Atomic Energy Central School No 4 Rawatbhata

CLASS 10 - ENGLISH

10 English

Time Allowed: 1 hour and 30 minutes **Maximum Marks: 40**

Section A

1. How, according to Mandela, had apartheid policy affected South Africa? **[2]**
2. Nelson Mandela described 'twin obligations' for a man. Do you agree with these obligations? Do you think that every person should fulfill these obligations in real life? **[2]**
3. A pilot is lost in the storm clouds. Did he arrives safely? Who helped him? **[2]**
4. Why did the young seagull's mother come near to him with a piece of fish? **[2]**
5. How is Wanda seen differently by the other girls? How do they treat her? **[2]**
6. Discuss the feelings of Peggy and Maddie on entering the classroom after the drawing competition. **[2]**
7. **Read the passages given below and answer the questions that follow them: (8 marks)** **[8]**

The introduction of films in the late nineteenth century was truly a revolution in the field of entertainment. Since then, many things have changed. From the silent era to now, an era of dizzying realistic animation and sound effects, every aspect associated with film-making has witnessed a multitude of changes. There are some limitations a filmmaker has to observe while making a film which prevents a film from being an exact reflection of society.

The first and the most important aspect that a filmmaker has to care for is that his or her film should be a commercially viable one. This simple requirement puts unlimited constraints on a filmmaker as he can only make films that he can sell to the common people who watch films for the sake of entertainment.

Sometimes unnecessary controversies are rigged by filmmakers to arouse interest and generate publicity for their films and a syrup of sex and violence is poured unnecessarily onto the initial plot line to make a film more spicy for the people we refer to as "front row audience" in a cinema hall. Another thing that is required to make a film based on real or historical themes commercially successful is making some changes in the storyline itself. Hence, the film ceases to be an exact reflection of a historical society. Take for example the recent controversy over the film Jodhaa Akbar. Even the film's director Ashutosh Gowariker has accepted that 70% of the film is not based on history. Now a question arises can a film that is 70% fiction be considered a reflection of any society of any era? Another good example of this would be the film Hotel Rwanda based on the Hutu-Tutsi conflict in Rwanda. The film has veered away from the mainly autobiographical storyline at many places. In the words of legendary Japanese filmmaker Akira Kurosawa, "In all my films, there's three or maybe four minutes of real cinema."

a. What was the great revolution in the field of entertainment in the late nineteenth century?
b. What is the first limitation of a filmmaker?
c. What is the main aim of a filmmaker?
d. The filmmaker can only make films that he can sell to the common people. (True/False)

e. Sometimes they create unnecessary controversies to arouse interest and generate publicity. (True/False)

f. How does a filmmaker charm the front row audience?

(a) by adding good scenes

(b) by adding good songs

(c) by adding glamour and violence

(d) by adding innovative ideas

g. Why is a filmmaker forced to change the real or historical storyline?

h. Who is Akira Kurosawa?

8. What were Mandela's opinions about the first and last decades of the twentieth century? Why did he say on the day of the inauguration that he was overwhelmed with a sense of history? **[8]**

9. What made Maddie feel uncomfortable and uneasy when Peggy and other girls made fun of Wanda Petronski? **[8]**

Section B

10. **Read the lines given below and answer the questions that follow:** **[4]**

I think I could turn and live with animals, they are
So placid and self-contain'd
I stand and look at them long and long.

a. Name the poem and the poet.

b. What does the poet say about animals?

c. Trace a word from the extract that means 'serene'.

d. The poet looks at the animals _____

परमाणु ऊर्जा केन्द्रीय विद्यालय-4, रावतभाटा

ऑनलाइन वर्णनात्मक परीक्षा - 2020-21

कक्षा-दसवीँ **समय-** **1.30 घंटा**

विषय- हिंदी **पूर्णांक - 40**

1.निम्नलिखित गद्यांश को पढकर नीचे दिए गए प्रश्नों के उत्तर लिखिए-

भारतीय नारी की हालत बड़ी विचित्र है| संस्कारों ने उसे पक्षाघात के रोगी के समान जड़कर दिया है| इसके अतिरिक्त अपनी सीमातीत सहिष्णुता की प्रशंसा सुनते-सुनते वह इसे जीवन का जरूरी अंग समझने लगी है|

जीवन को पूर्ण-से-पूर्ण रूप तक विकसित कर देने योग्य सिद्धांत उसके पास है, परन्तु न परिस्थिति विशेष में उनका उचित उपयोग ही वह जानती है और न उनका अर्थ ही वह समझती है; जीवन और सिद्धांत दोनों ही भार होकर उसे वैसे ही संज्ञाहीन किये दे रहे हैं, जैसे ग्रीष्म की कड़ी धूप में शीतकाल के भारी और गरम वस्त्र पहने हुए पथिक और उसका परिधान| जीवन को अपने सांचे में ढालकर सुंदर बनाने सिद्धांतों ने ही अपने विपरीत उपयोग से भार बनकर उसके सुन्दर सुकुमार जीवन को उसी प्रकार कुरूप बना डाला है जिस प्रकार हाथ का सुन्दर कंगन चरण में पहना जाने पर उसकी वृद्धि का रोककर उसको कुरूप बना देता है |

क. भारतीय नारी को किसने पक्षाघात के रोगी के समान जड़ कर दिया है? 1

ख. भारतीय नारी किस बात को जीवन का आवश्यक अंग समझने लगी है? 1

ग. लेखक के अनुसार भारतीय नारी के पास कौन-सी योग्यता है? 1

घ. भारतीय नारी को जीवन और सिद्धांतों ने भारहीन क्यों कर दिया है? 1

ङ. जीवन को सुंदर सांचे में ढालने वाले सिद्धांतों ने नारी के जीवन को कुरूप क्यों बना दिया है? 1

2. निम्नलिखित प्रश्नों के उत्तर दीजिए- **2x4=8**

क. लेखक सेकंड क्लास के डिब्बे में यात्रा क्यों कर रहा था?

ख. लेखक को नवाब साहब के किन हाव-भावों से महसूस हुआ कि वे उनसे बातचीत करने के लिए तनिक भी उत्सुक नहीं हैं?

ग. लेखक को परिमल के दिन क्यों याद आते हैं?

घ. फादर की उपस्थिति देवदार की छाया जैसी क्यों लगती थी?

