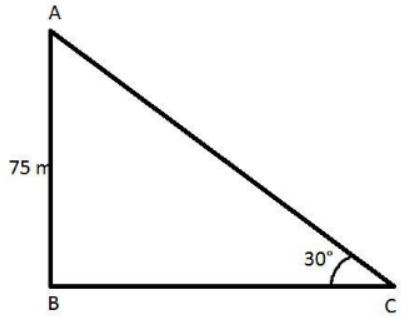
$BP^2 = BC^2 + CP^2$

$\Rightarrow 4BP^2 = 4BC^2 + 4CP^2$ [Multiplying both sides by 4]

$\Rightarrow 4BP^2 = 4BC^2 + (2CP)^2$

$\Rightarrow 4BP^2 = 4BC^2 + AC^2$ [$\because$ AC = 2 CP as p is mid point of AC]

24. In $\triangle ABC$,



Height of tower = 75 m

Distance from the base of tower to car = BC

$\angle$ACB = 30^o

tan θ = $\frac{AB}{BC}$

tan 30^o = $\frac{AB}{BC}$

$\frac{1}{\sqrt{3}}$ = $\frac{75}{BC}$

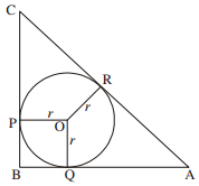
BC = $\frac{75}{\frac{1}{\sqrt{3}}}$

BC = $75\sqrt{3}$

Hence the distance of the car from the base of the tower is $75\sqrt{3}$ m.

25. AC = $\sqrt{\mathrm{AB}^2 + \mathrm{BC}^2}$

= $\sqrt{14^2 + 48^2}$ = $\sqrt{2500}$ = 50 cm



$\angle$OQB = $90^o \Rightarrow$ OPBQ is a square

$\Rightarrow$ BQ = r

QA = 14 - r = AR (tangents from a external point are equal in length)

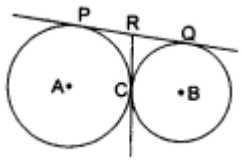
Again PB = r,

PC = 48 - r $\Rightarrow$ RC = 48 - r (tangents from a external point are equal in length)

AR + RC = AC $\Rightarrow$ 14 - r + 48 - r = 50

$\Rightarrow$ r = 6 cm.

OR



In the given figure, PR and CR are both tangents drawn to the same circle from an external point R.

$\therefore$ PR = CR. ...(i)

Also, QR and CR are both tangents drawn to the same circle (second circle) from an external point R

QR = CR ... (ii)

From (i) and (ii), we get

PR = QR [each equal to CR].

R is the midpoint of PQ,

i.e., the common tangent to the circles at C, bisects the common tangent at P and Q.

26. r + h = 37 (Given)

Total surface area of cylinder = $1628\mathrm{cm}^2$

$2\pi r(r + h) = 1628$

$2\pi r \times 37 = 1628$

$2\pi r = \frac{1628}{37}$

r = 7 cm

Radius of the cylinder = 7cm

Height of the cylinder = 30cm

Volume of cylinder $= \pi r^2 h = \frac{22}{7} \times 7 \times 7 \times 30$

$= 4620\text{cm}^3$

Volume of the cylinder = 4620cm^3

Section C

27. For any finite set of primes {p_1 , p_2 , p_3 ,....., p_n }, Euclid considered the number

    $n = p_1 \times p_2 \times p_3 \times \ldots\ldots \times p_{n+1}$

    n has a prime divisor p(every integer has at least one prime divisor). But p is not equal to any of the p_i .(If p were equal to any of the p_i , then p would have to divide 1, which is

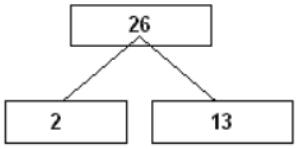
    impossible.

    So for any finite set of prime numbers, it is possible to find another prime that is not in that set.

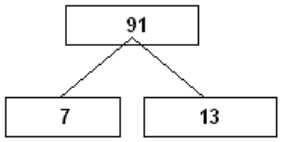
    In other words, a finite set of primes cannot be the collection of all prime numbers.

    Hence, there are infinitely many positive primes.

    OR

    So, 26 = 2 ×13

    So, 91 = 7 × 13

    Therefore, LCM(26, 91) = 2 × 7 × 13 = 182

    HCF(26, 91) = 13

    Verification:

    LCM ×HCF = 182 ×13 = 2366

    and 26 × 91 = 2366

    i.e., LCM × HCF = product of two numbers.

28. Since the penalty for each succeeding day is ₹ 50 more than for the preceding day.

    Therefore, amount of penalty for different days forms an A.P. with first term a = 200 and common difference d = 250 - 200= 50.

    We have to find how much does a delay of 30 days cost the contractor.

    In other words, we have to find the sum of 30 terms of the A.P.

    n = 30, a = 200 and d= 50

    $\therefore$ Required sum $= \frac{30}{2}\{2 \times 200 + (30-1) \times 50\} \left[\because S_n = \frac{n}{2}[2a + (n-1)d]\right]$

    ⇒ Required sum = 15 (400 + 29 × 50)

    ⇒ Required sum = 15 (400 + 1450)

    ⇒ Required sum = 15 × 1850 = 27750

    Thus, a delay of 30 days will cost the contractor of ₹ 27750.

29. Let us suppose that the numerator be x and denominator be y

    Therefore, the fraction is $\frac{x}{y}$.

    Then, according to the given conditions, we have

    $\frac{3x}{y-3} = \frac{18}{11}$ and $\frac{x+8}{2y} = \frac{2}{5}$

    ⇔ 11x = 6y -18 and 5x + 40 =4y

    ⇔11x - 6y + 18 =0 and 5x - 4y + 40 =0

    By cross multiplication, we have

$\frac{x}{(-6)\times40-(-4)\times18} = \frac{-y}{11\times40-5\times18} = \frac{1}{11\times(-4)-5\times(-6)}$

$\Rightarrow \quad \frac{x}{-240+72} = \frac{-y}{440-90} = \frac{1}{-44+30}$

$\Rightarrow \quad \frac{x}{-168} = \frac{y}{-350} = \frac{1}{-14}$

$\Rightarrow \quad x = \frac{-168}{-14}$ and $y = \frac{-350}{-14}$

$\Rightarrow$x =12 and y =25

Therefore, the fraction is $\frac{12}{25}$.

OR

Since $(x+1)$ is a factor of $2x^3 + ax^2 + 2bx + 1$

$\Rightarrow x = -1$ is a zero of $2x^3 + ax^2 + 2bx + 1$

$\Rightarrow 2(-1)^3 + a(-1)^2 + 2b(-1) + 1 = 0$

$\Rightarrow a - 2b - 1 = 0$

$\Rightarrow$ a - 2b = 1 ...(i)

Given that $2a - 3b = 4$ ...(ii)

Multiplying equation (i) by 2, we get

$2a - 4b = 2$ ...(iii)

Subtracting equation (iii) from (ii), we get

b = 2

Substituting b = 2 in equation (i), we have

a - 2(2) = 1

$\Rightarrow$ a - 4 = 1

$\Rightarrow$ a = 5

Hence, a = 5 and b = 2.

30. Given polynomials is f(x) = $3x^2 - x^3 - 3x + 5$ and g(x) = $x - 1 - x^2$

Writing the given polynomials in standard form, we get

f(x) = $-x^3 + 3x^2 - 3x + 5$ and g(x) = $-x^2 + x - 1$

Using long division method, we obtain

$$
\begin{array}{r|l}
-x^2 + x - 1 \;\overline{)\; -x^3 + 3x^2 - 3x + 5 \;} & x - 2 \\
\quad -x^3 + x^2 - x & \\
\quad + \;\; - \;\; + & \\
\hline
\quad 2x^2 - 2x + 5 & \\
\quad 2x^2 - 2x + 2 & \\
\quad - \;\; + \;\; - & \\
\hline
\quad 3 &
\end{array}
$$

Quotient q(x) = x - 2 and, Remainder r(x) = 3

Now, Quotient $\times$ Divisor + Remainder = (x - 2) ($-x^2 + x - 1$) + 3

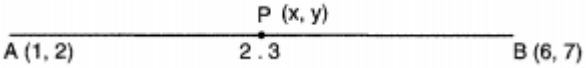
= $-x^3 + x^2 - x + 2x^2 - 2x + 2 + 3$

= $-x^3 + x^2 + 2x^2 - x - 2x + 2 + 3$

= $-x^3 + 3x^2 - 3x + 5$

Quotient $\times$ Divisor + Remainder = Dividend

Hence, the division algorithm is verified.

31. 

AP = $\frac{2}{5}$ AB or, AP : PB = 2 : 3

$x = \frac{2\times6+3\times1}{2+3}$ and $y = \frac{2\times7+3\times2}{2+3}$

$\therefore \quad x = \frac{12+3}{5} = 3, y = \frac{14+6}{5} = 4$

P(x, y) = (3, 4)

32. According to question

$\frac{\cos\theta-\sin\theta}{\cos\theta+\sin\theta} = \frac{1-\sqrt{3}}{1+\sqrt{3}}$

$\Rightarrow \quad \frac{(\cos\theta-\sin\theta)+(\cos\theta+\sin\theta)}{(\cos\theta-\sin\theta)-(\cos\theta+\sin\theta)} = \frac{(1-\sqrt{3})+(1+\sqrt{3})}{(1-\sqrt{3})-(1+\sqrt{3})}$ $[Applying\ componendo\ and\ dividendo]$

$\Rightarrow \quad \frac{2\cos\theta}{-2\sin\theta} = \frac{2}{-2\sqrt{3}}$

$\Rightarrow \quad \cot\theta = \frac{1}{\sqrt{3}} \Rightarrow \tan\theta = \sqrt{3} \Rightarrow \tan\theta = \tan 60^\circ \Rightarrow \theta = 60^\circ$

OR

According to the question,

tan (A+B-C) = 1

$\Rightarrow$ tan (A+B-C) = $\tan 45^\circ$

$\Rightarrow$ A + B - C = 45° .....(1)

Also given, sec (B+C-A) = 2

$\Rightarrow$ sec (B + C - A) = sec 60°

$\therefore B + C - A = 60^\circ$.....(2)

Adding equation (1) & (2);

$(A + B - C) + (B + C - A) = 45^\circ + 60^\circ$

$\Rightarrow \quad 2B = 105^\circ$

$\Rightarrow \quad B = 52\frac{1^\circ}{2}$

Putting $B = 52\frac{1^\circ}{2}$ in equation (2); we get :-

$52\frac{1^\circ}{2} + C - A = 60^\circ$

$\Rightarrow C - A = 7\frac{1^\circ}{2}$.....(3)

Also, in ΔABC, we have

$A + B + C = 180^\circ$

$\Rightarrow \quad A + 52\frac{1^\circ}{2} + C = 180^\circ \left[\because B = 52\frac{1^\circ}{2}\right]$

$\Rightarrow \quad C + A = 127\frac{1^\circ}{2}$.....(4)

Adding and subtracting (3) and (4), we get

2C = 135^o and 2A = 120^o

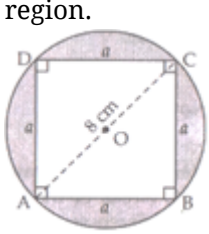
$\Rightarrow C = 67\frac{1}{2}^\circ$ and A = 60^o

Hence, we get the values of A = 60^o,

$B = 52\frac{1^\circ}{2}$

and $C = 67\frac{1^\circ}{2}$.

33. In the given figure, a square of diagonal 8 cm is inscribed in a circle. We have to find the area of shaded region.



Let the side of the square be a cm.

So, radius of the circle, r = OA = $\frac{AC}{2}$

$\Rightarrow$ r = $\frac{8}{2}$ = 4 cm

So, in right angled $\triangle$ABC,

$AB^2 + BC^2 = AC^2$

$\Rightarrow a^2 + a^2 = 8^2$

$\Rightarrow 2a^2 = 64$

$\Rightarrow a^2 = \frac{64}{2} \Rightarrow a^2 = 32$

Area of shaded part = Area of circle – Area of square

$= \pi r^2 - a^2 = \frac{22}{7} \times 4 \times 4 - 32$

$= 16\left[\frac{22}{7} - \frac{2}{1}\right] = 16\left[\frac{22-14}{7}\right] = \frac{16\times 8}{7} = \frac{128}{7}$

Area of shaded region = 18.286 cm^2

x	f	

34.

		f_ix_i
10	3	30
15	10	150
20	x	20x
25	7	175
35	5	175

Let the missing frequency is 'x'.

$\Sigma f_i x_i = 530 + 20x,$

$\Sigma f_i = 25 + x$

Mean = $\frac{\Sigma f_i x_i}{\Sigma f_i} = \frac{530+20x}{25+x} = 20.6$

$530 + 20x = 25 \times 20.6 + 20.6x$

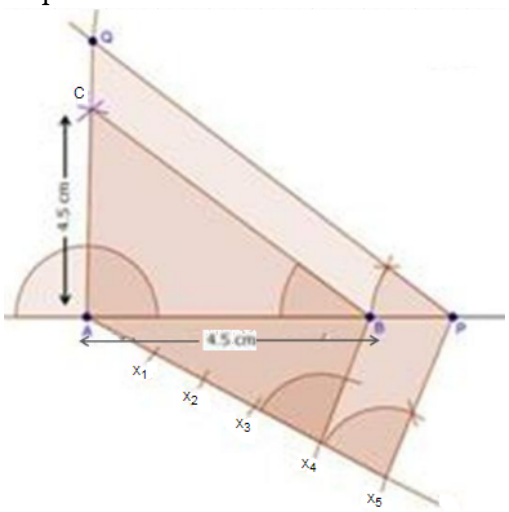
$\Rightarrow 530 + 20x = 515 + 20.6x$

$\Rightarrow 15 = 0.6x$

$\Rightarrow \quad x = \frac{15}{0.6} = 25$

Section D

35. Steps of construction:-



i. Draw a line segment AB of 4.5 cm.

ii. At A draw an angle of 90°.

iii. With centre A and radius 4.5 cm, draw an arc which intersects the line of angle at C.

iv. Join CB.

v. At A, draw $\angle BAX$ of any measure.

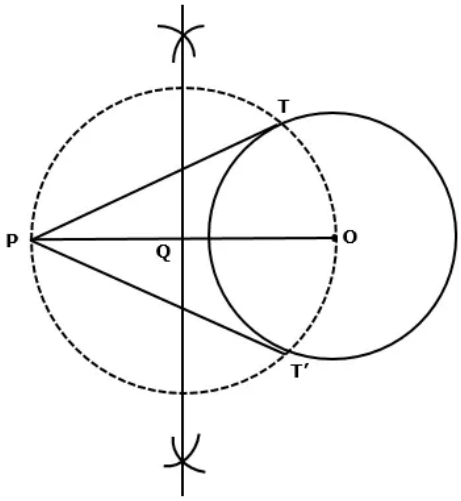
vi. Starting from A, cut 5 equal parts on AX such that
$AX_1 = X_1X_2 = X_2X_3 = X_3X_4 = X_4X_5$

vii. Join X_4B

viii. Through X_5, draw $X_5P \parallel X_4B$.

ix. Through P, draw PQ || BC
$\therefore \triangle QAP \sim \triangle CAB$

OR

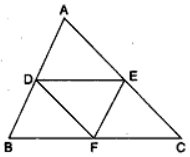


Steps of construction:

1. Take a point O on the plane of the paper and draw a circle of radius 3 cm.
2. Mark a point P at a distance of 7 cm from the centre O and join OP.
3. Draw a right bisector of OP, intersecting OP at Q.
4. Taking Q as centre and OQ = PQ as radius, draw a circle to intersect the given circle at T and T'.
5. Join PT and PT' to get the required tangents.

