Atomic Energy Central School No. 4,Rawatbhata

Class X (Mathematics, Science, Social Science)

Multiple Choice Questions Examination - July (2019-20)

Name of student:_____Class:_____ Roll No._____

General Instructions:1. Darken the appropriate circle in the OMR answer sheet.
2. Each question carries 1 mark. There is no negative marking.

Mathematics

1. A fraction becomes $\frac{9}{11}$, if 2 is added to both the numerator and denominator. If 3 is added to both the numerator and denominator it becomes $\frac{5}{6}$, then the fraction is **1**

   a) $\frac{9}{7}$ b) $\frac{-9}{7}$

   c) $\frac{7}{9}$ d) $\frac{-7}{9}$

2. The value of 'k' for which the system of equations 3x + 5y = 0 and kx + 10y = 0 has a non zero solution is **1**

   a) 0 b) 8

   c) 2 d) 6

3. If (x + 1) is a factor of $2x^3 + ax^2 + 2bx + 1$, then the values of 'a' and 'b', given that 2a – 3b = 4 are **1**

   a) a = – 5 and b = – 2 b) a = 5 and b = 2

   c) a = – 5 and b = 2 d) a = 5 and b = – 2

4. The angles of a triangle are $x°$, $y° and\ 40°$. The difference between the two angles 'x' and 'y' is $30°$, then **1**

   a) $x° = 75° and\ y° = 45°$ b) $x° = 85° and\ y° = 55°$

   c) None of these d) $x° = 65° and\ y° = 95°$

5. The pair of linear equations ax + by = c and px + qy = r has a unique solution then **1**

   a) aq $\neq$ bp b) aq = bp

   c) ap = bq d) ap $\neq$ bq

6. The system of equations x – 4y = 8, 3x – 12y = 24 **1**

   a) has infinitely many solutions b) may or may not have a solution

   c) has no solution d) has a unique solution

7. The system of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ has infinitely many solutions if **1**

a) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ b) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

c) None of these d) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

8. If $x = \alpha$ and $y = \beta$ is the solution of the equations $x - y = 2$ and $x + y = 4$, then **1**

a) $\alpha = 1 \text{ and } \beta = 3$ b) $\alpha = 3 \text{ and } \beta = -1$

c) $\alpha = 3 \text{ and } \beta = 1$ d) $\alpha = -3 \text{ and } \beta = 1$

9. The value of 'k' so that the system of equations $3x - 4y - 7 = 0$ and $6x - ky - 5 = 0$ have a unique solution is **1**

a) $k \neq -8$ b) $k \neq 4$

c) $k \neq -4$ d) $k \neq 8$

10. The area of the triangle formed by $y = x$, $x = 6$ and $y = 0$ is **1**

a) 18 sq. units b) 72 sq. units

c) 36 sq. units d) 9 sq. units

11. The sum of the digits of a two digit number is 9. Nine times this number is twice the number obtained by reversing the digits, then the number is **1**

a) 72 b) 27

c) 18 d) 81

12. The area of the triangle formed by the lines $2x + 3y = 12$ with the co – ordinate axis is **1**

a) 20 sq. units b) 10 sq. unit

c) 12 sq. units d) 16 sq. units

13. The area of the triangle formed by $x + 3y = 6$, $2x - 3y = 12$ and the y-axis is **1**

a) 15 sq. units b) 18 sq. units

c) 16 sq. units d) 12 sq. units

14. A train travels 360km at a uniform speed. If the speed had been 5 km/hr more, it would have taken 1 hour less for the same journey, then the actual speed of the train is **1**

a) 48 km/hr b) 36 km /hr

c) 40 km/hr d) 45 km/hr

15. Rohan's mother is 26 years older than him. The product of their ages 3 years from now will be 360, then Rohan's present age is **1**

a) 6 years b) 7 years

c) 10 years d) 8 years

16. The angry Arjun carried some arrows for fighting with Bheeshma. With half the arrows, he cut down the arrows thrown by Bheeshma on him and with six other arrows he killed the rath driver of Bheeshma. With one arrow each he knocked down respectively the rath, flag and bow of Bheeshma. Finally with one more than four times the square root of arrows he laid Bheeshma unconscious on an arrow bed. The total number of arrows that Arjun had is **1**

a) 100 b) 96

c) 80 d) 120

17. $2x^2 + 5\sqrt{3}\,x + 6 = 0$ have **1**

a) Real and equal root b) Real roots

c) No Real roots d) Real and Distinct roots

18. The product of two consecutive integers is 240. The quadratic representation of the above situation is **1**

a) $x(x+1) = 240$ b) $x(x+1)^2 = 240$

c) $5x^2 + 8x + 4 = 2x^2 + 4x + 6$ d) $x^2 + (x+1) = 240$

19. $3x^2 + 4x + 5 = 0$ have **1**

a) Real roots b) Real and Equal roots

c) No Real roots d) Real and Distinct roots

20. 500 bananas were divided equally among a certain number of students. If there were 25 more students, each would have received one banana less. Then the number of students is **1**