3. निम्नलिखित गद्यांश को पढकर नीचे दिए गए प्रश्नों के उत्तर लिखिए-

उनकी चिंता हिंदी को राष्ट्रभाषा के रूप में देखने की चिंता थी| हर मंच में इसकी तकलीफ बयान करते, इसके लिए अकाट्य तर्क देते| बस इसी एक सवाल पर उन्हें परेशान देखा है और हिंदी वालों द्वारा ही हिंदी की उपेक्षा पर दुःख करते उन्हें पाया है | घर परिवार के बारें में, निजी दुःख तकलीफ के बारे में उनका स्वाभाव था और बड़े-से-बड़े दुःख में उनके मुख से सांत्वना के जादू भरे दो शब्द सुनना एक ऐसी रोशनी से भर देता था जो किसी गहरी तपस्या से जनमती है|

क.फादर बुल्के को किसकी और क्यों चिंता रहती थी? इसे वे कैसे व्यक्त करते थे? 2

ख. फादर बुल्के के किस स्वाभाव की विशेषता का लेखक ने यहाँ वर्णन किया है? 2

ग. फादर बुल्के के सांत्वना भरे शब्द कैसे होते थे? 1

4. निम्नलिखित प्रश्नों के उत्तर दीजिए- **2x4=8**

क.'अट नहीं रही है' कविता में किस ऋतू का वर्णन है ? और वह क्या कारण है कि उससे आँखें नहीं हट रही हैं

ख. 'पत्तों से लदी डाल, कहीं हरी, कहीं लाल' पंक्ति का अर्थ स्पष्ट कीजिये|

ग. कवि बादलों से फुहार, रिमझिम या बरसने कि जगह गरजने के लिए क्यों कहता है ? 'उत्साह' कविता के आधार पर स्पष्ट कीजिए|

घ. कवि ने बादलों की सुंदरता का बखान किस तरह किया है? 'उत्साह' कविता के आधार पर वर्णन कीजिए?

5. निर्देशानुसार उत्तर लिखिए- **1x4=4**

क. अद्यापक चाहते हैं कि उनके शिष्य अच्छे बने| (सरल वाक्य में परिवर्तित कीजिए)

ख. राम तिवारी जी के घर हिंदी पढ़ने गया है| (मिश्र वाक्य में परिवर्तित कीजिए)

ग . जो भीख मांग रहा था, वह कहाँ चला गया| (वाक्य का भेद बताइए)

घ. मोहन फल खरीदने के लिए बाजार गया| (संयुक्त वाक्य में परिवर्तित कीजिए)

6. निम्नलिखित प्रश्नों में से किसी एक प्रश्न का उत्तर दीजिए- **5**

'माता का अंचल' पाठ में ग्रामीण परिवेश के चित्रण को दर्शाते हुए पाठ के आधार पर शहरी और ग्रामीण जीवन के अंतर को स्पष्ट कीजिए|

अथवा

'जार्ज पंचम की नाक' पाठ के आधार पर बताइये कि जार्ज पंचम की नाक एकाएक गायब होने के बाद सरकारी तंत्र की क्या प्रतिक्रिया थी तथा यह सरकारी तंत्र की किस चिंता को दर्शाती है

7. नियमित व्यायाम का महत्व बताते हुए मित्र को पत्र लिखिए| **5**

Atomic Energy Central School No 4 Rawatbhata

CLASS 10 - MATHEMATICS

Descriptive

Time Allowed: 1 hour and 30 minutes **Maximum Marks: 40**

Section A

1. The degree of the polynomial $5x^3 - 3x^2 - x + \sqrt{2}$ is **[1]**

   a) 2 b) 3

   c) 1 d) 0

2. If one zero of the quadratic polynomial $x^2 + 3x + k$ is 2, then the value of 'k' is **[1]**

   a) – 10 b) – 5

   c) 10 d) 5

3. A system of linear equations is said to be consistent, if it has **[1]**

   a) two solutions b) one or many solutions

   c) no solution d) exactly one solution

4. The larger of the two supplementary angles exceeds the smaller by 18^o. The smaller angle is **[1]**

   a) 99^o b) 81^o

   c) 100^o d) 180^o

5. A quadratic equation $ax^2 + bx + c = 0$ has non-real roots, if **[1]**

   a) $b^2 - 4ac > 0$ b) $b^2 - 4ac = 0$

   c) $b^2 - 4ac < 0$ d) $b^2 - ac = 0$

6. $x^2 - 6ax = -6a^2$ discriminant of the given equation is _____ **[1]**

   a) $12a^2$ b) $4a^2$

   c) $6a^2$ d) $2a^2$

7. If k, 2k – 1 and 2k + 1 are three consecutive terms of an AP, the value of k is **[1]**

   a) 3 b) 6

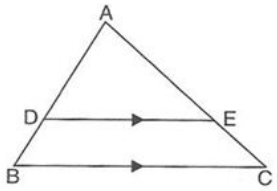
   c) -3 d) -2

8. The 4th term from the end of an AP - 11, - 8, - 5, ..., 49 is **[1]**

   a) 40 b) 37

   c) 43 d) 58

9. In the given figure, $DE||BC$. AB = 15, cm, BD = 6cm, AC = 25 cm, then AE is equal to **[1]**



a) 15 cm. b) 18 cm.

c) 20 cm. d) 10 cm.

10. In $\triangle$ABC, it is given that AB = 9 cm, BC = 6 cm and CA = 7.5 cm. Also, $\triangle$DEF is given such that EF = 8 cm and $\triangle$DEF ~ $\triangle$ABC. Then, perimeter of $\triangle$DEF is **[1]**

a) 30 cm b) 22.5 cm

c) 27 cm d) 25 cm

Section B

11. Match the column: **[2]**

Sum and product of Zeroes	Quadratic Polynomial
(a) Sum = 6, Product = 7	(i) $x^2 + 5x + 5$
(b) Sum = $-\frac{1}{2}$, Product = $\frac{1}{2}$	(ii) $3x^2 - 7x + 8$
(c) Sum = -5, Product = 5	(iii) 2x + x + 1
(d) Sum = $\frac{7}{3}$, Product = $\frac{8}{3}$	(iv) $x^2 - 6x + 7$

12. Match the following table: **[2]**

Polynomial	Degree
(a) $7x^6 + 5x^5 + 3x^4 - 4x + 2$	(i) 2
(b) $2z^2 + 4z - 6$	(ii) 10
(c) $4y^3 - 2y + 5$	(iii) 6
(d) $x^{10} - x^5 + 4$	(iv) 3

13. Solve the quadratic equation by factorization: **[2]**

$\frac{1}{x} - \frac{1}{x-2} = 3, x \neq 0, 2$

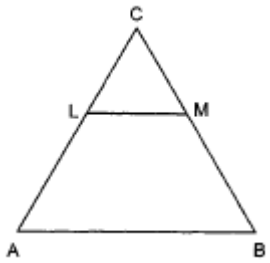
Section C

14. The denominator of a fraction is 4 more than twice the numerator. When both the numerator and denominator are decreased by 6, then the denominator becomes 12 times the numerator. Determine the fraction. **[3]**

15. Find the roots of the equation $4x^2 + 4bx - (a^2 - b^2) = 0$ by the method of completing the square. **[3]**

16. Find the sum of the first 40 positive integers divisible by 6. **[3]**

17. In Fig. $LM \parallel AB$. If AL = x - 3, AC = 2x, BM = x - 2 and BC = 2x + 3, find the value of x. **[3]**



Section D

18. Solve the following system of linear equations graphically: **[4]**

    x - y = 1

    2x + y = 8

    Shade the area bounded by these two lines and y-axis. Also, determine this area.