By measurement,
PT = PT' = 6.1 cm

36. Given:D,E and F are respectively the mid-points of sides AB, AC and BC of $\triangle$ ABC.
To determine. Ratio of the area of $\triangle$ DEF and $\triangle$ ABC.
Determination:
We have
$\frac{AD}{AB} = \frac{1}{2}$ ....(1)
$\because$ D is the mid-point of AB and
$\frac{AE}{AC} = \frac{1}{2}$ ....(2)



$\because$ E is the mid-point of AC
From (1) and (2),
$\frac{AD}{AB} = \frac{AE}{AC}$
$\therefore$ DE $\|$ BC.....By converse of basic proportionality theorem
$\therefore \angle$ ADE = $\angle$ ABC ....(3) .....corresponding angles
and $\angle$ AED= $\angle$ ACB .....(4) .....corresponding angles
In view of (3) and (4),
$\triangle$ ABC $\sim$ $\triangle$ DEF .....AA similarity criterion
$\frac{ar(\triangle DEF)}{ar(\triangle ABC)} = \left(\frac{DE}{BC}\right)^2$ ..... $\because$ The ratio of the areas of two similar triangle is equal to the square of the ratio of their corresponding sides.
$= \left(\frac{\frac{1}{2}BC}{BC}\right)^2$ ..... $\because$ D and E are the mid-points of AB and AC respectively
$\therefore$ DE||BC and DE=$\frac{1}{2}BC = \frac{1}{4}$ $\therefore$ ar($\triangle$ DEF):ar($\triangle$ ABC)=1:4.

37. x - y = 1
or, y = x - 1
When x = 2, we have y = 1
When x = 3, we have y = 2
When x= -1, we have y = -2

x	2	3	- 1
y	1	2	-2

2x + y = 8

or y = 8 - 2x

When x = 2, we have y = 4

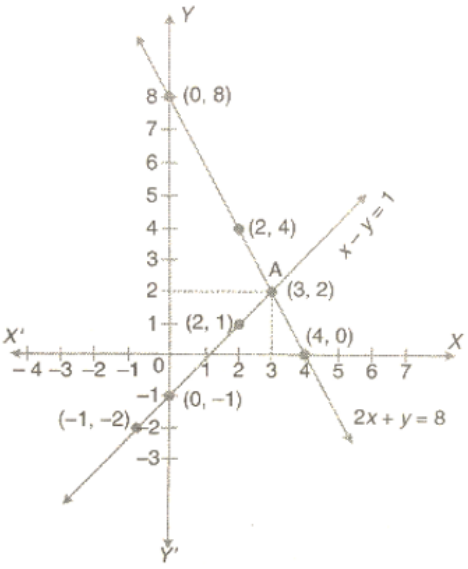
When x = 4, we have y = 0

When x = 0 , we have y = 8

x	2	4	0
y	4	0	8

Plotting the above points and drawing a line joining them, we get the graphical representation

Therefore, required graph is shown below:



The two lines intersect at point A (3, 2).

∴ Solution of given equations is x = 3, y = 2.

Again, x - y = 1 intersects y-axis at (0, -1) and 2x + y = 8 intersects y-axis at (0,8).

OR

2x - y + 3 = 0

3x - 5y + 1 = 0

$2x - y = -3 \ldots\ldots\ldots (1)$

$3x - 5y = -1 \ldots\ldots (2)$

Multiplying eqn. (i) by 3 and (ii) by 2, and subtracting (ii)

$6x - 3y = -9$

$6x - 10y = -2$

$(-) \quad (+) \qquad (+)$

$7y = 11$

$\Rightarrow y = \frac{11}{7}$

Substituting the value of y in ,eqn. (i)

2x - y = 3

2 x = y + 3

$2x = 3 + \frac{11}{7}$

$2x = \frac{21 + 11}{7} \Rightarrow 2x = 32/7$

$\Rightarrow x = \frac{32}{14}$

$or\ x = \frac{16}{7}$

- 4 - y + 3 = 0

or, - y - 1 = 0

y = -1

Hence, x=-2

38. We have, Diameter of the graphite cylinder = 1 mm = $\frac{1}{10}$cm

∴ Radius of graphite (r) = $\frac{1}{20}$cm = 0.05 cm

Length of the graphite cylinder =10 cm

Volume of the graphite cylinder = $\frac{22}{7} \times (0.05)^2 \times 10$

= 0.0785 cm^3

Weight of graphite = Volume× Specific gravity

= 0.0785 $\times 2.1$

= 0.164 gm

Diameter of pencil = $7\text{mm} = \frac{7}{10}\text{cm}$ = 0.7 cm

∴ Radius of pencil = $\frac{7}{20}$cm = 0.35 cm

and, Length of pencil = 10 cm

∴ Volume of pencil = $\pi r^2 h$

= $\frac{22}{7} \times (0.35)^2 \times 10$ cm^3 = 3.85 cm^3

Volume of wood = volume of the pencil - volume of graphite

= (3 .85 - 0.164) cm^3= 3. 686 gm

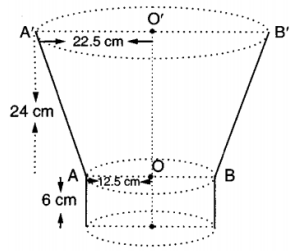
∴ Weight of wood = volume density

= 3. 686 × 0.7 = 3.73

Hence, Total weight = (3.73+ 0.164) gm = 3.894gm.

OR

Area of metallic sheet used = curved surface area of frustum + curved surface area of cylinder + area of circular base.



Diameter of bigger circular end = 45 cm

Radius = r_1 = 22.5 cm

Diameter of smaller circular end = 25 cm

Radius r_2 = 12.5 cm .

Now height of the frustum = Total height of bucket - height of cylinder

= 40 cm - 6 cm = 34 cm

Let l be the slant height of the frustum. Then,

$l = \sqrt{h^2 + (r_1 - r_2)^2} = \sqrt{24^2 + (22.5 - 12.5)^2} = \sqrt{576 + 100} = 26\text{cm}$

Let A be the area of metallic sheet used. Then,

A = Curved surface area of the frustum of cone + Area of circular base + Curved surface area of cylinder.

$A = \pi(r_1 + r_2)l + \pi r_2^2 + 2\pi r_2 h_2$,where h_2 = height of the base = 6 cm

$\Rightarrow \quad A = \pi\left[(22.5 + 12.5) \times 26 + 12.5^2 + 2 \times 12.5 \times 6\right] \text{cm}^2$

$\Rightarrow \quad A = \pi \times (1216.25)\text{cm}^2 = \frac{22}{7} \times 1216.25\text{cm}^2 = 3822.5\text{cm}^2$

Let V be the volume of water that the bucket can hold. Then,

$V = \frac{1}{3} \times \pi \times \left(r_1^2 + r_2^2 + r_1 r_2\right) \times h$

$\Rightarrow \quad V = \frac{1}{3} \times \frac{22}{7} \times \left\{22.5^2 + 12.5^2 + 22.5 \times 12.5\right\} \times 24\text{cm}^3$

$\Rightarrow \quad V = \frac{1}{3} \times \frac{22}{7} \times \left\{(9 \times 2.5)^2 + (5 \times 2.5)^2 + (9 \times 2.5) \times (5 \times 2.5)\right\} \times 24\text{cm}^3$

$\Rightarrow \quad V = \frac{1}{3} \times \frac{22}{7} \times (2.5)^2 \left(9^2 + 5^2 + 9 \times 5\right) \times 24\text{cm}^3$

$\Rightarrow \quad V = \frac{1}{3} \times \frac{22}{7} \times (2.5)^2 \times (151) \times 24\text{cm}^3 = 23728.57\text{cm}^3$ = 23.728 litres

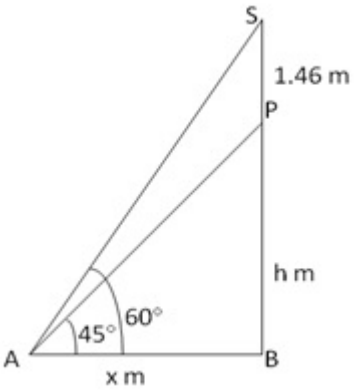
So, the bucket can hold 23.728 litres of water.

39. Let SP be the statue = 1.46 m(given)

Suppose PB be the pedestal = h metre

According to question angles of elevation of S and P are 60° and 45° respectively.

Further suppose AB = x m,



In right ΔABS,

$\frac{SB}{AB} = \tan 60^\circ = \sqrt{3}$

$\Rightarrow \frac{h+1.46}{x} = \sqrt{3}$ .....(i)

In right ΔPAB,

$\frac{PB}{AB} = \tan 45^\circ = 1$

$\therefore$ h = x .....(ii)

Putting x = h in (i), we get

$\frac{h+1.46}{h} = \sqrt{3} \Rightarrow h + 1.46 = \sqrt{3}h$

or h ($\sqrt{3} - 1$) = 1.46 $\therefore h = \frac{1.46}{\sqrt{3}-1} \times \frac{\sqrt{3}+1}{\sqrt{3}+1}$

$\therefore h = \frac{1.46}{2} \times (\sqrt{3}+1) = 0.73 \times 2.732$

= 2m (nearly)

Thus, height of the pedestal = 2m

40.

Marks below	No. of students	Class interval	Frequency	Cumulative frequency
10	15	0-10	15	15
20	35	10-20	20	35
30	60	20-30	25	60
40	84	30-40	24	84
50	96	40-50	12	96(F)
60	127	50-60	31(f)	127
70	198	60-70	71	198
80	250	70-80	52	250
			N=250	

$N = 250$

$\therefore \quad \frac{N}{2} = \frac{250}{2} = 125$

The cumulative frequency just greater than $\frac{N}{2}$ is 127

hence, median class is 50 - 60.

$median = l + \frac{\frac{N}{2} - F}{f} \times h$

Here,

l = Lower limit of median class

F = Cumulative frequency of class prior to median class.

f = Frequency of median class.
h = Class size.

$l = 50, f = 31, F = 96, h = 60 - 50 = 10$
$= 50 + \frac{125 - 96}{31} \times 10$
$= 50 + \frac{29 \times 10}{31}$
$= 50 + 9.35$
$= 59.35$

Solution

Class 10 - Mathematics

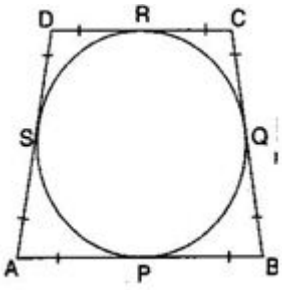
Confidence Examination II (2019-2020)

Section A

1. **(b)** 3 decimal places
   Explanation: $\frac{21}{24}$ = $\frac{7}{8}$ = $\frac{7}{2^3}$ Here, in the denominator of the given fraction the highest power of prime factor 2 is 3, therefore, the decimal expansion of the rational number $\frac{7}{2^3}$ will terminate after 3 decimal places.

2. **(d)** 2q
   Explanation: Let a be any positive integer and b=2
   Then by applying Euclid's Division Lemma, we have,
   a = 2q + r where $0 \leqslant r < 2$ r = 0 or 1
   Therefore, a = 2q or 2q + 1
   Thus, it is clear that a = 2q
   i.e., a is an even integer in the form of 2q

3. **(a)** 233
   Explanation: We know that A prime number is a whole number greater than 1 whose only two whole number factors are 1 and itself. e.g. 2, 23, 29 .....
   233 has only two factors = 1×233
   Because 233 has only two factors 1 and itself i.e 233

4. **(d)** 11 cm
   Explanation:
   

   Here DS = DR = 5 cm
   $\Rightarrow$ AS = 23 – 5 = 18 cm
   And AS = AP = 18 cm
   $\Rightarrow$BP = 29 – 18 = 11 cm
   $\because$OP$\perp$ AB and OQ $\perp$ BC
   $\therefore \angle$OQB = $\angle$OPB = 90° and $\angle$B = 90°
   Also $\angle$POQ = 90°
   Therefore, OPBQ is a square.
   $\therefore$ BQ = OQ = 11 cm
   Therefore Radius of circle = 11 cm

5. **(b)** 0
   Explanation: If $x_i's$ are the midpoints of the class intervals of grouped data, $f_i's$ are the corresponding frequencies and $\overline{x}$ is the mean, then $\sum(f_i x_i - \overline{x})$ is equal to 0. i.e the difference between the sum of product of frequencies and mid values of corresponding class intervals of the grouped data and the sum of their mean value is equal to zero.

6. **(b)** $\frac{12}{25}$
   Explanation: Number of multiples of 3 = 8 (3 6 9 12 15 18 21 24)
   Number of multiples of 5 = 5 (5 10 15 20 25)
   Number of possible outcomes (multiples of 3 or 5) = 12 (3,5,6,9,10,12,15,18,20,21,24,25)
   Number of Total outcomes = 25
   $\therefore$ Required Probability = $\frac{12}{25}$

7. **(b)** 3
   Explanation: Let one zero be β then the other zero will be $\frac{1}{\alpha}$
   Since $\alpha\beta = \frac{c}{a} \Rightarrow \alpha \times \frac{1}{\alpha} = \frac{6a}{a^2+9}$
   $\Rightarrow 1 = \frac{6a}{a^2+9}$
   $\Rightarrow 6a = a^2 + 9$
   $\Rightarrow a^2 - 6a + 9 = 0$
   $\Rightarrow (a-3)(a-3) = 0\ a-3=0$ and $a-3=0$
   $\Rightarrow a = 3$ and $a = 3$
8. **(a)** $\frac{b^2-2ac}{ac}$
   Explanation: Since
   = $\frac{\alpha^2+\beta^2}{\alpha\beta}$
   = $\frac{(\alpha+\beta)^2-2\alpha\beta}{\alpha\beta}$
   = $\frac{\left(\frac{-b}{a}\right)^2-2\times\frac{c}{a}}{\frac{c}{a}}$
   = $\frac{\frac{b^2}{a^2}-\frac{2c}{a}}{\frac{c}{a}}$
   = $\frac{b^2-2ac}{a^2} \times \frac{a}{c}$
   = $\frac{b^2-2ac}{ac}$
9. **(d)** $2a\sqrt{2}\ units$
   Explanation: Let the points be A(a,a) and B$(-\sqrt{3}a, \sqrt{3}a)$
   $\therefore$AB = $\sqrt{\left(-\sqrt{3}a-a\right)^2+\left(\sqrt{3}a-a\right)^2}$
   = $\sqrt{3a^2+a^2+2\sqrt{3}aa+3a^2+a^2-2\sqrt{3}aa}$
   = $\sqrt{6a^2+2a^2}$
   = $\sqrt{8a^2}$
   = $2a\sqrt{2}$ units
10. **(d)** ordinate
    Explanation: The distance of a point from the x – axis is the y (vertical) coordinate of the point and is called ordinate.
11. 5 units
12. no

    OR

    coincident
13. $tan\ \theta$
14. complementary
15. AB = 1.91cm
16. Put cos 30^0 = $\frac{\sqrt{3}}{2}$, cos 60^0 = $\frac{1}{2}$ & cos 90^0 = 0
    $\therefore$ cos 30^0cos60^0cos90^0 = $\frac{\sqrt{3}}{2}\times\frac{1}{2}\times 0$ = 0.