a) 500 b) 125

c) 250 d) 100

21. $4x^2 - 20x + 25 = 0$ have **1**

a) Real roots b) No Real roots

c) Real and Equal roots d) Real and Distinct roots

22. The sum S of first n even natural numbers is given by the relation S = n(n +1). If the sum is 420, then the value of 'n' is **1**

a) 20 b) 21

c) 24 d) 22

23. If $ax^2 + bx + c = 0$ has equal roots, then c is equal to **1**

a) $\frac{b^2}{2a}$ b) $\frac{b^2}{4a}$

c) $\frac{-b^2}{4a}$ d) $-\frac{b^2}{2a}$

24. If x = 2 is a root of the quadratic equation $3x^2 - px - 2 = 0$, then the value of 'p' is **1**

a) 0 b) 3

c) 5 d) 1

25. The common root of $2x^2 + x - 6 = 0$ and $x^2 - 3x - 10 = 0$ is **1**

a) – 2 b) $\frac{3}{2}$

c) 5 d) 2

26. A quadratic equation $ax^2 + bx + c = 0$ has real and equal roots, if **1**

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

c) $b^2 - 4ac > 0$ d) None of these

27. In an A.P. it is given that a = 5, d = 3 and a_n = 50, then the value of 'n' is **1**

a) 16 b) 18

c) 20 d) 15

28. Progressions with equal common difference are known as **1**

a) Geometric Progression b) none of these

c) Arithmetic Progression d) Harmonic Progression

29. The value of 'k' for which the numbers x, 2x + k, 3x + 6 are in A.P. is **1**

a) 3 b) 6

c) 5 d) 4

30. In an A.P., if d = – 4, n = 7 and a_n = 4, then 'a' is **1**

a) 7 b) 6

c) 28 d) 20

31. The next two terms of the AP : k, 2k + 1, 3k + 2, 4k + 3, ... are **1**

a) 5k + 4 and 6k + 5 b) 4k + 4 and 4k + 5

c) 5k + 5 and 6k + 6 d) 5k and 6k

32. In an A.P., if $a_m = \frac{1}{n}$ and $a_n = \frac{1}{m}$, then $a_{mn} =$ **1**

a) 1 b) 2

c) – 1 d) 0

33. A sum of Rs.1000 is invested at 8% simple interest per annum. The interest at the end of 30 years is **1**

a) Rs.30000 b) Rs.2400

c) None of these d) Rs.8000

34. If a, b, c, l, m are in A.P., then the value of a – 4b + 6c – 4l + m is **1**

a) 0 b) 2

c) 3 d) 1

35. The common difference of the A.P whose $a_n = -3n + 7$ is **1**

a) 3 b) 1

c) – 3 d) 2

36. The common difference of the A.P whose $S_n = 3n^2 + 7n$ is **1**

a) 6 b) 2

c) 1 d) 5

37. The list of numbers – 10, – 6, – 2, 2, ... is **1**

a) not an AP b) an AP with d = – 4

c) an AP with d = 4 d) an AP with d = 8

38. The first term of an A.P. Is 'm' and its common difference is 'n', then its 10th term is **1**

a) m + 9n b) 9m – n

c) 9m + n d) m – 9n

39. Which term of the A.P. 21, 18, 15, ...is – 81? **1**

a) 24 b) 30

c) 36 d) 35

40. The number of multiples of 4 lie between 10 and 250 is **1**

a) 64 b) 60

c) 65 d) 62

Science

41. The green coating on copper appears on exposure to air. It is - **1**

a) copper carbonate b) copper sulphate

c) copper nitrate d) copper sulphide

42. Slaked lime is the commercial name of - **1**

a) calcium carbonate b) calcium hydroxide

c) calcium oxide d) calcium bicarbonate

43. Decomposition of vegetable matter into compost is an example of : **1**

a) Exothermic reaction b) Endothermic reaction

c) Redox reaction d) Combination reaction

44. When you place iron in copper sulphate solution, the reddish brown coating formed on the nail is **1**

a) rough and granular
b) soft and dull
c) smooth and shining
d) hard and flaky

45. The colour of ferrous sulphate solution is **1**

a) blue
b) colurless
c) pale green
d) reddish brown

46. 10 ml of freshly prepared iron sulphate solution was taken in each of four test tubes. Strips of copper, iron, zinc and aluminium were introduced, each metal in a different test tube. A black residue was obtained in two of them. The right pair of metals forming the precipitates is: 1

a) iron and aluminium
b) copper and zinc
c) zinc and aluminium
d) aluminium and copper