19. Find the value of x, if we have, 2 + 6 + 10 + ... + x = 1800. **[4]**

20. In an equilateral triangle with side a, prove that **[4]**

    I. altitude $= \frac{\sqrt{3}}{2}a$

    II. area $= \frac{\sqrt{3}}{4}a^2$

Atomic Energy Central School No 4 Rawatbhata

CLASS 10 - SCIENCE

Online Descriptive Type Test -1(2020-21)

Time Allowed: 1 hour and 30 minutes **Maximum Marks: 40**

Section A- Physics

1. Which of the following is/are good conductor(s) of electricity? **[1]**

   a) Mica, Quartz b) Metals, Mica

   c) Metals, Quartz d) Metals, Rubber

2. The resistivity of a metallic wire depends on: **[1]**

   a) Its shape b) Its thickness

   c) Nature of material d) Its length

3. You have two metallic wires of resistances 6Ω and 3Ω. How will you connect these wires to get an effective resistance of 2Ω? **[1]**

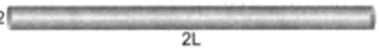
4. a. List the factors on which the resistance of a conductor in the shape of a wire depends. **[3]**
   b. Why are metals good conductors of electricity whereas glass is a bad conductor of electricity? Give reason.
   c. Why are alloys commonly used in electrical heating devices? Give reason.

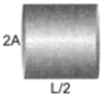
   OR

   A potential difference of 220 V is applied across a resistance of 440 Ω in an electric ion.
   (i) Find the current.
   (ii) Heat energy produced is 30s.

5. Figure (a), (b) and (c) show three cylindrical copper conductors along with their face areas and length. Which of the conductors will have highest resistance and why? **[3]**

   i. 

   ii. 

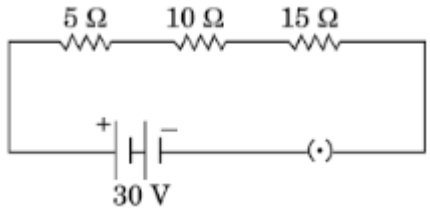
   iii. 

6. i. The potential difference between two points in an electric circuit is 1 V. What does it mean? Name a device that helps to measure the potential difference across a conductor. **[5]**
   ii. Why does the connecting cord of an electric heater not glow while the heating element does?
   iii. Electrical resistivities of silver and nicrome at 20^{o} C are $1.6\times10^{-6}$and 1.0×10^{-4},then explain why silver is used as good conductor and nicrome is used in making filaments ?

   OR

   a. How will you infer with the help of an experiment that the same current flows through every part of a circuit containing three resistors in series connected to a battery?

b. Consider the given circuit and find the current flowing in the circuit and potential difference across the 15 Ω resistors when the circuit is closed.



Section B - Chemistry

7. Generally, non-metals are not lustrous. Which of the following nonmetal is lustrous? **[1]**

a) Iodine b) Nitrogen

c) Sulphur d) Oxygen

8. Generally, non-metals are not conductors of electricity. Which of the following is a good conductor of electricity? **[1]**

a) Fullerene b) Sulphur

c) Diamond d) Graphite

9. Name one non-metal and one metal which are in liquid state at room temperature. **[1]**

10. What are amphoteric oxides? Give two examples of amphoteric oxides. **[1]**

11. What are the differences between Metals and Non-metals on the basis of ductility, malleability and sonority? **[1]**

12. A student was given Mn, Zn, Ag, Fe and Mg metals. Identify which of them **[3]**

i. will react with 5% dil. HNO3

ii. will react only with steam to give H2(g)

iii will not react with acid.

OR

An element A burns with golden flame in air. It reacts with another element B, atomic number 17 to give a product C. An aqueous solution of product C on electrolysis gives a compound D and liberates hydrogen. Identify A, B, C and D.

13. A student is added few piece of aluminum metal in the test tube A & B containing aquous solution of FeSO4 and CuSO4. In the second part of the experiment she added iron metal to another test tube C& D containing aquous solution of Al2(SO4)3 and CuSO4. **[5]**

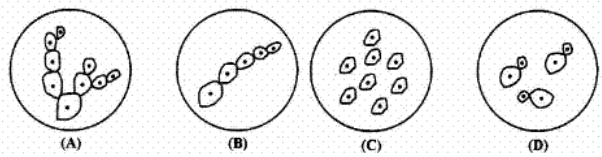
a.In which test tube/ tubes, will she observe colour change,

b.On the basis of this experiment, state which one is the most reactive metal and why?

c. Arrange these metals in increasing order of their reactivity .

Section C - Biology

14. The following are the sketches made by some students. The sketch not illustrative of budding in yeast is : **[1]**



a) B b) D

c) C d) A

15. What happens when Planaria gets cut into two pieces? **[1]**

16. What changes are observed in the uterus subsequent to implantation of young embryo? **[3]**

17. What are advantages of sexual reproduction over asexual reproduction? **[3]**

OR

What is the importance of DNA copying in reproduction?

18. a. What are Sexually Transmitted Diseases (STD's)? List two viral and two bacterial STDs. **[5]**

b. What is contraception? List three reasons for adopting contraceptive methods.

Atomic Energy Central School No 4 Rawatbhata

CLASS 10 - SOCIAL SCIENCE

Online Descriptive Type Test -1(2020-21)

Time Allowed: 1 hour and 30 minutes **Maximum Marks: 40**

Section A

1. Arrange the following in the correct sequence: **[1]**

   i. Champaran Satyagraha
   ii. Kheda Satyagraha
   iii. Ahmedabad Satyagraha
   iv. Rowlatt Act.

   a) iv, iii, ii, i
   b) iv, i, ii, iii
   c) i, ii, iii, iv
   d) i, iii, ii, iv

2. Gandhiji began fast unto death when Dr. B.R. Ambedkar demanded separate electorate for dalits because: **[1]**

   a) With separate electrorates, dalits would gain respect in society
   b) Separate electorates would create division in the society
   c) Separate electrorates would slow down the progress of integration into society
   d) The condition of dalits would become better

3. Who said, The Swaraj would not come for a hundred years if untouchability is not eliminated? **[1]**

   a) Motilal Nehru
   b) Subhash Chandra Bose
   c) Mahatma Gandhi
   d) B.R. Ambedkar

4. In which state mining has caused severe land degradation? **[1]**

   a) Haryana
   b) Punjab
   c) Bihar
   d) Jharkhand

5. Identify the classification of resources on the basis of its origin. **[1]**

   a) exhaustible and non-exhaustible
   b) renewable and non renewable
   c) individual and community
   d) biotic and abiotic

6. Which one of the following method is used to break up the force of the wind? **[1]**

   a) Multiple cropping
   b) Strip cropping
   c) Contour ploughing
   d) Terrace farming

7. Panchayats and Municipalities are under the direct control of which government? **[1]**

   a) Coalition
   b) Centre
   c) State
   d) Opposition

8. Panch, a president or sarpanch are _____ elected by all the adult population living in that ward. **[1]**

a) indirectly
b) hierarchy
c) directly
d) forcefully

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

Another name for secondary sector is _____.