    OR

    We know that, tan45° = 1 = Cot45° = Sin90° = Cos0° , Cosec30° = 2 = Sec 60°, putting these values in the given expression , we get :-
    $\frac{\tan 45^\circ}{\cos ec 30^\circ} + \frac{\sec 60^\circ}{\cot 45^\circ} - \frac{5\sin 90^\circ}{2\cos 0^\circ}$
    $= \frac{1}{2} + \frac{2}{1} - \frac{5\times 1}{2\times 1}$
    $= \frac{1}{2} + \frac{2}{1} - \frac{5}{2}$
    $= \frac{1+4-5}{2}$
    $= \frac{0}{2} = 0$
17. Area of circle = πr^2

Perimeter of circle = $2\pi r$

Given , Area of Circle = 2 $\times$Perimeter of Circle

$\Rightarrow \pi r^2 = 2 \times 2\pi r$

$\Rightarrow \frac{r^2}{r} = 4$

$\Rightarrow r = 4$ cm

Therefore, diameter of the given circle = 2(r) = 2(4) = 8 cm

18. We know that when a die is thrown two times, then

Number of possible outcomes = 36

Favourable outcomes of obtaining the same number on both dice ={(1,1)(2,2)(3,3)(4,4)(5,5)(6,6)}

Therefore,number of cases favourable to event=6

Probability of obtaining the same number on both dice = $\frac{6}{36}$=$\frac{1}{6}$.

19. As DE $\parallel$ BC

$\therefore \frac{AD}{AB} = \frac{AE}{AC}$,

$\cdot \frac{x}{2x+1} = \frac{x+3}{2x+8}$

(x + 3)(2x + 1) = x(2x + 8)

$2x^2 + x + 6x + 3 = 2x^2 + 8x$

3 = 8x - 7x

x = 3

20. For 1st AP,

a = -1, common difference = d

$\therefore a_4 = -1 + 3d$

For 2nd AP,

1st term, A = -8, common difference = d

$A_4 = -8 + 3d$

Now, $a_4 - A_4 = (-1 + 3d) - (-8 + 3d) = 7$

Section B

21. Total no. of balls = 12

Total no of outcomes = 12

i. Let R be the event of getting no red ball.

No of balls which are not red = 12 - 4 = 8

Favouring Outcomes = 8

P(R) = $\frac{8}{12} = \frac{2}{3}$

ii. Let K be the event of getting a black or red ball.

No. of balls red or black = 4 + 3 = 7

Outcomes favouring K = 7

P(K) = $\frac{7}{12}$

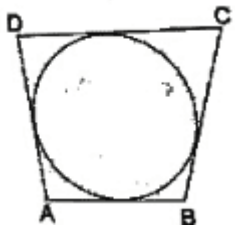
22. There are 13 (= 8 + 5) fish out of which one can be chosen in 13 ways.

Total number of elementary events = 13

There are 5 male fish out of which one male fish can be chosen in 5 ways.

Favourable number of elementary events = 5

Hence, required probability $= \frac{5}{13}$

23. 

We know that when a quadrilateral circumscribes a circle then the sum of opposite sides is equal to the sum of other opposite sides.

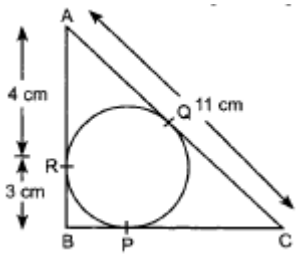
AB + CD = AD + BC

$\Rightarrow$ 6 + 8 = AD + 9

$\Rightarrow$ AD = 5 cm.

OR

Given,



$AR = 4\ cm.$

Also, $AR = AQ \Rightarrow AQ = 4cm$

Now, $QC = AC - AQ$

$= 11cm - 4cm = 7cm$ ...(i)

Also, $BP = BR$

$\therefore$ BP = 3 cm and PC = QC

$\therefore$ PC = 7 cm [From (i)]

$BC = BP + PC$

$= 3cm + 7cm$

$= 10cm$

24. $\frac{\sin\theta\cos\theta\cos(90^\circ-\theta)}{\sin(90^\circ-\theta)} + \frac{\sin\theta\cos\theta\sin(90^\circ-\theta)}{\cos(90^\circ-\theta)}$

$= \frac{\sin\theta\cos\theta\sin\theta}{\cos\theta} + \frac{\sin\theta\cos\theta\cos\theta}{\sin\theta} = \sin^2\theta + \cos^2\theta = 1$

OR

We have,

$\sin\theta = \frac{3}{5}$

$\therefore \quad \cos\theta = \sqrt{1-\sin^2\theta} \Rightarrow \cos\theta = \sqrt{1-\frac{9}{25}} = \sqrt{\frac{16}{25}} = \frac{4}{5}$

$\therefore \quad cosec\ \theta = \frac{1}{\sin\theta} = \frac{5}{3}, \sec\theta = \frac{1}{\cos\theta} = \frac{5}{4}$

$\tan\theta = \frac{\sin\theta}{\cos\theta} = \frac{3/5}{4/5} = \frac{3}{4}$ and $\cot\theta = \frac{1}{\tan\theta} = \frac{4}{3}$

25. Radius of circle = r = 7 cm

Area of a sector $= \frac{\pi r^2\theta}{360}$

$\therefore$ Area of the shaded region

$= \frac{\pi r^2\times 60^\circ}{360} + \frac{\pi^2\times 40^\circ}{360} + \frac{\pi r^2\times 80^\circ}{360}$

$= \pi r^2\left(\frac{60^\circ+40^\circ+80^\circ}{360^\circ}\right)$

$= \frac{22}{7}\times 7\times 7\times\frac{180^\circ}{360^\circ}$

= 77 cm^2

26. i. We observe that polynomials x^2 + 9, x^2 + 5x + 6 and x^2 - 7x + 12 are in the form of ax^2 + bx + c, which is the standard form of quadratic polynomial. Hence, 3 quadratic polynomials were written.

ii. α and β are zeros of polynomial x^2 + 5x + 6.

We know that for any quadratic polynomial:

Sum of zeros $= -\frac{\text{coefficient of x}}{\text{coefficient of } x^2}$

So, $\alpha + \beta = -\frac{5}{1} = -5$

Section C

27. We have, f(x) = x^3 - 3x^2 + 5x - 3 and g(x) = x^2 - 2.

We find that degree (f(x)) = 3 and degree (g(x)) = 2.

Therefore, quotient q (x) is of degree 1 and the remainder r (x) is of degree less than 2.

Let q(x) = ax + b and r (x) = cx + d.

Using division algorithm, we have f(x) = g(x)$\times$q(x) + r(x)

$\Rightarrow x^3 - 3x^2 + 5x - 3 = (x^2 - 2)(ax + b) + (cx + d)$

$\Rightarrow x^3 - 3x^2 + 5x - 3 = ax^3 + bx^2 - 2ax - 2b + cx + d$

$\Rightarrow x^3 - 3x^2 + 5x - 3 = ax^3 + bx^2 - 2ax + cx - 2b + d$

$\Rightarrow x^3 - 3x^2 + 5x - 3 = ax^3 + bx^2 + (c - 2a)x - 2b + d$

On equating the coefficients of various powers of x on both sides, we get

$1 = a$ [On equating the coefficients of x^3]

$-3 = b$[On equating the coefficients of x^2]

$5 = c - 2a$ [On equating the coefficients of x]

$-3 = -2b + d$ [On equating the constant terms]

Solving these equations, we get: $a = 1, b = -3$

$c - 2a = 5$

$\Rightarrow c - 2(1) = 5$

$\Rightarrow c = 7$

and $-3 = -2b + d$

$\Rightarrow -3 = -2(-3) + d$

$\Rightarrow d = -9$

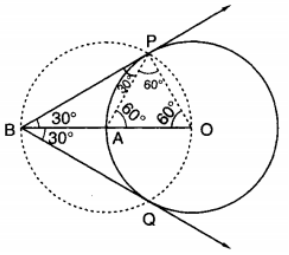
Therefore, Quotient $q(x) = ax + b = x - 3$ and Remainder $r(x) = 7x - 9$.

28. In order to draw the pair of tangents, we follow the following steps.

Steps of construction

STEP I Take a point O on the plane of the paper and draw a circle of radius OA = 5 cm.

STEP II Produce OA to B such that OA = AB = 5 cm.



STEP III Taking A as the centre draw a circle of radius AO = AB = 5 cm. Suppose it cuts the circle drawn in step I at P and Q.

STEP IV Join BP and BQ to get the desired tangents.

Justification: In OAP, we have

OA = OP = 5 cm (= Radius)

Also, AP = 5 cm (= Radius of circle with centre A)

$\therefore \Delta OAP$ is equilateral. $\Rightarrow \angle PAO = 60^\circ \Rightarrow \angle BAP = 120^\circ$

In ΔBAP, we have

BA = AP and $\angle BAP$ = 120°

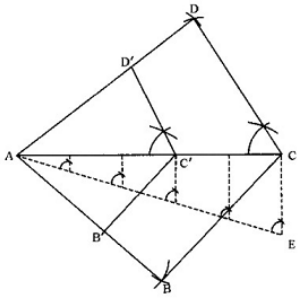
$\angle ABP = \angle APB = 30^\circ$

$\Rightarrow \quad \angle PBQ = 60^\circ$

OR

Steps of construction:

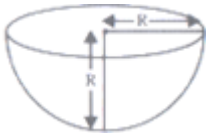
i. Construction triangles ABC and ADC using AB = 5.0 cm, BC = 4.8 cm, CD = 4.5 cm, AD = 6 cm and AC = 7.3 cm to get the quadrilateral ABCD.
ii. Divide the diagonal AC into five equal parts.
iii. Let C' be the point on AC into five equal parts.
iv. Through C', draw lines parallel to CD and CB to intersect AD and AB in the points D' and B' respectively. Then AB'C'D' is the required quadrilateral.



29. A solid metallic hemisphere of radius 8 cm is melted and recasted into a right circular cone of base radius 6 cm. We need to determine the height of the cone.

Hemisphere

R = 8 cm



Cone

r = 6 cm

h = ?

As the hemisphere is recasted into a cone. So,

Volume of cone = Volume of hemisphere

$\Rightarrow \frac{1}{3}\pi r^2 h = \frac{2}{3}\pi R^3$

$\Rightarrow r^2h = 2R^3$

$\Rightarrow h = \frac{2R^3}{r^2} = \frac{2\times8\times8\times8}{6\times6} = \frac{32\times8}{9}$

$= \frac{256}{9} = 28.44$

$\Rightarrow$ h = 28.44 cm.

Hence, the height of the cone is 28.4 cm.

30. We have,

$\frac{\sin^2 20^\circ+\sin^2 70^\circ}{\cos^2 20^\circ+\cos^2 70^\circ} + \frac{\sin(90^\circ-\theta)\sin\theta}{\tan\theta} + \frac{\cos(90^\circ-\theta)\cos\theta}{\cot\theta}$

$= \frac{\sin^2 20^\circ+\sin^2(90^\circ-20^\circ)}{\cos^2 20^\circ+\cos^2(90^\circ-20^\circ)} + \frac{\sin(90^\circ-\theta)\sin\theta}{\tan\theta} + \frac{\cos(90^\circ-\theta)\cos\theta}{\cot\theta}$

$= \frac{\sin^2 20^\circ+\cos^2 20^\circ}{\cos^2 20^\circ+\sin^2 20^\circ} + \frac{\cos\theta\sin\theta}{\frac{\sin\theta}{\cos\theta}} + \frac{\sin\theta\cos\theta}{\frac{\cos\theta}{\sin\theta}}$ [sin (90° - θ) = cosθ and cos(90° - θ) = sinθ]

$= \frac{1}{1} + \cos^2\theta + \sin^2\theta$ = 1 + 1 = 2

OR

= $(m + n)^{2/3} + (m - n)^{2/3}$

= $(a\cos^3\theta + 3a\cos\theta\sin^2\theta + a\sin^2\theta + 3a\cos^2\sin\theta)^{2/3} + (a\cos^3\theta + 3a\cos\theta\sin^2\theta - a\sin^3\theta - 3a\cos^2\theta\sin\theta)^{2/3}$

= $a^{2/3}(\cos^3\theta + 3\cos\theta\sin^2\theta + \sin^3\theta + 3\cos^2\theta\sin\theta)^{2/3} + a^{2/3}(\cos^3\theta + 3\cos\theta\sin^2\theta - \sin^3\theta - 3\cos^2\theta\sin\theta)^{2/3}$

= $a^{2/3}\{(\cos\theta + \sin\theta)^3\}^{2/3} + a^{2/3}\{(\cos\theta - \sin\theta)^3\}^{2/3}$

= $a^{2/3}(\cos\theta + \sin\theta)^2 + a^{2/3}(\cos\theta - \sin\theta)^2$

= $a^{2/3}(\cos^2\theta + \sin^2\theta + 2\cos\theta\sin\theta) + a^{2/3}(\cos^2\theta + \sin^2\theta - 2\cos\theta\sin\theta)$

= $a^{2/3}(1 + 2\cos\theta\sin\theta) + a^{2/3}(1 - 2\cos\theta\sin\theta)$ [$\because \cos^2\theta + \sin^2\theta = 1$]

= $a^{2/3}(1 + 2\cos\theta\sin\theta + 1 - 2\cos\theta\sin\theta)$

= $a^{2/3}(1 + 1)$

= $2a^{2/3}$

= RHS

Hence proved.

31. We need to find the H.C.F. of 506 and 1155 and express it as a linear combination of 506 and 1155.

By applying Euclid's division lemma

1155 = 506 × 2 + 143.

506 = 143 × 3 + 77.

143 = 77 × 1 + 66.

77 = 66 × 1 + 11.

66 = 11 × 6 + 0.

Therefore, H.C.F. = 11.

Now, 11 = 77 - 66 × 1 = 77 - [143 - 77 × 1] × 1 {∵ 143 = 77 × 1 + 66}

= 77 - 143 × 1 + 77 × 1

= 77 × 2 - 143 × 1

= [506 - 143 × 3] × 2 - 143 × 1 {∵ 506 = 143 × 3 + 77 }

= 506 × 2 - 143 × 6 - 143 × 1

= 506 × 2 - 143 × 7

= 506 × 2 - [1155 - 506 × 2] × 7 {∵1155 = 506 × 2 + 143 }

= 506 × 2 - 1155 × 7 + 506 × 14

= 506 × 16 - 1155 × 7

Hence obtained.

OR

Let $\sqrt{6}+\sqrt{2}$ be rational number

$\sqrt{6}+\sqrt{2}$ = $\frac{p}{q}$

$\sqrt{2}$ = $\frac{p}{q}$ - $\sqrt{6}$

$\sqrt{2}$ = $\frac{p-q\sqrt{6}}{q}$

$2q^2 = p^2 + 6q^2 - 2\sqrt{6}q$

$2q^2 - p^2 - 6q^2 = -2\sqrt{6}q$

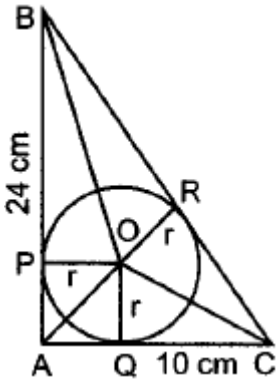
$\sqrt{6}$ = $\frac{2q^2-p^2-6q^2}{-2q}$

as $\frac{2q^2-p^2-6q^2}{-2q}$ is in $\frac{p}{q}$ form it is rational number, so $\sqrt{6}$ should be rational number but in general $\sqrt{6}$ is irrational.

So our assumption is wrong.

Therefore given number is irrational.

32. Given,



$AB = 24cm, AC = 10cm$

In right-angled △ABC

$\mathrm{BC}^2 = \mathrm{AB}^2 + \mathrm{AC}^2$

$= 24^2 + 10^2$

$= 676$

$\Rightarrow \mathbf{BC} = 26\mathrm{cm}$

Let r be the radius of the incircle

⇒ OP ⊥ AB, OQ ⊥ AC and OR ⊥ BC

OP = OQ = OR [Incentre of a triangle is equidistant from its sides]

ar(△ABC) = ar(△AOB) + ar(△BOC) + ar(△AOC)

$\frac{1}{2}AB \times AC = \frac{1}{2}AB \times OP + \frac{1}{2}AC \times OQ + \frac{1}{2} \times BC \times OR$

$\frac{1}{2} \times 24 \times 10 = \frac{1}{2}[24 \times r + 10 \times r + 26 \times r]$

$\Rightarrow\ 120 = r[24 + 10 + 26]$

$\Rightarrow$ 120 = r[24+ 10 + 26]

$\Rightarrow$ 120 = 30r $\Rightarrow$ r = 4 cm

33. i. A(1, 7), B(4, 2), C(-4, 4)

Distance travelled by Seema, AC = $\sqrt{[-4-1]^2 + [4-7]^2} = \sqrt{34}$ units

Distance travelled by Aditya, BC = $\sqrt{[-4-4]^2 + [4-2]^2} = \sqrt{68}$ units

$\therefore$ Aditya travels more distance

ii. By using mid-point formula,

Coordinates of D are $\left(\frac{1+4}{2}, \frac{7+2}{2}\right) = \left(\frac{5}{2}, \frac{9}{2}\right)$

iii. ar$(\Delta ABC) = \frac{1}{2}$[1(2 - 4) + 4(4 - 7) - 4(7 - 2)]

= 17 sq. units

34. 3x + y + 1 = 0

$\Rightarrow$ y = -3x - 1

x	0	1	-1
y	-1	-4	2

Points are (0, -1)(1, -4) and (-1, 2)

2x - 3y + 8 = 0

$\Rightarrow y = \frac{2x+8}{3}$

x	2	-1	-4
y	4	2	0

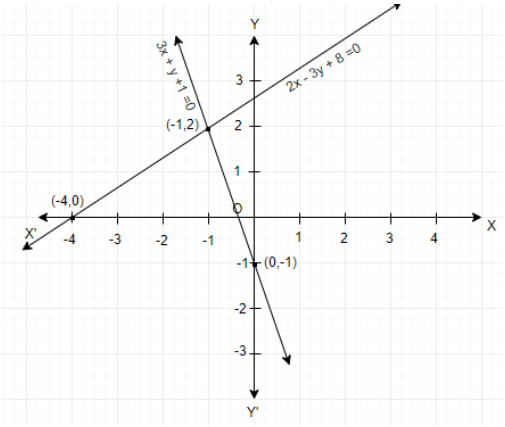
Points are (2, 4), (-1, 2) and (-4, 0)

The required graph is shown below:

The two lines intersect at (-1, 2).

Hence, the pair of equations is consistent.

The solution is x = -1, y = 2



Section D

35. Since the given equation has equal roots,

$D = b^2 - 4ac = 0$

Here, a = (3k + 1), b = 2(k + 1), c = 1

$[2(k+1)]^2 - 4(3k+1)(1) = 0$

or, $4\left(k^2 + 2k + 1\right) - (12k + 4) = 0$

or, $4k^2 + 8k + 4 - 12k - 4 = 0$

$\therefore 4k^2 - 4k = 0$

k = 0,1

Put k = 0, in the given equation,

$x^2 + 2x + 1 = 0$

or, $(x + 1)^2 = 0$

or, x = -1

Again put k = 1, in the given equation,

$4x^2 + 4x + 1 = 0$

$(2x + 1)^2 = 0$

or, $x = -\frac{1}{2}$

Hence, roots = $-1, -\frac{1}{2}$

36. According to the question,

Given Sum of n terms $(S_n) = \frac{3n^2}{2} + \frac{13}{2}n$

Put n = 24, $S_{24} = \frac{3\times24\times24}{2} + \frac{13\times24}{2}$

= 864 + 156

= 1020

Put n = 25, $S_{25} = \frac{3\times25\times25}{2} + \frac{13\times25}{2}$

$= \frac{1875}{2} + \frac{325}{2}$

$= \frac{2200}{2} = 1100$

∴ 25th term (a_{25}) = S_{25} - S_{24}

= 1100 - 1020

= 80

OR

Let a be the first term and d be the common difference of the given AP. Therefore, the sum of first n terms is given by

$S_n = \frac{n}{2} \cdot \{2a + (n-1)d\}$

∴ S_{10} = $\frac{10}{2}$·(2a+9d) ⇒5(2a+9d)=210

⇒2a+9d=42. ...(i)

Sum of last 15 terms = (S_{50} - S_{35}).

∴ (S_{50} - S_{35}) = 2565

⇒ $\frac{50}{2}$(2a+49d)- $\frac{35}{2}$(2a+34d)=2565

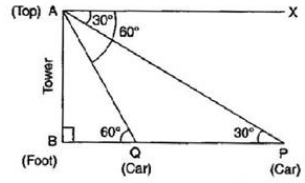
⇒ 25(2a+49d)-35(a+17d)=2565

⇒ (50a-35a)+(1225d-595d)=2565

⇒ 15a+630d = 2565 ⇒ a + 42d = 171 ..... (ii)

Therefore, on solving (i) and (ii), we get a=3 and d=4.

Hence, the required AP is 3,7,11,15,19.....

37. 

In right triangle ABP,

$\tan 30^\circ = \frac{AB}{BP}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{AB}{BP}$

BP = AB$\sqrt{3}$ ..... (i)

In right triangle ABQ,

$tan\ 60^0 = \frac{AB}{BQ}$

$\Rightarrow \sqrt{3} = \frac{AB}{BQ}$

$\Rightarrow BQ = \frac{AB}{\sqrt{3}}$..... (ii)

∵ PQ = BP - BQ

∴ PQ = AB$\sqrt{3} - \frac{AB}{\sqrt{3}} = \frac{3AB-AB}{\sqrt{3}} = \frac{2AB}{\sqrt{3}}$ = 2BQ [From eq. (ii)]

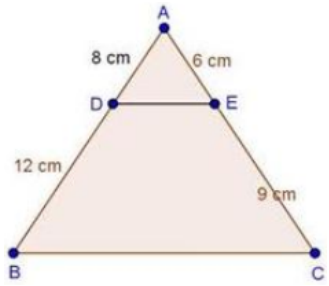
$\Rightarrow$ BQ = $\frac{1}{2}$PQ

$\because$ Time taken by the car to travel a distance PQ = 6 seconds.

$\therefore$ Time taken by the car to travel a distance BQ, i.e. $\frac{1}{2}$PQ = $\frac{1}{2} \times 6 = 3$ seconds.

Hence, the further time taken by the car to reach the foot of the tower is 3 seconds.

38. We have,



$\frac{AD}{DB} = \frac{8}{12} = \frac{2}{3}$

And, $\frac{AE}{EC} = \frac{6}{9} = \frac{2}{3}$

Since, $\frac{AD}{DB} = \frac{AE}{EC}$

Therefore, according to the converse of basic proportionality theorem,we have

DE||BC

In ΔADE and ΔABC

$\angle A = \angle A$ [Common]

$\angle ADE = \angle B$ [Corresponding angles]

Then, ΔADE ~ ΔABC [By AA similarity]

$\therefore \frac{AD}{AB} = \frac{DE}{BC}$ [Corresponding parts of similar Δ are proportional]

$\Rightarrow \frac{8}{20} = \frac{DE}{BC}$

$\Rightarrow \frac{2}{5} = \frac{DE}{BC}$

$\Rightarrow BC = \frac{5}{2}DE$

OR

Given: In figure, ABD is a triangle right angled at A and AC $\perp$ BD.

TO prove:

i. AB^2 = BC.BD

ii. AC^2 = BC.DC

iii. AD^2 = BD.CD

Proof:

i. In $\triangle$BAC and $\triangle$BDA,

$\angle$BAC = $\angle$BDA, ...(1)

In $\triangle$ABC,

$\angle$ BAC + $\angle$CBA = 90^o .....(2)

In $\triangle$ABD,

$\angle$BDA + $\angle$CBA = 90^o .....(3)

In view of (2) and (3)

$\angle$BAC = $\angle$BDA

$\angle$ACB = $\angle$DAB .....[Each equal to 90^o]

$\therefore \triangle BAC \sim \triangle BDA$ .....[AA similarity criterion]

$\therefore \frac{BA}{BD} = \frac{BC}{BA}$.....[$\therefore$ corresponding sides of two similar triangle and proportional]

$\Rightarrow$ BA^2 = BC.BD

$\Rightarrow$ AB^2 = BC.BD

ii. In $\triangle$ ACB and $\triangle$ DCA,

$\angle$ ACB = $\angle$ DCA .....Each equal to 90^o

$\angle$BAC=$\angle$ADC .....Proved above

$\therefore \angle$ ACB $\sim \angle$DCA.....AA similarity criterion

$\therefore \frac{AC}{DC} = \frac{BC}{AC}$ [$\therefore$ corresponding sides of two similar triangles are proportional]

$\Rightarrow AC^2 = BC \times DC$

iii. In $\triangle$ ADB and $\triangle$ CDA,

$\angle$ DAB = $\angle$ DCA.....[Each equal to 90^o]

$\angle$ BDA = $\angle$ ADC

$\therefore \triangle$ ADB $\sim \triangle$CDA.....[AA similarity criterion]

$\therefore \frac{AD}{CD} = \frac{BD}{AD}$.....[$\therefore$corresponding sides of two similar triangles are proportional]

$\Rightarrow AD^2 = BD \times CD$

39. According to question

Diameterdiameter of the well = 7m

Radius of the well (r) $= \frac{7}{2}m = 3.5m$ and,

height of the well (h) = 22.5 m

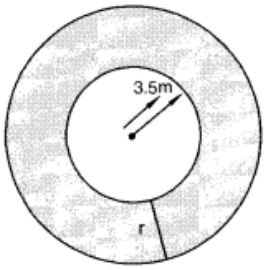
$\therefore$ Volume of the earth dugout = $\pi \times (3.5)^2 \times 22.5\text{m}^3 = \pi \times \frac{7}{2} \times \frac{7}{2} \times \frac{45}{2}\text{m}^3$

Let the width of the embankment be r metres. Clearly, embankment forms a cylindrical shell whose inner and outer radii are 3.5 m and (r + 3.5) m respectively and height 1.5 m.

$\therefore$ Volume of the embankment = Area of ring at top $\times$ height of the embankment

$= \pi\left\{(r+3.5)^2 - (3.5)^2\right\} \times 1.5\text{m}^3 = \pi(r+7)r \times \frac{3}{2}\text{m}^3$

But, Volume of the embankment = Volume of the well



$\Rightarrow \quad \pi r(r+7) \times \frac{3}{2} = \pi \times \frac{7}{2} \times \frac{7}{2} \times \frac{45}{2}$

$\Rightarrow \quad r(r+7) = \frac{49}{4} \times 15$

$\Rightarrow 4r^2 + 28r = 735$

$\Rightarrow 4r^2 + 28r - 735 = 0$

$4r^2 + 70x - 42x - 735 = 0$

$\Rightarrow 2r(2r + 35) - 21(2r + 35) = 0$

$\Rightarrow (2r + 35)(2r - 21) = 0$

$\Rightarrow 2r + 35 = 0$ or $2r - 21 = 0$

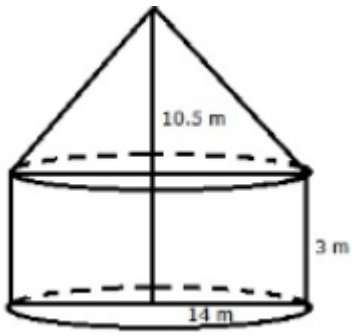
$\Rightarrow r = \frac{-35}{2}$ or $x = \frac{21}{2}$

$\frac{-35}{2}$ is negative, hence neglect this value

$\Rightarrow x = \frac{21}{2} = 10.5\text{m}$

Hence, the width of the embankment is 10.5 m.

OR



Radius of the cylinder = 14 m

And its height = 3 m

Radius of cone = 14 m
And its height = 10.5 m
Let I be the slant height
$\therefore l^2 = (14)^2 + (10.5)^2$
$l^2 = (196 + 110.25)m^2$
$l^2 = 306.25\ m^2$
$l = \sqrt{306.25}\text{m}$
=17.5 m
Curved surface area of tent
= (curved area of cylinder + curved surface area of cone)
$= 2\pi rh + \pi rl$
$= \left[\left(2 \times \frac{22}{7} \times 14 \times 3\right) + \left(\frac{22}{7} \times 14 \times 17.5\right)\right] \text{m}^2$
$= (264 + 770)m^2 = 1034m^2$
Hence, the curved surface area of the tent = 1034 m^2
Cost of canvas = Rs.(1034 × 80)= Rs.82720

40. Mode:
Here, the maximum frequency is 23 and the class corresponding to this frequency is 35 - 45.
So, the modal class is 35 - 45.
Now, size (h) = 10
lower limit it (l) of modal class = 35
frequency (f_1) of the modal class = 23
frequency (f_0) of class previous the modal class = 21
frequency (f_2) of class succeeding the modal class = 14
$\therefore Mode = l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times h = 35 + \frac{23-21}{2\times23-21-14} \times 10$
$= 35 + \frac{2}{11} \times 10 = 35 + \frac{20}{11}$
= 35 + 1.8 (approx.)
= 36.8 years (approx.)
Mean:-
Take a = 40, h = 10.

Age (in years)	**Number of patients (f_i)**	**Class marks (x_i)**	**$d_i = x_i - 40$**	$u_i = \frac{x_i - 40}{10}$	**f_iu_i**
5-15	6	10	–30	–3	–18
15-25	11	20	–20	–2	–22
25-35	21	30	–10	–1	–21
35-45	23	40	0	0	0
45-55	14	50	10	1	14
55-65	5	60	20	2	10
Total	$\sum f_i = 80$				$\sum f_iu_i = -37$

Using the step deviation method,
$\overline{x} = a + \left(\frac{\sum f_i u_i}{\sum f_i}\right) \times h = 40 + \left(\frac{-37}{80}\right) \times 10$
$= 40 - \frac{37}{8} = 40 - 4.63$
= 35.37 years
Interpretation:- Maximum number of patients admitted in the hospital is of the age 36.8 years (approx.), while on an average the age of a patient admitted to the hospital is 35.37 years.

Solution

Class 10 - Science

Confidence Examination II (2019-2020)

Section A

1. A reversible reaction is denoted by a double arrow pointing both directions in a chemical equation. For example, a two reagent, two product equation would be written as

   $A + B \rightleftarrows C + D$

2.

Element	Na	Al	Si	P
Atomic number	11	13	14	15
Electronic configuration	2,8,1	2,8,3	2,8,4	2,8,5

   Therefore, P contains maximum valence electrons i.e.5.

3. i. There are two types of nuclear reactions i.e. (a) Nuclear fusion (b) Nuclear fission.
   ii. True.
   iii. **Uses of nuclear energy:** The energy is used to produce steam which further generates electricity.
   iv. **Advantages of nuclear energy:** A large amount of energy obtained by a small amount of raw material.
   Limitations of nuclear energy :
   1. Improper nuclear waste storage and disposal result in environmental contamination.
   2. Risk of accidental leakage of nuclear radiation.
   3. The high cost of installation.
   4. Limited availability of nuclear fuel (uranium).

4. a. Insulin hormone is secreted by the pancreas.
   b. Testosterone in male and oestrogen in the female are the hormone that is secreted during the adolescent.
   c. If Insulin is not secreted in the proper amount then it causes diabetes.
   d. Glucagon and Insulin are secreted from alpha and beta cells of islets of pancreas respectively.

5. **(c)** A and C
   Explanation:
   Eye donation actually means cornea donation. Conditions like myopia and hypermetropia are refractive errors. These are corrected using spectacles and cornea is otherwise healthy, therefore a person who wears spectacles can donate eyes without any problem.
   Hypermetropia is also known as far-sightedness. In hypermetropia, a person cannot see nearby object clearly, but can see distant object clearly.