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

TISCO stands for _____.

Section B

11. What was the objective of Simon Commission? Why was it opposed in India? **[3]**
12. What was the Rowlatt Act? How did it affect the National Movement? **[3]**
13. What are the biotic and abiotic resources? Give some examples. **[3]**
14. Mention any four difficulties of the local government in India. **[3]**

OR

The federal system has two or more sets of Government. Justify the statement.

15. Explain how public sector contributes to the economic development of a nation. **[3]**

Section C

16. How did different social groups participate in the Civil Disobedience Movement? Explain with examples. **[5]**

OR

Mahatma Gandhi declared that Swaraj would not come for a hundred years if untouchability was not eliminated. Mention the efforts of Gandhiji to get Harijans their rights.

17. What is the relevance of the Gandhian model of resource conservation in today's world? **[5]**
18. Explain the features of third tier of the rural government. **[5]**

Solution

Class 10 - Mathematics

Descriptive

Section A

1. **(b)** 3

   Explanation: The degree of the polynomial $5x^3 - 3x^2 - x + \sqrt{2}$ is 3. The degree of a polynomial is the highest power of that polynomial.

2. **(a)** – 10

   Explanation: Given Polynomial is $p(x) = x^2 + 3x + k$

   According to question, $p(x) = 0$ (Put x = 2)

   p(2) = 0

   $\Rightarrow (2)^2 + 3 \times 2 + k = 0$

   $\Rightarrow 4 + 6 + k = 0$

   $\Rightarrow k = -10$

3. **(b)** one or many solutions

   Explanation: A system of linear equations is said to be consistent if it has at least one solution or can have many solutions. If a consistent system has an infinite number of solutions, it is dependent. When you graph the equations, both equations represent the same line. If a system has no solution, it is said to be inconsistent. The graphs of the lines do not intersect, so the graphs are parallel and there is no solution.

4. **(b)** 81^o

   Explanation: Let larger of the two supplementary angles be x and smaller be y

   According to question, x + y = 180^o ... (i)

   And x = y + 18^o

   $\Rightarrow$ x - y = 18^o ... (ii)

   Subtracting eq. (ii) from eq. (i),

   we get 2y = 162^o

   $\Rightarrow$ y = 81^o

   Therefore, the smaller angle is 81^o

   Putting the value of y in equation 1

   x + 81^o = 180^o

   x = 180^o - 81^o

   x = 99^o, which is a larger angle.

5. **(c)** b^2- 4ac < 0

   Explanation: The roots of the quadratic equation $ax^2 + bx + c = 0$, In this formula the term b^2 - 4ac is called the discriminant. If b^2 - 4ac = 0, so the equation has a single repeated root. If b^2 - 4ac > 0, the equation has two real roots. If b^2- 4ac < 0, the equation has two complex roots.

6. **(a)** $12a^2$

   Explanation: x^2 - 6ax + $6a^2$ = 0

   D = b^2 - 4ac

   D = $(-6a)^2$ - 4 $\times$ 1 $\times$ $6a^2$

   D = $36a^2$ - $24a^2$

   D = $12a^2$

7. **(a)** 3

   Explanation: (2k – 1) – k = (2k + 1) – (2k - 1)

2k – 1 – k = 2

$\Rightarrow$ k = 3

8. **(a)** 40

Explanation: First term, a = - 11

Common difference, a_2 - a = - 8 - (- 11) = 3

Let the last term be a_n

a_n = a + (n - 1)d

49 = - 11 + (n - 1)3

49 + 11 = (n - 1)3

n - 1 = 60/3

n - 1 = 20

n = 21

4^{th} term from last will be 18^{th} term from starting

And a_{18} = a + 17d

= - 11 + 17(3)

= 40

Alternatively we can use the direct formula

$a_n = l$ - (n - 1)d

where, a_n = nth term from last of an AP

l = last term

d = common difference

9. **(a)** 15 cm.

Explanation: Since $DE||BC$, then using Thales theorem,

$\Rightarrow \frac{AB}{DB} = \frac{AC}{EC}$

$\Rightarrow \frac{15}{6} = \frac{25}{EC}$

$\Rightarrow$ EC = 10 cm

Now, AE = AC – EC = 25 – 10 = 15 cm

10. **(a)** 30 cm

Explanation: $\triangle$DEF $\sim$ $\triangle$ABC

$\therefore \frac{DE}{AB} = \frac{EF}{BC} = \frac{DF}{AC} = \frac{DE+EF+DF}{AB+BC+AC}$

$\Rightarrow \frac{DE}{9} = \frac{8}{6} = \frac{DF}{7.5}$

$\frac{DE}{9} = \frac{8}{6} \Rightarrow DE = \frac{8\times9}{6} = 12\text{cm}$

$\frac{DF}{7.5} = \frac{8}{6} \Rightarrow DF = \frac{7.5\times8}{6} = 10\text{cm}$

Perimeter of $\triangle$DEF = DE + EF + DF

= 12 + 8 + 10 = 30 cm

Section B

11. (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
12. (a) - (iii), (b) - (i), (c) - (iv), (d) - (ii)
13. We have the following equation,

$\frac{1}{x} - \frac{1}{x-2} = 3$

Taking LCM

$\Rightarrow \frac{x-2-x}{x(x-2)} = 3$

$\Rightarrow$ -2 = 3x (x - 2)

$\Rightarrow$ 3x(x - 2) + 2 = 0

$\Rightarrow 3x^2$ - 6x + 2 = 0

Factorise the equation

$\Rightarrow 3x^2 - \left[\left(3+\sqrt{3}\right)x + \left(3-\sqrt{3}\right)x\right] + 2 = 0$

$\Rightarrow 3x^2 - \left(3x+\sqrt{3}\right)x - \left(3-\sqrt{3}\right)x + 2 = 0$

$\Rightarrow 3x^2 - \sqrt{3}\left(\sqrt{3}+1\right)x - \sqrt{3}\left(\sqrt{3}-1\right)x + 1\left(\sqrt{3}+1\right)\left(\sqrt{3}-1\right) = 0$

$\Rightarrow \sqrt{3}x\left(\sqrt{3}x-\left(\sqrt{3}+1\right)\right)-\left(\sqrt{3}-1\right)\left(\sqrt{3}-\left(\sqrt{3}+1\right)\right)=0$

$\Rightarrow \left[\sqrt{3}x-\left(\sqrt{3}-1\right)\right]\left[\sqrt{3}x-\left(\sqrt{3}+1\right)\right]=0$

$x=\frac{\sqrt{3}-1}{\sqrt{3}}$ or $\frac{\sqrt{3}+1}{\sqrt{3}}$

$x=\frac{3-\sqrt{3}}{3}$ or $\frac{3+\sqrt{3}}{3}$

Section C

14. Let the numerator and denominator of the fraction be x and y respectively.

Then,

Fraction= $\frac{x}{y}$

It is given that

Denominator = 2 (Numerator) + 4

$\Rightarrow y=2x+4$

$\Rightarrow 2x-y+4=0$

According to the given condition, we have

$y-6=12(x-6)$

$\Rightarrow y-6=12x-72$

$\Rightarrow 12x-y-66=0$

Thus, we have the following system of equations

2x - y + 4 =0 .....(i)

12x - y -66 =0 .....(ii)

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

10x - 70 =0 $\Rightarrow$ x = 7

Putting x = 7 in equation (i), we get

14 - y + 4 =0 $\Rightarrow$ y = 18

Hence, required fraction =$\frac{7}{18}$.

15. We have,

$4x^2 + 4bx - (a^2 - b^2) = 0$

$\Rightarrow x^2+bx-\left(\frac{a^2-b^2}{4}\right)=0$

$\Rightarrow x^2+2\left(\frac{b}{2}\right)x=\frac{a^2-b^2}{4}$

$\Rightarrow x^2+2\left(\frac{b}{2}\right)x+\left(\frac{b}{2}\right)^2=\frac{a^2-b^2}{4}+\left(\frac{b}{2}\right)^2$

$\Rightarrow \left(x+\frac{b}{2}\right)^2=\frac{a^2}{4}$

$\Rightarrow x+\frac{b}{2}=\pm\frac{a}{2}$

$\Rightarrow x=\frac{-b}{2}\pm\frac{a}{2} \Rightarrow x=\frac{-b-a}{2},\frac{-b+a}{2}$

Hence, the roots are $-\left(\frac{a+b}{2}\right)$ and $\left(\frac{a-b}{2}\right)$.

16. The first 40 positive integers divisible by 6 are 6, 12, 18, 24, ...

Here, $a_2 - a_1 = 12 - 6 = 6$

$a_3 - a_2 = 18 - 12 = 6$

$a_4 - a_3 = 24 - 18 = 6$

i.e.$a_{k+1}-a_k$ is the same every time.

So, the above list of numbers form an AP.

Here, a = 6

d = 6

n = 40

$\therefore$ Sum of the first 40 positive integers = S_{40}

$=\frac{40}{2}[2a+(40-1)d]$ .....$\{\because S_n=\frac{n}{2}[2a+(n-1)d]\}$

= 20[2a + 39d]

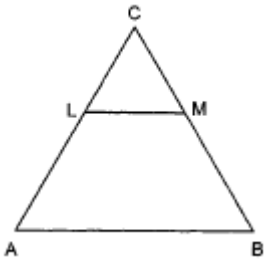
$=(20)[2\times 6+39\times 6]$

= (20) (246)

= 4920

17. We have, AL = x - 3, AC = 2x, BM = x - 2 and BC = 2x + 3, and we need to find the value of x.

In ΔABC, we have



$LM||AB$

$\therefore \quad \frac{AL}{LC} = \frac{BM}{MC}$ [By Thaley's Theorem]

$\Rightarrow \quad \frac{AL}{AC-AL} = \frac{BM}{BC-BM}$

$\Rightarrow \quad \frac{x-3}{2x-(x-3)} = \frac{x-2}{(2x+3)-(x-2)}$

$\Rightarrow \quad \frac{x-3}{x+3} = \frac{x-2}{x+5}$

$\Rightarrow$ (x - 3) (x + 5) = (x - 2) (x + 3)

$\Rightarrow x^2 + 2x - 15 = x^2 + x - 6$

$\Rightarrow$ x = 9

Section D

18. Given system of equations are:

$x - y = 1$

$2x + y = 8$

Graph of the equation $x - y = 1$:

We have,

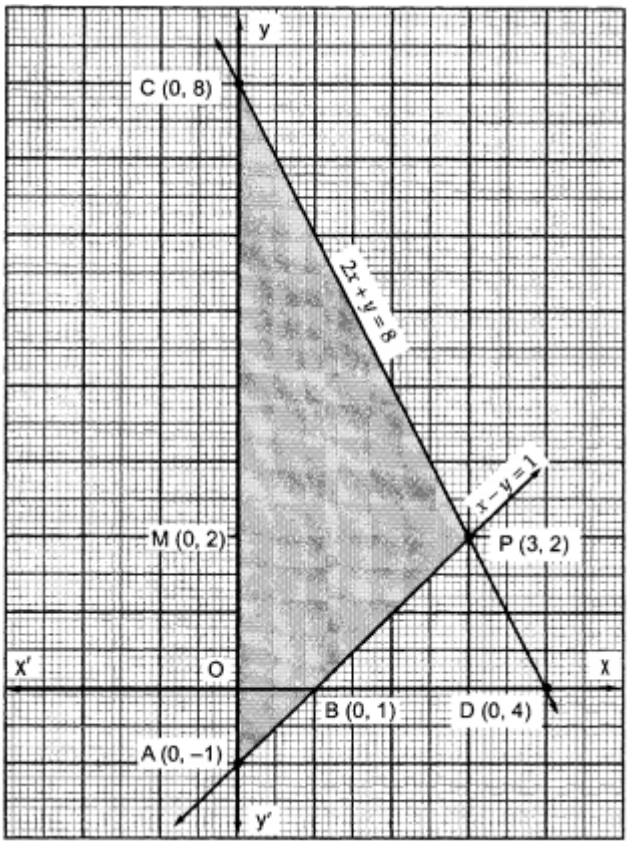
x - y = 1 $\Rightarrow$ y = x - 1 and x = y + 1

Putting x = 0, we get y = -1

Putting y = 0, we get x = 1

Thus, we have the following table for the points on the line $x - y = 1$:

x	0	1
y	-1	0



Graph of the equation $2x + y = 8$:

We have,

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

Putting x = 0, we get y = 8

Putting y = 0, we get x = 4

Thus, we have the following table giving two points on the line represented by the equation 2x + y = 8.

x	0	4
y	8	0

Clearly, the two lines intersect at P (3,2). The area enclosed by the lines represented by the given equations and the y-axis is shaded in Fig.