   OR

   (a) -300cm
   Explanation:
   $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$
   $\frac{1}{-75} - \frac{1}{u} = \frac{1}{-100}$
   $\frac{-1}{75} + \frac{1}{100} = \frac{1}{u}$
   $\frac{-4+3}{300} = \frac{1}{u}$
   $\frac{-1}{300} = \frac{1}{u}$
   $u = -300\ cm$

6. **(c)** emission from vehicles.
   Explanation: Euro norms refer to the permissible emission levels, for both petrol and diesel vehicles, which have been implemented in Europe. However, the government in India has adopted the Euro norms for available fuel quality and the method of testing. It requires manufacturers to reduce the existing polluting emission levels in a more efficient manner by making certain technical changes in their vehicles.

7. **(c)** Mechanical energy into electric energy
   Explanation: An electric generator converts mechanical energy into electrical energy, while a motor does the opposite - it converts electrical energy into mechanical energy.

8. **(a)** mild non - corrosive base
Explanation: Baking soda(sodium bicarbonate) is a mild non corrosive base and is used in the preparation of cakes. When it is heated, it decomposes to sodium carbonate carbon dioxide and water molecules.

OR

(d) a gas evolves
Explanation: Sodium bicarbonate reacts with acetic acid to form water, carbon dioxide and sodium acetate. Carbon dioxide gas is evolved.
$CH_3COOH + NaHCO_3 \rightarrow CH_3COONa + H_2O + CO_2 \uparrow$

9. **(c)** 1-C, 2-B, 3-D, 4-A
Explanation:
Forest, desert and pond are natural ecosystems. An aquarium or a garden is an example of a human-made ecosystem. Scavengers act as house-keepers and break down the dead remains and waste products of organisms in an ecosystem. Paper, plastic bags, etc are recyclable waste.

(1) A man- made ecosystem	(C) Aquarium, Grassland
(2) A natural ecosystem	(B) Forest, Pond
(3) Scavengers	(D) Housekeepers
(4) Recyclable waste	(A) Paper, plastic bags, etc

10. **(d)** 1-B, 2-D, 3-A, 4-C
Explanation:
The sun is the ultimate source of energy. This energy is captured by the plants. The flow of this energy in an ecosystem is always unidirectional. Essential nutrients like nitrogen, carbon, oxygen and water are cycled in the environment in separate biogeochemical cycles. In these cycles, they are changed from one form to another. According to 10% law, the energy available to each successive trophic level is 10% of the previous trophic level.

(1) Ultimate source of energy	(B) Sun
(2) Unidirectional flow	(D) Energy
(3) Cyclic flow	(A) Nutrients
(4) Limitation of energy levels	(C) 10% law

11. **(c)** Mg
Explanation: Mg has a valency of 2 and combines with chlorine to form $MgCl_2$.

12. **(c)** 1-B, 2-D, 3-A, 4-C
Explanation: Calcination involves heating in absence of air to remove volatile matter from an ore such as dolomite. In roasting, the ore is heated in a regular supply of air in a furnace at a temperature below the melting point of the metal. Oxide ores, such as iron ore, are smelted with carbon, which serves as a fuel and changes the ore into a reduced metal. A large amount of heat is released in a thermite reaction and a temperature of about 3500°C is attained which is enough to weld broken metallic parts.

13. **(a)** Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.
Explanation: Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

14. **(c)** Assertion is CORRECT but, reason is INCORRECT.
Explanation: Assertion is CORRECT but, reason is INCORRECT.

Section B

15. The substance X is calcium carbonate i.e. $CaCO_3$. The reaction involved with dil. HCl is:

$$\underset{Calcium\ \text{carbonate (X)}}{CaCO_3(s)} + 2HCl(aq) \xrightarrow[dil.]{} \underset{Calcium\ \text{chloride}}{CaCl_2(aq)} + H_2O(l) + CO_2\uparrow$$

The lime water turns milky due to the formation of white precipitate of $CaCO_3$ when CO_2 gas is passed

through lime water.
$Ca(OH)_2(aq) + CO_2(g) \longrightarrow CaCO_3(s) + H_2O(l)$

16. i. $2Na + 2H_2O \rightarrow 2NaOH + H_2$ **[Exothermic Reaction]**
    ii. $2FeSO_4 \rightarrow Fe_2O_3 + SO_2 + SO_3$ **[Endothermic Reaction]**

OR

i. This statement is correct because copper is more reactive than silver and it can displace silver from silver nitrate. $Cu(s) + 2AgaNO_3(aq) \longrightarrow Cu(NO_3)_{2(}aq) + 2Ag(s)$
ii. This statement is wrong as copper is more reactive than silver so silver cannot displace copper from copper sulphate.

17. i. Atomic number of fluorine will be 9, because atomic number increases by one on going from one element in the same period to the next in the modern periodic table.
    ii. X has larger atomic size because of less effective nuclear charge than Q.
    iii. Y, has smaller atomic size because new shells are added as we go down a group and Z is kept below Y in the same group.

18. Difference between aerobic and anaerobic respiration:

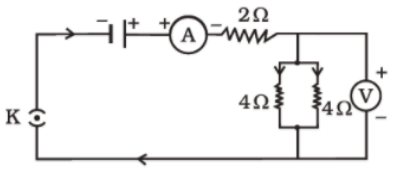
Aerobic respiration	Anaerobic respiration
(i) Takes place in presence of oxygen.	(i) Takes place in absence of oxygen.
(ii) Complete oxidation of glucose occurs.	(ii) Incomplete oxidation of glucose occurs.
(iii) More energy is produced.	(iii) Less energy is produced.

Anaerobic respiration takes place in yeast, some bacteria and some internal parasites like tapeworm. Anaerobic respiration also takes place in our muscles during vigrous exercise to meet the energy demands of the body.

OR

Artery	**Vein**	**Capillary**
1. Thick-walled. 2. Carries oxygenated blood from the heart to other parts of the body. 3. Situated deeper under the skin.	1. Thin-walled. 2. Carries deoxgenated blood from different organs to the heart. 3. Situated just under the skin.	1. Thin-walled. 2. Capillaries are involved in the exchange of food material, respiratory gases, and body wastes. 3. Occur at the terminals of artery and vein.

19. i. Atmospheric refraction is responsible for advanvced sunrise.
    ii. Scattering of light is responsible colour of water in deep sea.
    iii. Atmospheric refraction causes twinkling of stars.
    iv. Scattering of light leads to reddish appearance of sky during sunset and sunrise.
20. i. Acquired traits are those characteristics which an individual develops during its lifetime due to the effect of environmental factors. These traits are not inheritable.
    ii. Inherited traits are those features, which are genetically transmitted from parents to their offsprings and which cannot be varied by environmental factors.
    iii. Professional ethics and social responsibility are the values shown by the doctor.
21. The growth of the plant in response to water (stimulus) is called a hydrotropic movement (hydrotropism).This is due movement of the germinating roots to water. For example, The roots of plants show positive hydrotropism. They grow towards the water source.
22. Fleming's left hand rule states that stretch the forefinger, the central finger and the thumb of your left hand mutually perpendicular to each other. If the forefinger shows the direction of the magnetic field and central finger that of the current, then the thumb will point towards the direction of motion of the conductor.

23. 

Total resistance for parallel combination of 4Ω resistor can be calculated as follow:

$\frac{1}{R} = \frac{1}{4} + \frac{1}{4} = \frac{1}{2}$

or, $R = 2\Omega$

Thus, resistance of parallel combination is equal to resistance of resistors in series. So, potential difference across 2Ω resistance will be same as potential difference across the other two resistors which are connected in parallel.

24. i. Concave lens.
    ii. The image formed at the centre of curvature of the mirror.
    iii. The concave mirror is used in the construction of shaving glass. Since concave mirrors magnify objects in focus and reflect real, almost 3-D images. Hence, used for shaving.

OR

When an object is placed between Focus and Pole of concave mirror, the image formed is virtual, magnified, erect and behind the mirror.when an object is placed between Curvature and Focus of concave mirror, the image formed is real, magnified, inverted at the same side of mirror.

Section C

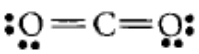
25. i. When zinc carbonate is heated in the absence of oxygen (**calcination**), zinc oxide and carbon dioxide are produced.

$$\underset{Zinc\ carbonate}{ZnCO_3}\ (s) \xrightarrow[Calination]{Heat} \underset{Zinc\ oxide}{ZnO(s)} + \underset{Carbon\ dioxide}{CO_2(g)}$$

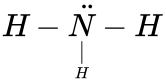
    ii. When a mixture of copper (II) oxide and copper sulphide is heated then copper metal and sulphur dioxide gas are produced.

$$\underset{Cuprous\ oxide}{2Cu_2O} + \underset{Cuprous\ sulphide}{Cu_2S(s)} \xrightarrow[\text{Reduction}]{Heat} \underset{Copper}{6Cu(s)} + SO_2(g)$$

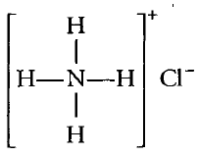
26. i. Carbon dioxide (CO_2) contains two double bonds.



    ii. In Ammonia molecule (NH_3) , Nitrogen is central atom , it is linked to three hydrogen atoms.



    iii. Ammonium chloride (NH_4 CI) contains both ionic and covalent bonds.

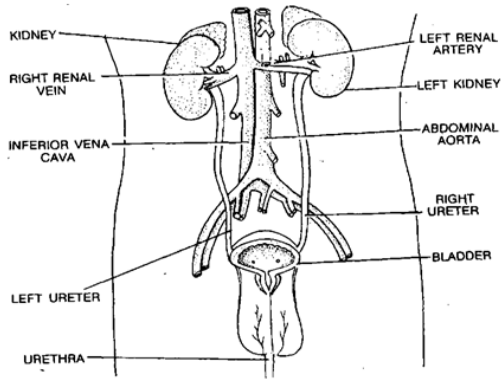


    iv. Alcohols such as Ethanol (CH_3CH_2OH) is soluble in water.
    v. Unsaturated compounds like ethane, ethyne, benzene etc., burn with a sooty flame.

27. The excretory system in human beings includes a pair of kidneys, a pair of ureters, a urinary bladder, and a urethra. This is also known as the urinary system.
    i. The kidneys are located in the abdomen, one on either side of the backbone. They act as excretory organs and also control the balance of water and mineral ions in the body. Each kidney is made up of about million microscopic coiled channels called nephrons. Nephrons are the basic filtration unit in the kidneys. It consists of- Glomerulus's, Bowman's capsule, convoluted tubule.
    ii. From each kidney, a ureter arises which opens into the urinary bladder.
    iii. The urethra passes urine to the outside of the body. The urethra emerges through the penis in males and close to the vagina in females.

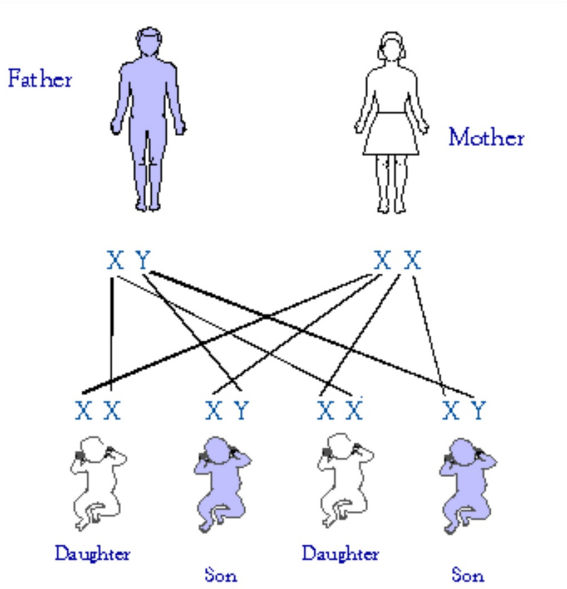
Excretory pathway in kidney – Blood is carried by the renal artery to the nephron, from there to renal pyramid leading to pelvis to the ureter, then to the urinary bladder and finally to the urethra which passes it

to outside



28. a. The organs having similar origin or structures but performing different functions are homologous structures
Example: limbs of frog, limbs of lizard, bird, human.

b.



There is equal chance of fusion of either X or Y chromosomes with the egg, so we can say that the sex of new born child is a matter of chance and none of the parents is responsible for it.

OR

a. **Reproduction-** It is a biological process by which new individual organisms (offspring)are produced from their parents.
Types of reproduction:-
(i) Asexual reproduction
(ii) Sexual reproduction

b.

Unicellular Organisms	Multicellular Organisms
Only one parent is required for reproduction.	Two parents are required for reproduction.
It is a fast process of reproduction.	Slower than unicellular organisms.
No specialized cells are required for reproduction.	Specialized cells are required for reproduction.

29. a. Relation between resistance and electrical resistivity of the material of conductor in the shape of a cylinder of length and area of cross-section is

$R = \frac{\rho l}{A}$

Here, R = resistance, ρ = electrical resistivity of material, l = length and A = area of cross-section

Thus, electrical resistivity, $\rho = \frac{RA}{l}$ .....(i)

Putting the units of R, A and l in equation (i), we get,

$\rho = \frac{\Omega \times m^2}{m}$

$\rho = \Omega \times m$

Thus, SI unit of resistivity (ρ) is Ω m

b. Given that,

Resistance, R = 100 ohm, Length, l = 5 m, Area A = 3×10^{-7} m^2

The resistivity of the metal is,

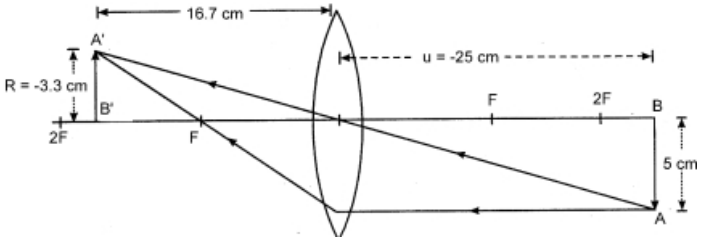
$\rho = \frac{RA}{l}$

$\rho = \frac{100 \times 3 \times 10^{-7}}{5}$

$\rho = 6 \times 10^{-6}$ Ω m

Hence, the resistivity of the metal is $\rho = 6 \times 10^{-6}$ Ω m

30.



h = 5 cm; h' = ?, u = - 25 cm [Object distance is always negative]

v = ?; f = + 10 cm [convex lens]

Using $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ or $\frac{1}{v} = \frac{1}{f} + \frac{1}{u}$

$\frac{1}{v} = \frac{1}{-25} + \frac{1}{10} = \frac{-2+5}{50} = \frac{3}{50}$

v = 16.7 cm

m = $\frac{h'}{h} = \frac{v}{u}$ or $h' = h\frac{v}{u}$

$h' = 5\frac{\frac{50}{3}}{-25} = \frac{-250}{75} = -3.3\ cm$

h' = - 3.3 cm

Negative sign shows image is inverted, real, diminished (3.3 cm) and at 16.7 cm on the right side of lens.

OR

The ability of a lens to converge or diverge light rays is called power of the lens. It is defined as the reciprocal of focal length. It's SI unit is dioptre (D). If focal length is expressed in metres, then power is expressed in dioptre. We can say, dioptre is the power of a lens whose focal length is one metre. For concave lens P and f are negative. For convex lens P and f are positive. Lens A of focal length + 10 cm is convex lens

and power, P = $\frac{100}{f(in\ cm)} = \frac{100}{10} = +10D$

Lens B of focal length - 10 cm is concave lens

and power, P = $\frac{100}{f(in\ cm)} = \frac{100}{-10} = -10D$

Lens A (i.e. convex lens) will form a virtual and magnified image of an object placed 8 cm from it, as shown.