Now, Required area= Area of the shaded region

$\Rightarrow$ Required area = Area of ΔPAC

$\Rightarrow \quad \text{Required area } = \frac{1}{2}(\text{ Base } \times \text{ Height })$

$\Rightarrow \quad \text{Required area } = \frac{1}{2}(AC \times PM)$

$\Rightarrow \quad \text{Required area } = \frac{1}{2}(9 \times 3) \text{ sq.units}$ [$\because$ PM = x-coordinate of P = 3]

= 13.5 sq. units.

19. We have,

2 + 6 + 10 + ... x = 1800

Here ; 2, 6, 10 , ...x are in arithematic progression where, a = 2 is first term and d = 4 is common difference.

Using formula to find the number of terms in AP.

x = a + (n-1)d

x = 2 + (n - 1) .4

x = 2 + 4n - 4

x = 4n - 2

x + 2 = 4n

n = $\frac{(x+2)}{4}$

Now, using formula, $S_n = \frac{n}{2}$ (a + T_n)

Here, S_n = 1800, n = $\frac{x+2}{4}$, a = 2, T_n = x

$1800 = \frac{\left(\frac{x+2}{4}\right)}{2}$ [2 + x]

$1800 = \frac{x+2}{8} \times (x + 2)$

$1800 \times 8 = (x + 2)^2$

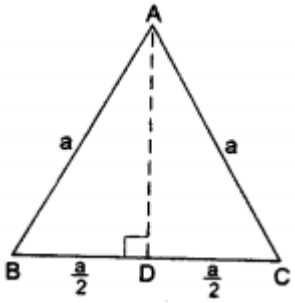
$14400 = (x + 2)^2$

$(120)^2 = (x + 2)^2$

$x + 2 = 120 \Rightarrow x = 118$

Hence, value of x = 118

20.



Let $\triangle ABC$ be an equilateral triangle with side a.

Then, AB = AC = BC = a.

Draw $AD \perp BC$.

In $\triangle ADB$ and $\triangle ADC$, we have

AB = AC (given), $\angle B = \angle C = 60^\circ$

and $\angle ADB = \angle ADC = 90^\circ$

$\therefore \quad \triangle ADB \cong \triangle ADC$

$\therefore \quad BD = DC = \frac{a}{2}$

i. From right $\triangle ADB$, we have

$AB^2 = AD^2 + BD^2$ [by Pythagoras' theorem]

$\Rightarrow \quad AD = \sqrt{AB^2 - BD^2}$

$= \sqrt{a^2 - \left(\frac{a}{2}\right)^2} = \sqrt{a^2 - \frac{a^2}{4}} = \sqrt{\frac{3a^2}{4}} = \frac{\sqrt{3}}{2}a$

Hence, altitude $= \frac{\sqrt{3}}{2}a$.

ii. Area of $\triangle ABC = \frac{1}{2} \times$ base $\times$ altitude $= \left(\frac{1}{2} \times BC \times AD\right)$

$= \left(\frac{1}{2} \times a \times \frac{\sqrt{3}}{2}a\right)$ [using (i)]

$= \left(\frac{\sqrt{3}}{4}a^2\right)$ sq units.

Hence, area $(\triangle ABC) = \left(\frac{\sqrt{3}}{4}a^2\right)$ sq. units.

Solution

Class 10 - Science

Online Descriptive Type Test -1(2020-21)

Section A- Physics

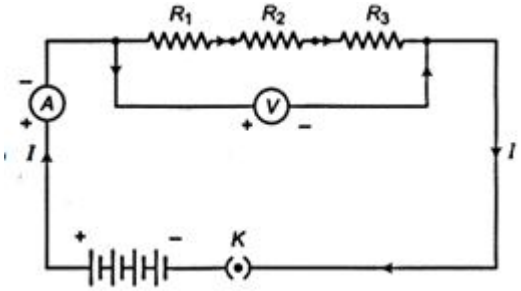
1. **(c)** Metals, Quartz
   Explanation: Metals are electropositive in nature and are, therefore, good conductors of electricity. Quartz is a chemical compound consisting of one part silicon and two parts oxygen (SiO_2). It is the most abundant mineral found in Earth surface. Its unique properties make it one of the most useful natural substances. It has electrical properties and heat resistance that make it valuable in electronic products. Mica has superior electrical properties as an insulator. Rubber is also an insulator.
2. **(c)** Nature of material
   Explanation: Resistivity is 'an intrinsic property of a material' that quantifies how strongly a given material opposes the flow of electric current. The resistivity of a metallic wire depends on the nature of the material. It does not depend on the physical dimensions (length, thickness, shape, etc.) of the metallic wire.
3. When the equivalent resistance of connecting wire is low then, wire should be connected in parallel combination. So equivalent resistance can be obtained by the given formula :
   $\therefore \frac{1}{R_{\text{eff}}} = \frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{6} + \frac{1}{3} = \frac{1+2}{6} = \frac{3}{6} = \frac{1}{2}$
   $\Rightarrow \quad R_{\text{eff}} = 2\Omega$
4. a. Factors affecting resistance of a conductor:
   i. Resistance is directly proportional to the length of the conductor
   ii. Resistance is inversely proportional to the area of cross-section of the conductor
   b. Metals are a good conductor of electricity because they have low resistivity and also have free electrons. Glass is a bad conductor of electricity because it has high resistivity and have no free electrons.
   c. Alloys are commonly used in electrical heating devices because they have high resistivity and high melting point. They do not get oxidized(or burn) readily at high temperatures.

   OR

   Here V = 220 volts; R = 440Ω
   Now $I = \frac{V}{R} = \frac{220}{440} = 0.5\ A$
   Heat energy produced in 30s = $\frac{V^2}{R}T = \frac{(220)^2 \times 30}{440} = 3.300J$
5. $\because$ All of them are made of copper,the resisvity remains same. Let the resistivity be ρ
   i. $R_a = \rho\frac{L}{A}$
   ii. $R_b = \rho\left(\frac{2L}{A/2}\right)$
   = $\rho\left(\frac{4L}{A}\right)$
   = $4R_a$
   iii. $R_c = \rho\left(\frac{L}{2(2A)}\right)$ = $\frac{1}{4}\rho\left(\frac{L}{A}\right)$ = $\frac{1}{4}R_a$
   $\therefore$ Conductor(b) has the highest resistance. It has the largest length and the smallest area of cross-section compared to other two. The following conclusion is also proved mathematically.
6. i. It means that if a charge of one C is moved from one point to the other, then one J of work is done. The potential difference is measured by an instrument called the voltmeter.
   ii. The electric power is given by
   P = I^2 R
   The resistance of the heating element is very high, resistance of connecting cord is very low. Thus, negligible heat generates in the connecting cord and it does not glow.
   iii. Based on the resistivity, reason can be explained given below :
   a. Silver is a better conductor due to its lower resistivity.
   b. Nichrome should be used in electrical heating devices due to very high resistivity.

OR

a. (i) Join the three resistors R_1, R_2 and R_3 of different values in series connected to a battery of V volt.
(ii) Connect them with battery, an ammeter (A) and plug key (K).
(iii) Plug the key and note the ammeter reading
(iv) Change the position of the ammeter to anywhere in between the resistors and note the ammeter reading each time.
(v) The ammeter reading will remain the same every time.
Therefore when resistors are connected in series same current flows through all resistors.



b. Given: $R_1 = 5\Omega$, $R_2 = 10\Omega$, $R_3 = 15\Omega$ and V = 30V
Total resistance of the circuit, $R = R_1 + R_2 + R_3$
$R = 5 + 10 + 15$
$R = 30\ \Omega$
Potential difference across the circuit, by ohm's law,
V = IR
or $I = \frac{V}{R} = \frac{30}{30} = 1A$
Potential difference across 15 ohm Resistor = 1 × 15 = 15 volt

Section B - Chemistry

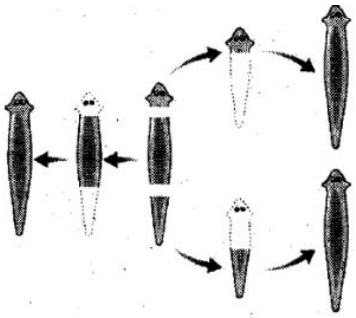
7. **(a)** Iodine
Explanation: Lustre means to shine. Shining metals are also called lustrous metal. For example, gold. Non-metals such as sulphur, oxygen, nitrogen are non-lustrous but iodine is a greyish black solid and crystals have a metallic lustre.
8. **(d)** Graphite
Explanation: Graphite is a good conductor of electricity and heat. Graphite has weak intermolecular forces between its layers. Hence it has de-localized electrons. As electrons are free to move through its structure, it conducts heat and is a good conductor of electricity.
9. Liquid metal : Mercury
Liquid non-metal : Bromine.
10. **Amphoteric oxides :** Oxides of metals which have both acidic as well as basic behaviour are known as amphoteric oxides. Such metallic oxides react with acids as well as base to produce salt and water. Examples of Amphoteric oxides are aluminium oxide (Al_2O_3) and zinc oxide (ZnO).
11. ---
12. ---

OR

---
13. ---

Section C - Biology

14. **(c)** C
Explanation: Buds appear as protuberance. In C all the cells are separate and single.
15. Planaria is a type of flatworm. It has the amazing capacity to regenerate its lost body. When Planaria gets cut into two pieces then it's every piece grows into a complete organism due to the regeneration ability of Planaria.



16. The uterine lining is thickened every month to support the growing embryo. Followed by fertilization, placenta is developed which serve to provide nutrition and oxygen to developing embryo from the mother's blood**.** It is a disc embedded in the uterine wall and contains villi on the embryo's side of the tissue while blood spaces surrounding the villi are present on mother’s side. Waste products of developing embryo are removed by transferring them into the mother's blood through the placenta.
17. **Advantages of sexual reproduction:**
    Sexual reproduction has a dual significance for the species.
    1) It results in multiplication and perpetuation of the species.
    2) It contributes to evolution of the species by introducing variation in a population much more rapidly than asexual reproduction.
    3) In sexual reproduction, more variations are produced. Thus, it ensures survival of species in a population.
    4) The new formed individual has characteristics of both the parents.
    5) Variations are more viable in sexual mode than in asexual one. This is because in asexual reproduction, DNA has to function inside the inherited cellular apparatus.

    OR

    DNA (Deoxyribonucleic acid) is the genetic material found in the chromosomes, which are present in the nucleus of a cell. The DNA is the information site for making proteins and each specific type of protein leads to a specific type of body design.
    Thus, it is the DNA molecule that determines the body design of an individual. Therefore, it can be concluded that it is the DNA that gets transferred from parents to offsprings and makes them look similar.
18. a. **STD's -** Diseases which are spread by sexual contact.
        i. Viral STD's - Warts and AIDS
        ii. Bacterial STD's- Gonorrhea and Syphilis
    b. **Contraception:** The method of preventing unwanted pregnancy.
    Reasons-
        i. To prevent unwanted pregnancies.
        ii. To prevent the transfer of sexually transmitted diseases.
        iii. Proper gap between successive births.
        iv. For the better health of mother.

Solution

Class 10 - Social Science

Online Descriptive Type Test -1(2020-21)

Section A

1. **(c)** i, ii, iii, iv
   Explanation: The Champaran Satyagraha was the first local satyagraha movement started by Mahatma Gandhi on the 19th of April, 1917. The Kheda Satyagraha was initiated in the Kheda district of Bihar by Mahatma Gandhi on 11th of March in 1918. The Ahmedabad Satyagraha or the Ahmedabad Mill Strike started in Ahmedabad, Gujarat in March 1918 by Mahatma Gandhi. Rowlatt Act was passed in February 1919 by the British. The Act legalized arrest without warrant and detention of a suspect for an indefinite period without any trial.
2. **(c)** Separate electrorates would slow down the progress of integration into society
   Explanation: When Dr. B.R. Ambedkar demanded separate electorate for dalits Gandhiji began a fast unto death. He believed that separate electorates for dalits would slow down the process of their integration into society.
3. **(c)** Mahatma Gandhi
   Explanation: Not all social groups were moved by the abstract concept of swaraj. One such group was the nation's 'untouchables', who from around the 1930s had begun to call themselves Dalit or oppressed. For long the Congress had ignored the Dalits, for fear of offending the Sanatanis, the conservative high-caste Hindus. But Mahatma Gandhi declared that swaraj would not come for a hundred years if untouchability was not eliminated.
4. **(d)** Jharkhand
   Explanation: Mining ruins the land, water, forests, and air. The loss or pollution of natural resources degrades the quality of human life in these areas. The large scale mining and allied activities going on in the Jharkhand region have caused severe damage to the land resources of the area. Vast areas of rich forests and agricultural land belonging to the indigenous people have been laid waste because of haphazard mining.
5. **(d)** biotic and abiotic
   Explanation: On the Basis of Origin:
   Biotic Resources: These are obtained from the biosphere and have life such as human beings, flora, and fauna, fisheries, livestock, etc. Biotic resources affect the biosphere, community, individual of a species, population, biome. **Abiotic Resources**: All those things which are composed of non-living things are called abiotic resources. For example, rocks and metals. Abiotic resources affect the population, individual of a species, ecosystem, community, and biosphere.
6. **(b)** Strip cropping
   Explanation: Strips of grass are left to grow between the crops. This breaks up the force of the wind. This method is known as strip cropping. It is also used when a slope is too steep or when there is no alternative method of preventing soil erosion. The most common crop choices for strip cropping are closely sown crops such as hay, wheat, or other forages which are alternated with strips of row crops, such as corn, soybeans, cotton, or sugar beets.
7. **(c)** State
   Explanation: Panchayats in villages and municipalities in urban areas were set up in all the States are directly under the control of state governments.
8. **(c)** directly
   Explanation: This is a council consisting of several ward members, often called panch, and a president or sarpanch. They are directly elected by all the adult population living in that ward.
9. Industrial sector
10. Tata Iron and Steel Company Limited