Solution

Class 10 - Social Science

Confidence Examination II (2019-2020)

Section A

1. (a) - (iv), (b) - (iii), (c) - (ii), (d) - (i)
2. **(c)** Bankim Chandra Chattopadhyay
   Explanation: The image of Bharat Mata first created by Bankim Chandra Chattopadhyay. In the 1870s he wrote 'Vande Mataram' as a hymn to the motherland. Later it was included in his novel Anandamath and widely sung during the Swadeshi movement in Bengal. Moved by the Swadeshi movement, Abanindranath Tagore painted his famous image of Bharat Mata.
3. **(a)** 1882
   Explanation: Vernacular press act of 1878 was repealed after four years in 1882, after facing criticism from various sections of the society.
4. **(b)** 90%
   Explanation: Rinderpest is a disease which affects cattle. The example of rinderpest in Africa shows that even a cattle disease can widely alter the power equations in a geographical area.Rinderpest wiped off 90% of the cattle population of Africa during this period.
5. **(b)** Formation of kanker layer
   Explanation: Due to the dry climate, high temperature, evaporation is faster and the soil lacks humus and moisture. The lower horizons of the soil are occupied by Kankar because of the increasing calcium content downwards. The Kankar layer formations in the bottom horizons restrict the infiltration of water. It is nodular calcium carbonate formed in soils of semi-arid regions. It forms sheets across alluvial plains and can occur as discontinuous lines of nodular kankar.
6. A. Kharif crop
   B. 21°C to 27°C
7. copper is used in electrical cables as it is malleable, ductile and a good conductor of heat and electricity. Therefore, it allows electricity to flow through them easily.

   OR

   It has great importance because it combines the strength of metals such as iron with extreme lightness and also with good conductivity and great malleability.
8. The system of 'checks and balances' comes under Horizontal form of power sharing.

   OR

   Prudential reasons stress that power-sharing will bring out better outcomes, whereas moral reasons emphasis the very act of power-sharing as valuable.
9. **(a)** Telangana
   Explanation: Telangana became the 29th State of India on the 2nd June, 2014.It was seperated from Andhra
10. Family Laws

    OR

    Inheritance
11. A man or woman who believes in equal rights and opportunities for men and women is called Feminist.

    OR

    Decentralisation reduces the power of the central government and gives to regional govt. which leads to proper functioning of the country.
12. 30 percent.
13. **(b)** Brazil
    Explanation: Brazil is still considered as developing due to its low GDP per capita, low living standards, high infant mortality rate and other factors. The other three mentioned countries are developed.
14. Investment

15. **(c)** Farmer
Explanation: The primary sector includes all those activities the end purpose of which consists in exploiting natural resources. Among these only farmer belongs to the primary sector who is engaged in exploiting the natural resources.

16. Body Mass Index

OR

Infant Mortality Rate (or IMR)

17. **(d)** Reserve Bank of India (RBI)
Explanation: Reserve Bank of India was established in the year 1935. It is the central bank of India and supervises the functioning of all the banks and sees that the banks gives loans not just to profit making businesses and traders but also to small cultivators, small scale industries, etc.

18. **(d)** Petrochemicals
Explanation: Petrochemical is a mineral-based industry.
Tea, Sugar and coffee are agro-based industries.

19. **(a)** Assertion is CORRECT but, reason is INCORRECT.
Explanation: Assertion is CORRECT but, reason is INCORRECT.

20. **(d)**
Lack of Double Coincidence of Wants

Explanation: Barter system can work only when both buyer and seller are ready to exchange each other's goods. A shoe manufacturer wants to sell shoes in the market and buy wheat. The shoe manufacturer will first exchange shoes that he had produced for money, and then exchange the money for wheat. Imagine how difficult it would be if the shoe manufacturer had to directly exchange shoes for wheat without using money. He would have to look for a wheat growing farmer, who not only wants to sell wheat but also wants to buy the shoes in exchange.

Section B

21. The Rowlatt Act of 1919 was opposed by the people of India in the following manner:
    i. Gandhi began non-violent civil disobedience with a hartal on 6 April.
    ii. Rallies were organized in various cities.
    iii. Workers of the 12 railway workshops went on strike and shops were closed.
    iv. The two renowned leaders of the Congress, Dr. Satya Pal, and Dr. Saifuddin Kithlew were arrested on 10th April.
    v. On 13th April, a public meeting was held at Jallianwala Bagh in a small park enclosed by buildings on all sides to protest against the arrest. General Dyer ordered his troops to open fire on the innocent civilians who had gathered from the city of Amritsar and outside to attend a peaceful meeting.

OR

    A. First World War led to a huge increase in defense expenditure which was financed war loans and increase in Taxes.
    B. Custom duties were raised and new income taxes were introduced.
    C. Through war years prices increased-doubling between 1913 and 1918.
    D. Villagers were called upon to supply soldiers.
    E. Forced recruitment in rural areas caused widespread anger

22. The severe economic crisis was experienced in most parts of the world in the 1920s and 1930s.
The following examples state its severity:
    i. A great fall in industrial production as the demand for goods also fell.
    ii. Deterioration of the economic conditions of the industrialists.
    iii. Unemployment soared very high.
    iv. There was a great fall in the living standard of the people.
    v. Economic depression resulted in poverty.
    vi. The price of agricultural products fell disastrously in many countries.
    vii. US banking system collapsed. By 1933, over 4000 banks had closed and between 1929 and 1932, about 110000 companies had collapsed.

OR

The effects of the decision of MNCs to relocate production to Asian countries were:

i. Wages were relatively low in countries like China. Thus they became attractive destinations for investment by foreign MNCs competing to capture world markets.
ii. Most of the TVs, mobile phones, and toys seen in the shops are made in China, this is because of the low-cost structure of the Chinese economy, most importantly its low wages.
iii. The decision of MNCs to relocate production to Asian countries led to increased world trade and capital flows. This relocation was on account of the low-cost structure and lower wages in Asian countries. It also benefited the Asian nations because increased employment led to quick economic transformation.

23. **Source A:** To sustain the market during the Great Depression, publishers brought out cheap paperback editions.
Source B: As primary education became compulsory from the late nineteenth century, children became an important category of readers.
Source C: The manuscripts in India were preserved by pressing them between wooden covers or being sewn together.
24. Electricity has such a wide range of application in today's world that, its per capita consumption is considered as an index of development. Electricity is generated mainly in two ways:
    i. Hydro electricity: Hydro electricity is generated by running water which drives hydro turbines to generate hydro electricity. It is a renewable resource of energy.
    ii. Thermal power: It is generated by burning other fuels such as coal, petroleum and natural gas to drive turbines to produce thermal power.

OR

Importance of coal as a source of energy in India are:

i. Coal is the most abundantly available fossil fuel in India.
ii. It provides a substantial part of the nation's energy needs.
iii. It is used for power generation.
iv. It supplies energy to industry as well as for domestic needs.

25. Federalism means sharing power among the central and non central authorities. it seeks to give equal representation to all the constituent units.
    A. In the constituent units or in states, there is diversity in the population with respect to language, religion, caste and culture.
    B. To give equal opportunity and voice to various social groups, there is reservation for some categories like SCs, STs, OBCs and women in some areas.
    C. This reservation aims to give power to the socially weaker sections of the society to give them an equal chance and representation in the political system.
26. A. Andhra Pradesh- Telgu Desam Party (1982), Telangana Rashtra Sammiti(2001)
    B. Karnataka- Janata Dal (secular)1999
    C. West Bengal- Forward Bloc (1940), Revolutionary Socialist Party (1940), Trinamool Congress (1977).
27. Informal lenders give loans to people not having any collateral because informal lenders like moneylenders know the borrower personally and hence, are often willing to give a loan without collateral. The borrowers can, if necessary, approach the moneylender even without repaying their earlier loan. However, the moneylenders charge very high rates of interest, keep no records of the transactions and harass the poor borrowers. They can use unfair or illegal means to get their money back.

OR

Before the introduction of coins, people used the things related to their domestic life. For example in this era people used grains and cattle as money. People use milk , cotton and crops to conduct business, There after came the use of metallic coins-gold, silver, copper coins- a phase which continued well into the last century.

28.

Final goods	Intermediate goods
The goods which are used either for final consumption or for capital formation.	The goods which are used up in producing the final goods and services.
The value of final goods is included in the national income.	The value of intermediate goods is not included in the national income.

For example, television, bread or bakery products etc.	For example, flour, cotton etc.

Section C

29. The Process of Unification of Germany is as follows:
    i. By 1848, the popular effort of political associations failed in installing a constitutional monarchy in Germany.
    ii. The Failure of the Frankfurt Parliament made it clear that German unification had to come through the combined effort of monarchy and army supported by large landowners.
    iii. From then on, Prussia took on the leadership in the unification of Germany The architect of the process was the Chief Minister of Prussia, Otto von Bismarck. He took the help of bureaucracy and the military.
    iv. He fought three wars in seven years with Austria, Denmark, and France which ended in Prussian victory and completed the process of German unification.
    v. The Prussian King William-1 was proclaimed German Emperor in January 1871.

OR

Political Fragmentation of Italy:

Italy had a long history of political fragmentation. Italians were scattered over several dynasties as well as the multi-national Habsburg Empire. Italy was divided into seven states during the middle of the nineteenth century. Of these seven states, only Sardinia-Piedmont was ruled by an Italian princely house. At that time, North of Italy was under Austrian Habsburg, the centre was ruled by Pope and the Southern regions were ruled by the Bourbon kings of Spain. The past revolutionary uprisings, which failed, prompted King Victor Emmanuel II from Sardinia-Piedmont to unify the Italian states through war.

Role of Mazzini:

During 1830s Giuseppe Mazzini had tried to unite Italy. Giuseppe Mazzini formed a coherent program for uniting the Italian Republic. He formed a secret society called young Italy. But both the uprising in 1831 and 1848 failed. Even the ruling elites also wanted a unified Italy which would offer economic development and political dominance. Failure of the 1831 and 1848 revolutionary uprisings prompted King Victor Emmanuel II from Sardinia-Piedmont to unify the Italian states.

Role of Cavour:

The unification of Italy was a result of many wars. Chief Minister Cavour made a tactful diplomatic alliance with France, and Sardinia-Piedmont succeeded in defeating the Austrian forces in 1859.

Role of Garibaldi:

A large number of armed volunteers under the leadership of Giuseppe Garibaldi joined the unification movement.

Following events took place leading to the unification of Italy:

1859: Sardinia-Piedmont with an alliance with France defeated the Austrian forces. A large number of people under the leadership of Giuseppe Garibaldi joined the movement.

1860: Sardinia-Piedmont‟s forces marched into South Italy and the Kingdom of the Two Scillies and drove out the Spanish rulers.

1861: Victor Emanuel was declared as the king of united Italy and Rome was declared the capital of Italy.

30. Resources are objects in the environment which are technologically accessible, economically feasible and culturally acceptable, and fulfil the basic needs of man.
    The factors responsible for resource development in India are as follows:
    a. The availability of resources is a necessary condition for the development of any region or state.
    b. The history of colonisation reveals that rich resources in colonies were the main attraction for foreign invaders. It was primarily the higher level of technological development of the colonising countries that helped them to exploit resources of other regions and establish supremacy over the colonies.
    c. Resources can contribute to development only when they are accompanied by appropriate technology and institutional changes.
    d. Resource development also involves the quality of human resources. Knowledge gained by people plays an important role in resource development.
    e. India has vast natural resources. After independence, concerted efforts were made through Five Year Plans for the overall development of the economy.

31. **There is the concentration of jute mills in West Bengal because of the following factors:**
    a. Proximity of the jute producing areas.
    b. Cheap and easy water transport.
    c. Availability of abundant water for jute processing.
    d. Cheap and skilled labour from nearby areas.
    e. Port facilities for export.
    f. Kolkata as a large urban centre provides banking and insurance facilities.
32. A. It is an Island nation south of India. Tamil natives are called Sri Lankan tamils and formed 13% population.
    B. The Indian Tamils whose forefathers had come from India as planatation workers formed 5% population.
    C. The Sinhala Buddhist, who was 74% of the population, formed the majority government after independence in 1948.
    D. Tamils are either Hindus or Muslims, 7% of the people are Christian who are both Tamil and Sinhala.
    E. Sinhalese enjoy majority and can impose their will on the entire country.
33. i. **Corruption:** The record of democracies show us that most of the democratic countries have failed to remove or reduce corruption. India is one of the largest democratic countries of the world but has also failed in this issue along with other democratic countries.
    ii. **Non-attentive to the needs of the people:** A democratic government should be attentive to the needs and demands of the people, but unfortunately, the record of democracy is not impressive on this issue. Democracies often frustrate the needs of the people and often ignore the demand of a majority of its population. Democracy is all about muscle and money power.
    iii. **Economic growth and development:** Democracy is considered a better government than other forms of government. So one can expect better economic growth and development. But unfortunately, democracy has even failed on this issue. If one considers all democracies and all dictatorship for the last 50 years dictatorship has a slightly higher rate of economic growth.
    iv. **Reduction of Inequality and Poverty:** As democracy is the government of the people, one expects democracies to reduce economic disparities. Most of the democracies of the world have failed on this issue. In most of the democracies, a small number of ultra-rich enjoy a highly disproportionate wealth and income. Their share in the total income of the country has been increasing. Those at the bottom have little to depend upon.
    v. These are some of the outcomes of democracy where it has failed drastically. But yet, it is one of the best forms of government in the world today. Since it is 'the people's government' and the people are the real rulers.

    OR

    Democracy stands much superior in promoting dignity and freedom to the citizens:
    i. Every individual wants to receive respect from fellow beings.
    ii. Democracy allows it's citizen to live freely and to share its ideas in any field.
    iii. Women in a democratic country have also enhanced their dignity and live freely in the male dominated country like India.
    iv. The passion for respect and freedom is the basis of any democracy.
    v. Democracies throughout the world have recognized this. It has been achieved in various degrees in various democracies.
    vi. Long struggles by women have given them respect and equal treatment.
    vii. Democracy gave equal protection and opportunities to the people of low caste, it also helps in maintaining the dignity of its citizen.
    viii. In many democracies, women were deprived of their right to vote for a long time, which they have achieved now.
    ix. In India, 1/3rd of seats have been reserved for women in local bodies.
    x. Democracy has strengthened the claims of the disadvantaged and discriminated castes for equal status and equal opportunity.
34. **Globalisation and greater competition among producers have been advantageous to consumers in the following ways:**

i. Globalization and greater competition among local and foreign producers have been advantageous to consumers, especially to the population residing in urban areas.
ii. There is a greater choice before these consumers who now enjoy an improved quality of goods and services at lower prices. This would not have been possible without globalization.
iii. Due to globalization, people enjoy higher standards of living than before. It has increased the purchasing power of people.
iv. Globalization has benefited the consumers as it has led to employment generation.
v. Wide-ranging choice of goods in our markets is a recent phenomenon and has brought changes in the lives of people.

Section D

35. a. A. Madras
B. Champaran

b.