Section B

11. Sir John Simon was the head of a Statutory Commission set up by the Tory government in Britain. Simon Commission was to look into the functioning of the constitutional system in India and suggest changes.
It was opposed because of the following reasons:
    a. The Commission did not have any Indian as its members.
    b. All its members were the British.
12. a. In 1919, the Rowlatt Act was passed hurriedly through the Imperial Legislative Council, despite the united opposition of the Indian members. This Act gave the British Government enormous powers to repress political activities. According to this law, political prisoners could be detained in prison without trial for two years.
    b. Mahatma Gandhi wanted non-violent civil disobedience movement against the Rowlatt Act which would start with a hartal on 6 April. Alarmed by the popular upsurge, the British administration decided to clamp down on nationalists. Local leaders were picked up from Amritsar. Gandhiji was barred from entering Delhi. On 10th April, the police in Amritsar opened fire upon a peaceful procession which led to the widespread attack on banks, post offices and railway stations. Martial law was imposed and General Dyer took command.
13. **Biotic resources:** All resources which are obtained from the biosphere and have life are known as biotic resources e.g. forests, animals, birds, etc. Mineral fuels can be regarded as biotic resources since they are derived from or products formed from decayed organic matter.
A**biotic resources:** All resources which are non-living are called abiotic resources e.g. mineral ores, petroleum, etc. These resources fall into the larger category of natural resources which occur naturally in the environment and are not created or produced by humans or human activity.
14. **Four difficulties of the local government in India are:**
    i. Most states have not transferred significant powers to the local governments.
    ii. There is a shortage of resources.
    iii. Elections are not held regularly.
    iv. The Gram Sabha are not held regularly.

OR

Federalism is a system of government in which the power is divided between a central authority and various constituent units of the country. Usually, a federation has two levels of government. One is the government for the entire country that is usually responsible for a few subjects of common national interest.
    a. One is the government for the entire country called central/union government with the subjects of national importance.
    b. The other government is at the level of provinces or states that looks after the matters of state importance. Both governments enjoy their respective powers independently.
    c. Later, the third tier of federalism was added as local government in the form of Panchayats and municipalities or provincial governments.
15. The public sector contributes to the economic development of a nation in the way explained below:
    i. **Improving infrastructure:** Economic development depends upon the creation of basic infrastructure such as power, transportation, communication, irrigation, education etc. Public sector enterprises can arrange the large investment necessary for the economy. Government runs railways, shipping, aeroplanes, metro and local trains. The government undertakes heavy spending and ensure that such facilities are available for everyone.
    ii. **Export promotion:** A large number of public enterprises have been set-up to promote India's export.
    iii. **Reduction in regional disparities:** The government sets up industries in underdeveloped regions to reduce and overcome regional disparities in development.
    iv. **Supports farmers and consumers:** The Government in India buys wheat and rice from farmers at a 'fair price'. This it stores in its godowns and sells at a lower price to consumers through ration shops. The government has to bear some of the cost. In this way, the government supports both farmers and consumers.

Section C

16. The different social groups which participated in the Civil Disobedience Movement were:
    a. In the countryside, the rich peasant communities like Patidars of Gujarat and Jats of Uttar Pradesh took an active part in the movement. They were hard hit by trade depression and falling prices and were unable

to pay the government's revenue demand. For them, Swaraj meant to struggle against high revenue.

b. As the depression continued poor peasantry found it difficult to pay the rent. They joined a variety of radical movements often led by socialists and communists.
c. Indian merchants and industrialists resented colonial policies which restricted trade. They were against imports of foreign goods. When the civil disobedience movement was first launched, they gave financial assistance and refused to buy or sell imported cloth. To organise business interests, they formed the Indian Industrial and Commercial Congress in 1920 and the Federation of the Indian Chamber of Commerce and Industries (FICCI) in 1927.
d. Some workers participated in the movement with their selective approach adopted from Gandhian ideas to protest against low wages and poor working conditions. There were strikes by railway workers and dockyard workers. Thousands of workers in Chotanagpur tin mines wore Gandhi caps and participated in protest rallies and boycott campaigns.
e. Women joined the Civil Disobedience Movement in large number. They participated in protest marches, manufactured salt and picketed foreign cloth and liquor shops.

OR

For a long period, Congress had ignored the Dalits for fear of offending the conservative high-caste Hindus. Mahatma Gandhi declared that Swaraj would not come for a hundred years if untouchability was not eliminated. He called the 'untouchables' Harijan or the children of God.

The Efforts of Gandhiji for Harijans were as follows:

- Gandhiji organised Satyagraha to secure the entry of the untouchables into temples and access to public wells, tanks, roads, and schools.
- Gandhi himself cleaned toilets to dignify the work of the bhangi (the sweepers) and persuaded the upper caste to change their hearts and give up the sin of untouchability.
- When Dalits under the leadership of B.R. Ambedkar organised the depressed classes association in 1930, demanding separate electorates, Gandhiji began fast unto death. He was prepared to sacrifice his life, to preserve the unity of society.
- Gandhiji signed Poona Pact (September 1932) with Dr. Ambedkar. It gave the depressed classes reserved seats in Provincial and Central Legislative councils, but they were to be voted in by the general electorate.

17. Gandhiji said, "There is enough for everybody's need and not for anybody's greed."
    1. He blamed the greedy and selfish individuals and exploitative nature of modern technology as the root cause for resource depletion at the global level.
    2. Irrational consumption and over-utilisation of resources may lead to socio-economic and environmental problems.
    3. If resources are carelessly managed, many will be used up. If used wisely and efficiently, however, renewable resources will last much longer. Through conservation, people can reduce waste and manage natural resources wisely.
    4. The Man has to make judicious use of natural resources. The ecological balance should not be disturbed.
    5. As resources are vital for any developmental activity, resource conservation at various levels is important to overcome these problems. If resources are used up at the same rate as they are generated or formed, they will be maintained for use by future generations.
18. The features of the third tier of rural government are:
    A. Rural local government is popularly known by the name Panchayat Raj. Each Village or group of villages in some state has a Gram Panchayat.
    B. This is a council consisting of several ward members called Panchs and a president called Sarpanch. They are directly elected by the adult population living in the ward or village.
    C. The Panchyats works under the overall supervision of the Gram Sabha. All the voters of the village are the members of Gram Sabha.
    D. The local government structure goes right up to the district level. A few Gram panchayat are grouped together to form Sanchayat Samiti or Block. The members of all the Block are elected by the panchayat members of the area.
    E. All the Panchayat Samitis or Mandals in a district together constitute the Zila Parishad.