Solution

Class 10 - Hindi A

Confidence Examination II (2019-2020)

Section A

1. i. अपनी बुद्धि -विवेक में सूक्ष्म परिवर्तन लाकर हम अपने स्वभाव को परिवर्तित कर सकते हैं।
   ii. हमारे मस्तिष्क के दो विभिन्न अंश होते हैं-चेतन और अवचेतन। दोनों ही अलग-अलग प्रयोजनों के लिए जिम्मेदार हैं।एक जाग्रत रहता है तो दूसरा सुषुप्तावस्था में रहता है।
   iii. मस्तिष्क का चेतन भाग हमें विशिष्ट बनाता है। इसकी वजह से एक व्यक्ति किसी दूसरे व्यक्ति से अलग होता है। हमारी कछ अलग-सा स्वभाव, अनोखी सृजनात्मक शक्ति, रचनात्मकता आदि कार्यों की जिम्मेदारी चेतन मस्तिष्क की ही होती है। यही चेतन मन एक को दूसरे से पृथक कर विशिष्ट बना देता है।
   iv. अवचेतन मस्तिष्क एक ताकतवर प्रतिश्रुति यंत्र के समान होता है। यह जीवन के प्रारम्भिक दिनों से लेकर अब तक के रिकॉर्ड किए अनुभवों को दोहराता है। इसमें रचनात्मकता नहीं होती। यह उन स्वचालित क्रियाओं और सहज स्वभाव को भी नियंत्रित करता है जो हमारी आदत बन चुका है।
   v. लेखक अभिमन्यु की चर्चा के माध्यम से यह प्रतिपादित करना चाहता है कि अवचेतन मस्तिष्क जन्म के थोड़े पहले माँ के पेट में ही सीखना शुरु कर देता है। उस समय उसे सही-गलत का ज्ञान नहीं होता केवल अपने स्वभाव के अनुसार आस-पास की गतिविधियों को ग्रहण कर लेता है जो बाद में उसके जीवन का आधार बन जाते हैं।
   vi. चेतन और अवचेतन मन

Section B

2. i. मिश्र वाक्य।
   ii. आज सुबह पापा ने जल्दी उठकर मुझे दवा लेने भेज दिया।
   iii. जेब से चाकू निकाला और दोनों खीरों को गोदकर झाग निकाला।
   iv. यह वही बालसुलभ हँसी है जिसमें कई यादें बंद हैं ।
3. i. बच्चों द्वारा फिल्म की भूरि-भूरि प्रशंसा की गई।
   ii. बाढ़ग्रस्त जम्मू-कश्मीर के लिए अनेक लोगों ने उदारता दिखाई।
   iii. मुझसे अब चुप बैठा नहीं जाता।
   iv. वह खड़ा भी नहीं हो सकता।
4. i. **उड़ रहे हैं-** क्रिया, अकर्मक, पुल्लिंग, बहुवचन, वर्तमान काल।
   अकर्मक क्रिया, बहुवचन, पुल्लिंग, वर्तमान काल।
   ii. **निबन्ध-** संज्ञा, जातिवाचक, पुल्लिंग, एकवचन, कर्म कारक।
   iii. **मोहन-** संज्ञा, व्यक्तिवाचक पुल्लिंग एकवचन।
   व्यक्तिवाचक संज्ञा, एकवचन, पुल्लिंग, कर्ता कारक।
   iv. **देश पर-** संज्ञा, जातिवाचक पुल्लिंग एकवचन, अधिकरण कारक।
5. i. काव्यांश में वात्सल्य रस है।
   ii. काव्यांश में श्रृंगार रस है।
   iii. विन्ध्य के वासी उदासी तपोव्रत धारी महा बिनु नारि दुखारे।
   गौतम तीय तरी तुलसी, सो कथा सुनि भे मुनिवृंद सुखारे।।
   iv. 'रसराज' 'श्रृंगार रस' को कहा जाता है।

Section C

6. i. हालदार साहब के मत से देशभक्तों का मखौल उड़ाने वाली कौम स्वार्थी होती हैं। ऐसी कौम कभी भी अपने देश का हित नहीं कर सकती, वह सिर्फ अपनी भलाई के विषय में सोचती है ।
   ii. हालदार साहब के मन में कस्बे में घुसने से पहले ये ख़याल आया कि नेताजी की मूर्ति तो वहीं होगी किन्तु कैप्टन की मृत्यु हो जाने के कारण उस पर चश्मा नहीं होगा ,क्योंकि मास्टर उसे लगाना भूल गया था। उन्होंने निश्चय किया कि चौराहे से गुजरते हुए उस ओर नहीं देखेंगे।
   iii. हालदार साहब उन देशवासियों के व्यवहार को सोचकर दुःखी हो रहे थे जिनके हृदय देशभक्ति की भावना से शून्य थे। जो देश पर अपना सब कुछ न्यौछावर कर देने वाले देशभक्तों का सम्मान करने के बजाय उनकी हँसी उड़ाते थे। ऐसे देश का भविष्य कैसा होगा यह सोचकर वे दुःखी थे।

7. निम्नलिखित प्रश्नों में से किन्ही चार के उत्तर दीजिये:
   a) बालगोबिन भगत की दिनचर्या लोगों के अचरज का कारण इसलिए थी क्योंकि वे सुबह उठकर दो मील दूर नदी में स्नान करने जाते थे | किसी भी मौसम का कोई भी असर उन्हें रोक नहीं पाता था | दोनों समय ईश्वर के गीत गाना, ईश्वर की साधना में लगे होते हुए भी गृहस्थी के कार्यों से वे कभी भी विरत नहीं हुए | प्रत्येक वर्ष गंगा स्नान के लिए जाना और संत-समागम में भाग लेना उन्होंने अंत समय तक नहीं छोड़ा |
   b) लेखक को सेकंड क्लास के डिब्बे में आया देखकर नवाब साहब के चेहरे पर असंतोष के भाव साफ़ नज़र आने लगे | उन्हें अपने एकांत में बाधा का अनुभव होने लगा और अनमने भाव से वह खिड़की से बाहर देखने लगे | जैसे ही लेखक उनकी तरफ देखते वह उनसे नज़रें फेर लेते | नवाब साहब के इन हाव-भाव को देखकर लेखक ने अनुमान लगाया कि नवाब साहब उनसे बात करने के लिए किंचित भी उत्सुक नहीं हैं |

c) फादर कामिल बुल्के का रंग गोरा था। सफेद झाँई मारती भूरी दाढ़ी, वात्सल्य और ममत्व से परिपूर्ण नीली आँखें थी। बाँहें सदा दूसरों को गले लगाने को आतुर रहती थीं।अपने प्रियजनों के प्रति इतनी आत्मीयता रखते कि अपने आशीर्वादों से लोगो के मन को लबालब भर देते थे। दुख की घड़ी में भी अपने प्रियजनों को ऐसे सांत्वना देते थे कि वो अपना सारा दुख भूल जाता था।

d) लेखिका स्वतंत्र विचारों वाली, अपने अधिकारों और कर्तव्यों के प्रति सजग थी | उनकी की माँ त्याग और धैर्य की पराकाष्ठा थी पर वे लेखिका के लिए आदर्श नहीं बन सकी क्योंकि उनकी दृष्टि में उनका ये धैर्य और त्याग स्वाभाविक न होकर विवशता और बेबसी से उपजा था |

e) डुमराँव गाँव की इतिहास में कोई विशेष पहचान नहीं रही है पर फिर भी वह एक विशेष स्थान के रूप में प्रसिद्द है | भारतरत्न पुरस्कार से सम्मानित प्रसिद्द शहनाई वादक बिस्मिल्ला खां का जन्म इसी स्थान पर हुआ था | शहनाई के लिए नरकट की आवश्यकता पड़ती है और यह नरकट इस गाँव में सोन नदी के किनारे विशेष रूप से पाया जाता है। इस तरह शहनाई और डुमराँव एक-दूसरे के पूरक हो गए।

8. i. कुम्हड़बतिया कोउ नाहीं से अभिप्राय यह है कि हम कुम्हडबतिया के सामान नहीं हैं जो तरजनी दिखाने से सड़ जाता है अर्थात इतने कमजोर नहीं हैं, जो उनकी बातों से भयभीत हो जाएँगे।

ii. चहत उड़ावन फूंकी पहारू से लक्ष्मण का अभिप्राय यह है कि मैं कोई साधारण व्यक्ति नहीं हूँ | जिस प्रकार फूंक से पहाड़ को नहीं उड़ाया जा सकता वैसे ही मुझे फरसा दिखाकर डराया नहीं जा सकता हैं।

iii. लक्ष्मण ने परशुराम पर यह व्यंग्य किया कि हे मुनिवर आप तो व्यर्थ में बाण पकडे हैं, आपके वचन ही तो करोड़ो बज्र के सामान हैं|

9. निम्नलिखित प्रश्नों में से किन्ही चार के उत्तर दीजिये:

a) फागुन मास में प्रकृति का सौन्दर्य अपने चरम पर होता है | ऐसा कोई सहृदय नहीं जो इससे अभिभूत हुए बिना नहीं रह सकता | फागुन में वसंत की मादकता है, प्रफुल्लता है | कवि प्रकृति प्रेमी है | उसे प्रकृति के कण-कण में सुन्दरता नज़र आती है | उसका ह्रदय कोमल है इसलिए वह फागुन की सुन्दरता से आँख नहीं हटा पा रहा |

b) कवि के अनुसार फसलें पानी, मिट्टी, धूप, हवा और मानव श्रम के मेल से बनी हैं। इनमें विभिन्न नदियों के पानी की ताकत (जादू) समायी हुई है। विभिन्न प्रकार की मिट्टियों की विशिष्ट विशेषताएँ (गुण-धर्म) छिपी हुई हैं। सूरज और हवा का प्रभाव समाया है। इन सबके साथ किसानों और मजदूरों का लगनशील श्रम व सेवा भी सम्मिलित है। इन सभी तत्वों के समेकित योगदान से ही कोई फ़सल तैयार हो पाती है।

c) अतीत की सुखद स्मृतियों को। क्योंकि बीते हुए सुखों और कल्पना का वर्तमान में कोई अस्तित्व नहीं है। वे यथार्थ रूप ग्रहण नहीं कर सकते और व्यक्ति के वर्तमान को दुविधाग्रस्त कर देते हैं। छाया मत छूना में कवि ने छाया को अतीत की सुखद स्मृतियां बताया है क्योंकि पुरानी मधुर यादें याद करना ठीक नहीं है। इनसे वर्तमान का दुख और भी दुगना हो जाएगा।सुख भरे बीते दिनों को वापस नहीं पाया जा सकता। इसलिए उनकी कल्पना में विचरण करने की अपेक्षा वर्तमान के यथार्थ का सामना करना ही उचित है।

d) स्त्री के जीवन में वस्त्र और आभूषण भ्रमों की तरह हैं अर्थात् ये चीजें व्यक्ति को भरमाती हैं। ये स्त्री के जीवन के लिए बंधन का काम करते हैं। और जिस प्रकार चतुर व्यक्ति अपनी लच्छेदार भाषा और मोहक शब्दावली से ही भोले इंसान को अपना गुलाम बना लेता है वैसे ही पुरुष से प्राप्त वस्त्र और आभूषणों के लालच में अथवा उन्हें लेकर आसक्त होने से स्त्री भ्रमित हो जाती है और वह पुरुष की दासी बन जाती है। ससुराल में अच्छे वस्त्राभूषणों के मोह में स्त्री प्राय: दासतामय बन्धन में पड़ जाती है। इसलिए वस्त्राभूषणों को शाब्दिक भ्रम कहा गया है।

e) संगतकार के माध्यम से कवि प्रत्येक कलाकार की सहायक सहयोगीयों की ओर संकेत करना चाहता है। जैसे वाद्ययंत्रकार, सहायक गायक, उद्घोषक आदि। नाटक, फिल्म, संगीत, नृत्य में मुख्य कलाकार के साथ सहायक कलाकारों की भूमिका रहती है। कई बार केवल मुख्य गायक ही पर्दे पर दिखाई देते हैं शेष सहायक कलाकार पर्दे के पीछे ही रहते हैं किंतु मुख्य कलाकार की सफलता का श्रेय सभी सहायक कलाकारों को जाता है। तो कवि समाज के उन सभी लोगों की ओर संकेत करना चाहता है, जो प्रत्येक कलाकार की सफलता के लिए उनका सहयोग करते हैं।

10. निम्नलिखित प्रश्नों में से किन्ही दो के उत्तर दीजिये:

a) 'माता का आँचल' के आधार पर लेखक के पिताजी की विशेषताएँ निम्नलिखित हैं-
i.उनकी दिनचर्या को देखकर कहा जा सकता है कि वे धार्मिक प्रवृत्ति के थे |
ii.वे सुबह जल्दी उठकर अपने बेटे को भी नहलाकर पूजा में बैठ जाते |
iii.उनका अपने बच्चे से अत्यधिक जुड़ाव था |
iv.अपने पुत्र के प्रत्येक कार्य में वे सहयोग देते |
v.अपने पुत्र के प्रत्येक खेल में वे शामिल रहते |

b) 'जार्ज पंचम की नाक' पाठ में जिस सरकारी तंत्र की कार्यप्रणाली को दर्शाया गया है वह बड़ी ही संकीर्ण सोच को व्यक्त करती है | सरकारी तंत्र परतंत्रता की मानसिकता से ग्रस्त है। किसी भी कार्य के प्रति सरकारी तंत्र जागरूक नहीं है। अवसर आने पर ही उनकी निद्रा खुलती है। सरकारी कार्यप्रणाली में मीटिंगें प्रमुख हैं। हर छोटी-से-छोटी बात पर मीटिंग बुलाई जाती है जिसमें परामर्श होता है, विचार विमर्श होता है परंतु उसके अनुरूप कार्य नहीं होता | सभी विभाग एक-दूसरे पर कार्य थोपते रहते हैं। व्यर्थ का दिखावटीपन, चिंता, चापलूसी की प्रवृत्ति पूरी कार्यप्रणाली में कूट-कूट कर भरी हुई है। पाठ में रानी एलिजाबेथ के भारत आने पर सम्पूर्ण सरकारी तंत्र अपने सभी काम-काज छोड़कर उनकी तैयारी और स्वागत मे लग जाता है | जॉर्ज पंचम की नाक लगाने को लेकर जो चिंता और बदहवासी दिखाई देती है संपूर्ण पाठ में दिखाई देती है वह सरकारी तंत्र की अयोग्यता, अदूरदर्शिता, चाटुकारिता और मूर्खता को दर्शाती है।

c) सैलानी जब प्राकृतिक स्थानों के सौन्दर्य का आनंद लेते हैं तब वहाँ अपने साथ खाने का सामान, पानी की बोतल अन्य पैकेट्स साथ लेकर जाते हैं और खाली करने के बाद इधर - उधर फेंक देते हैं। हम अनजाने में ही पर्यावरण को प्रदूषित कर देते हैं। वहाँ तमाम खाली डिब्बे, कूड़ा-कचरा, प्लास्टिक बैग फेंककर वातावरण को प्रदषित कर देते हैं। हमें वहाँ जाकर ऐसा नहीं करना चाहिए और साथियों को भी ऐसा करने से रोकना चाहिए। इन सभी कचरे को एक जगह डस्टबिन में एकत्रित कर देना चाहिए जन जागरूकता फैलाकर हम इन स्थानों को प्रदूषण से बचा सकते हैं। यही नहीं अपितु स्थानीय पक्षियों, जानवरों पर प्रहार करना भी ठीक नहीं है। वहाँ की वनस्पतियों की सुरक्षा करना प्रत्येक सैलानी का दायित्व है उन्हें नष्ट नहीं करना चाहिए।

Section D

11. तैराकी मेरा प्रिय शौक है। जब भी मैं पानी के भीतर होता हूँ तो मुझे असीमित आनंद की अनुभूति होती है। तड़के सुबह और शाम के दो घंटे मैंने तैरने का समय निश्चित कर रखा है । इस बार मुझे छुट्टियों में गाँव जाना था। मुझे वहाँ बहुत अच्छा लगता है उसका सबसे बड़ा कारण यह था कि मेरे गाँव से बड़ी नहर गुजरती है। बचपन से ही मैं इस नहर में जाकर खूब तैरता रहा हूँ इसलिए आज भी जब कभी मैं गाँव जाता हूँ तो नहर में तैरने का आनन्द अवश्य लेता हूँ। इस बार जब में गाँव गया तो देखा नहर पूरी तरह चढ़ी हुई है। शाम को मैं तैरने के लिए नहर पर जा पहुँचा और तभी मैंने देखा एक 5-6 वर्ष का बालक नहर में डूब रहा है और बचाने के लिए चिल्लाता हुआ हाथ-पैर चला रहा है। नहर का बहाव तेज था। बच्चा इस बात से अनभिज्ञ होकर नहर में स्नान कर रहा होगा और बीच धार में पहुँचकर डूबने लगा होगा। उसे डूबते देखकर में तुरंत नहर में कूद पड़ा और उसके पास पहुँचकर मैंने उसे अपनी पीठ पर ले लिया तथा तैरते हुए किनारे की ओर आने लगा। तभी एक भंवर में फँस गया तुरन्त मैंने हाथ-पाँव चलाकर अपने को भँवर से दूर किया और बालक को लेकर किनारे पर आ गया है।

बच्चे के पेट में पानी चला गया था मैंने उसे पेट के बल लिटाकर पीठ की ओर से दबाया जिससे बहुत सारा पानी उसके पेट से निकल गया और वह आराम से साँस लेने लगा। मैं उसे लेकर उसके द्वारा बताए गए घर पर जा पहुँचा और उसके माता-पिता को सारी घटना बताई। वे मेरे ही गाँव के थे अतः उन्होंने मुझे धन्यवाद के साथ-साथ शाबाशी भी दी और कहा कि तुम्हारी वजह से आज यह जिंदा बच पाया। मैं एक अच्छा कार्य करके संतोष का अनुभव कर रहा था लेकिन उस दिन मैंने निश्चय किया कि जब तक मैं गाँव में हूँ ऐसे बालकों की टीम बनाऊँगा और उन्हें तैराकी के गुण सिखाऊँगा ताकि आवश्यकता के समय वे इस मुसीबत से छुटकारा पा सकें। मेरे इस निर्णय का सभी ने स्वागत किया।

OR

भूमिका:-

आज का विश्व विज्ञान की नींव पर टिका है। विज्ञान और तकनीक की अद्भुत खोजों ने मनुष्य के जीवन में एक नवीन क्रांति ला दी है | कंप्यूटर मानव की इन्हीं अद्भुत खोजों में से एक है जिसने मानव जीवन के प्रत्येक क्षेत्र में अपनी गहरी पैठ बना ली है। यह ऐसा इलेक्ट्रॉनिक मस्तिष्क है जिसने अपनी अनगिनत विशेषताओं के बल पर जीवन के प्रत्येक क्षेत्र में दस्तक दी है। आज हर संस्था और उद्योग में कंप्यूटर का प्रयोग विशाल स्तर पर हो रहा है | मोबाइल रिचार्ज से लेकर घर का सामान मंगवाने तक में कंप्यूटर एक अहम भूमिका निभा रहा है | कंप्यूटर आज रोज़मर्रा की उपयोगी वस्तु बन गया है | वास्तव में कंप्यूटर एक ऐसा यांत्रिक मस्तिष्कों का समन्वयात्मक और गुणात्मक योग है, जो तीव्र गति से न्यूनतम समय में त्रुटिहीन गणना करने में सक्षम है | अतः कंप्यूटर को सर्वाधिक तीव्र एवं शुद्ध गणना करने वाला यंत्र कहना कोई अतिशयोक्तिपूर्ण कदापि नहीं है |

कंप्यूटर का आगमन:-

इस प्रगति में कम्प्यूटर का आविष्कार इस शताब्दी की सर्वाधिक चमत्कारी घटना है। सन् 1926 में टेलीविजन का आविष्कार होने पर वैज्ञानिकों ने कम्प्यूटर के सम्बन्ध में अनुसंधान प्रारम्भ किया। लगभग डेढ़ दशक के अन्तराल में अमेरिका तथा इंग्लैण्ड के वैज्ञानिकों ने मानव के नये मस्तिष्क के रूप में कम्प्यूटर का आविष्कार कर वैज्ञानिक प्रगति का नया अध्याय प्रारम्भ किया। आरम्भिक कम्प्यूटर इतने स्थूलकाय थे और उनका संचालन इतना श्रमसाध्य था कि कम्प्यूटर का कोई उज्ज्वल भविष्य नहीं दिखाई देता था। सर्वप्रथम एबेकस का आगमन हुआ। यह बच्चों को शिक्षा दिलाने में काफी लोकप्रिय हुआ। जापान में आज भी शिक्षण कार्य में इसका उपयोग होता है। आधुनिक कम्प्यूटर का सूत्रपात करने का श्रेय इंग्लैण्ड के वैज्ञानिक चार्ल्स बैवेज को जाता है। इन्होंनें 19वीं शताब्दी में पहला कंप्यूटर बनाया | भारत में कम्प्यूटर का आगमन 1985 के आसपास हुआ, परन्तु भारत अब कम्प्यूटर निर्माण के क्षेत्र में स्वावलम्बी बन चुका है।

विविध उपयोग:-

विज्ञान और इंजीनियरिंग के क्षेत्र में गणित की जटिल विस्तृत गिनतियाँ, युद्ध में विमानों, पनडुब्बियों, शत्रु के निश्चित ठिकानों पर सटीक हमला करने वाली मिसाइलें कम्प्यूटर द्वारा ही संचालित होती हैं। सूचनाएँ एकत्र करने में कम्प्यूटर का व्यापक रूप में प्रयोग हो रहा है। चिकित्सा क्षेत्र में कम्प्यूटरीकृत मशीनों के द्वारा चिकित्सा विज्ञान नई उँचाइयों को छू रहा है। आज मानव जीवन का कोई भी क्षेत्र इसके प्रयोग से अछूता नहीं है | बैंकिंग, प्रकाशन, कला, अनुसंधान और औद्योगिक क्षेत्रों में तो कंप्यूटर ने क्रांति ला दी है |

लगभग प्रत्येक क्षेत्र में आज कम्प्यूटर का उसकी उपयोगिता के कारण व्यापक रूप से प्रयोग हो रहा है। रेलवे स्टेशनों, हवाई अड्डों पर कम्प्यूटर का प्रयोग आरक्षण आदि के लिए किया जा रहा है। चिकित्सा के क्षेत्र में कम्प्यूटरीकृत मशीनों का प्रयोग रोगी का रोग पहचानने और चिकित्सा करने में किया जा रहा है।

लाभ-हानियाँ:-

ज्योतिष, अन्तरिक्ष, मौसम की सूचना, चुनाव क्षेत्र आदि में कंप्यूटर सर्वाधिक उपयोगी सिद्ध हुआ है | कम्प्यूटर का यह रोमांचकारी और सुविधा प्रदायक पक्ष एक खतरे की घंटी भी है। कम्प्यूटर के सतत प्रयोग ने मनुष्य को निष्क्रिय और उत्साह विहीन प्राणी बना दिया है। उसकी प्राकृतिक क्षमताओं का ह्रास होता जा रहा है | वर्तमान स्थिति से स्पष्ट हो रहा है कि आगे के युद्ध कम्प्यूटर नियन्त्रित होंगे और क्षणमात्र में मानवों के विशाल नगर व बस्तियाँ ध्वस्त की जा सकेगी।

विश्व की तीसरी आँख:-

यह भी यथार्थ है कि कम्प्यूटर आज विश्व की तीसरी आँख बन चुका है क्योंकि कम्प्यूटर पर इंटरनेट के माध्यम से अल्प समय में ही संसार के किसी भी कोने की कोई भी सूचना, आँकडे या समाचार तुरन्त प्राप्त किए जा सकते हैं। अन्तरिक्ष और दूरसंचार के क्षेत्र में कम्प्यूटर ने क्रान्ति ला दी है। आज मानव विश्व युद्धों की आशंका से त्रस्त है, परन्तु आगे उसे ब्रह्माण्ड युद्धों को भी झेलना पड़ सकता है।

उपसंहार:-

वर्तमान युग कंप्यूटर का युग है | आज कम्प्यूटर के बिना जीवन की कल्पना भी नहीं की जा सकती है। कम्प्यूटर के कारण प्रत्येक क्षेत्र में विकास की गति दस गुनी से लेकर हजार गुनी तक बढ़ सकती है पर मानव को अपनी भावनाओं का अस्तित्व भी बनाए रखने के लिए स्वयं की कंप्यूटर से निर्भरता कम करनी होगी नहीं तो वह दिन दूर नहीं जब सम्पूर्ण विश्व को केवल यांत्रिक विश्व बनने से कोई नहीं रोक सकता |

OR

भारत अनेक धर्मों, जातियों और भाषाओं का देश है। फिर भी हमारे देश में विविधता में एकता निहित है। जब कभी उस एकता को खंडित करने का प्रयास किया जाता है| भारत का प्रत्येक नागरिक सजग हो उठता है। राष्ट्रीय एकता को खंडित करने वाली शक्तियों के प्रति आन्दोलन आरंभ हो जाता है। यही भारतीय एकता है। भौगोलिक रूप से सीमाओं में घिरा कोई भूभाग तभी देश या राष्ट्र कहलाएगा जब वहाँ के रहने वाले लोग उससे प्रेम करेंगे और यह प्रेम

तभी उत्पन्न होगा जब उनमें आपस में भाईचारा एकता होगी। राष्ट्रीय एकता का अभिप्राय है कि सम्पूर्ण भारत भौगोलिक अखंडता के साथ ही सामाजिक, राजनीतिक, आर्थिक एवं वैचारिक रूप से एक हो। यहाँ कर्म -कांड, पूजा-पाठ, खान-पान, रहन-सहन और वेशभूषा में अन्तर हो सकता है, इनमें अनेकता हो सकती है किन्तु हमारे राजनीतिक और वैचारिक दृष्टिकोण में एकता होती है और इस प्रकार अनेकता में एकता ही भारत की प्रमुख विशेषता बन जाती है जिसके दर्शन भारत के कोने-कोने में दिखाई देते है। इतनी विभिन्नताओं से युक्त भारत तरह-तरह के फूलों से युक्त किसी गुलदस्ते के समान सुशोभित होता है।

राष्ट्रीय एकता के मार्ग में अनेक बाधाएँ हैं। इनमें से कुछ बाधाएँ निम्नलिखित हैं-

अ) भाषागत विवाद

(ब) प्रान्तीयता या प्रादेशिकता की भावना

(स) साम्प्रदायिकता

(द) जातिगत विवाद

आज राष्ट्र विभिन्न विरोधी ताकतों एवं समस्याओं से जूझ रहा है। आज तो हालात ये हो गए हैं कि उसे बाहरी शत्रुओं से ज्यादा भीतरी शत्रुओं का भय है जो मौके का फायदा उठाने में जुटे हैं। लोग छोटी छोटी समस्याओं को राष्ट्रीय समस्या बना रहे हैं।

राष्ट्रीय एकता के मार्ग में आने वाली बाधाओं को दूर तभी किया जा सकता है जब हम सभी एकजुट हो जाएँ। इसके लिए आवश्यक है कि उन्हें एक ही राष्ट्र भाषा में शिक्षा दी जाए। जातिवाद का उन्मूलन करते हुये सर्व धर्म समभाव की स्थापना की जाए। शिक्षा का प्रसार किया जाए। सबके हित की भावना को सर्वोपरि रखा जाए। राजनीति का प्रयोग जनहित के लिए किया जाए ताकि एकता की भावना का विकास हो। राष्ट्र की प्रगति, सुख-शान्ति प्रशासनिक सुव्यवस्था एवं देश के शत्रुओं से सुरक्षा के लिए राष्ट्रीय एकता की परम आवश्यकता है। यदि हम भारतवासी किसी कारणवश छिन्न-भिन्न हो गए, तो हमारी पारस्परिक फूट को देखकर अन्य देश हमारी स्वतन्त्रता को हड़पने का प्रयास करेंगे। आज जबकि चीन, पाकिस्तान को खुले या छिपे तौर पर परमाणु अस्त्र तक बनाने में सहायता कर सकता है, तब राष्ट्रीय एकता बनाए रखने की आवश्यकता और ज़िम्मेदारी दोनों बढ़ जाती है।

12. पटेल नगर ,नई दिल्ली

२४ मार्च २०१९

प्रिय मित्र

२३ मार्च की शाम हमारे पारिवारिक मित्र बबलू से यह दु:खद समाचार मिला है कि आपकी पूजनीया माताजी का आकस्मिक निधन हो गया है।अचानक मिले इस समाचार पर तो पहले मुझे विश्वास नहीं हुआ क्योंकि अभी दो दिन पहले ही वह मुझे बाजार में मिली थी और हमने काफी देर तक बातचीत भी की थी | उन्होंने बताया था कि उनका स्वास्थ्य अच्छा है किन्तु यह समाचार को सुन कर मैं हतप्रभ रह गया । ईश्वर की इच्छा के आगे किसी का कोई वश नहीं है। इस दु:खद घटना पर मैं हार्दिक शोक व्यक्त करता हूँ तथा ईश्वर से प्रार्थना करता हूँ कि मृत आत्मा को चिर शान्ति प्रदान करे तथा परिवार को इस वज्र आघात को सहने की शक्ति प्रदान करे।

आपका मित्र

गौरव

OR

सेवा में,

खाद्य मंत्री,

राजस्थान सरकार, जयपुर

विषय-खाद्य पदार्थों में होने वाली मिलावट संबंधी गतिविधियों के संदर्भ में

महोदय,

आप भली-भांति जानते है कि त्योहारों का मौसम आ पहुंचा है जिसमें खाद्य पदार्थों की महत्त्वपूर्ण भूमिका होती है। इस समय बाजार में खाद्य पदार्थों की माँग बहुत बढ़ जाती है और उनकी पूर्ति करने के लिए मिलावट करने वालो का धंधा भी ज़ोर पकड़ने लगता है जिससे ग्राहक बहुत परेशान होते हैं।

आपको सूचित करते हुए बड़ा खेद हो रहा है कि आजकल हमारे शहर जयपुर में खाद्य पदार्थों में मिलावट का धंधा बड़े जोरों पर चल रहा है। लोग घी में खूब मिलावट कर रहे हैं। अभी-अभी छापा मारकर 600 मिलावटी घी की टीनें पकड़ी गई हैं। मसालों में भी खूब मिलावट हो रही है, मिठाई में खोया-मिलावट वाला ही डाला जाता है जो स्वास्थ्य के लिए बहुत हानिकारक है। दूध में दूधिया सिथेंटिक दूध मिला दिया जाता हैं | इन सभी कारणों से शहर का जन जीवन बीमारियों से घिरता जा रहा है। कोई भी खाद्य-पदार्थ मिलावट के अवैध कारोबार से अछूता नहीं है।

इस पत्र के माध्यम से मैं अनुरोध करना चाहता हूँ कि आप सम्बन्धित विभागीय कर्मचारियों को सचेत करें जिससे वे जगह-जगह छापामार कार्यवाही हो और दोषी लोगों के खिलाफ सख्त कार्यवाही की जाए ताकि जनजीवन विभिन्न बीमारियों से सुरक्षित हो सके। आपकी अति कृपा होगी।

भवदीय

किशन लाल

करुणा धाम विकास समिति

जयपुर

दिनांक : 17 जनवरी, 2019

13.

मयूर नोबल स्कूल
आवश्कता है गणित अध्यापक की योग्यता - बी.एस.सी./बी. कॉम., बी. एड.,वांछनीय -कम्पूटर का कार्यसाधक ज्ञान कम से कम चार वर्षों का अध्यापन अनुभव योग्यतानुसार आकर्षक वेतमान

दिनांक : 17 से 19 जनवरी, 2019 तक
प्रधानाचार्य के कक्ष में शैक्षणिक प्रमाण - पत्रों के साथ मिलें।
दूरभाष : 011-2625XXXX

OR

रोलेक्स की घड़ियाँ

प्रथम १००० क्रेताओं को १०% की विशेष छूट !

जानी-मानी प्रतिष्ठित घड़ी निर्माता कम्पनी पेश करती है आधुनिक तकनीक से लैश, समय ठीक करने और सेल बदलने के झंझट से मुक्ति । जो शरीर के तापमान से स्वतः चालित होती हैं। ये स्वतः ही समय और दिनांक ठीक करने में सक्षम हैं। बारिश में भीगने या पानी में गिरने पर भी खराब होने का कोई भी डर नहीं। दिखने में आकर्षक और वाज़िब दाम ।

पता
२५/३ गौरव मार्किट
वैशाली नगर ,जयपुर
दूरभाष- ९००१२५####