47. What do you observe when sodium sulphate is added to barium chloride solution? **1**

a) Transparent solution is formed.
b) Bubbles are seen
c) Gas is released.
d) A white insoluble substance is formed

48. Chemical formula of marble is **1**

a) $CaHCO_3$
b) CaC_2
c) $CaCO_3$
d) $Ca(OH)_2$

49. Which gases are given out when Lead nitrate is heated? **1**

a) NO_2 , O_2
b) N_2O_4 , O_2
c) PbO , O_2
d) NO , O_3

50. Which of the following statement is correct? **1**

A. Electrolysis of water is an example of decomposition reaction
B. Nitrogen is used to prevent rancidity
C. Melting of ice is a physical change
D. Corrosion requires presence of both air and moisture

a) A and B
b) A. B. C and D
c) A and C
d) A, B and D

51. Chemically rust is - **1**

a) metal oxide
b) ferric oxide
c) ferrous oxide
d) hydrated ferric oxide

52. Reaction between water and quick lime gives rise to calcium hydroxide which of the following statement are correct? 1

A. The reaction is exothermic

B. The PH of final solution is less than 7

C. The reaction is endothermic

D. The PH of final solution is greater than 7

a) A and C b) C and D

c) A and D d) All of these

53. Pick out a decomposition reaction : **1**

a) $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$ b) $C_2H_4 + H_2 \rightarrow C_2H_6$

c) $Cu + AgNO_3 \rightarrow Cu(NO_3)_2 + 2Ag$ d) $NH_4Cl \rightarrow NH_3 + HCl$

54. When students observed a stained epidermal peel of a leaf under the microscope, it appeared pinkish red. The stain used was **1**

a) iodine b) colchicine

c) safranin d) acetocarmine

55. Instead of water, we use glycerine as mounting medium : **1**

a) To enlarge the material b) To clean the material

c) To colour the material d) To prevent the material from drying

56. Ridhima put lime water in the beaker. She finds lime water turns milky. It means **1**

a) Presence of lime with germinating seeds. b) Absence of KOH

c) Absence of NaOH d) Presence of KOH in conical flask in the test tube.

57. To transfer the peel from Petri dish to the slide, we generally use **1**

a) Pair of tong b) Forceps

c) Brush d) Needle

58. To prepare a good temporary mount of the petunia leaf peel showing many stomata, the student has to get the peel from the **1**

a) lower surface of the leaf b) tip of the leaf

c) point of attachment of the leaf to its petiole. d) upper surface of the leaf

59. To prepare a temporary mount of leaf peel, one should take **1**

a) any of the above
b) freshly plucked leaf
c) leaf placed in sunlight for 48 hours
d) dried and preserved leaf

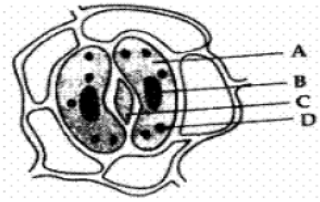
60. When a cell is kept in a hypotonic solution then water moves: **1**

a) out of the cell
b) no movement of water
c) into the cell
d) some time movement display

61. While preparing a temporary stained mount of a leaf epidermal peel, the extra stain is removed by **1**

a) soaking with filter paper
b) absorbing with cotton wool
c) washing with water
d) washing with calcium chloride solution

62. In the diagram of the stomatal pore given below, the marking corresponding to the chloroplast is : **1**



a) B
b) C
c) D
d) A

63. The function of KOH in the experimental set-up to show that 'CO is released during respiration' is **1**

a) to enhance respiration
b) to release oxygen for respiration
c) to absorb carbon dioxide released by germinating seeds
d) to remove water vapour from the flask

64. Which of these is not a part of the small intestine? **1**

a) Jejunum
b) Rectum
c) Duodenum
d) Ileum

65. A student puts germinating seeds into the conical flask and miss to put KOH solution in hanging test tube what he observe **1**

a) Water level will not rise in bent tube
b) Water level will decrease in bent tube
c) CO_2 will not be absorbed
d) Water level will not rise in bent tube and CO_2 will not be absorbed

66. If the solute concentration of raisin is more inside then: **1**

a) endosmosis rate will be same
b) endosmosis rate will be less
c) endosmosis rate will be more
d) endosmosis process will not occur

67. Which one of the following is correct-

A. Fuse wire is an alloy of tin and lead B. Switch is always connected to live wire C. Alternate current is unidirectionalD. Higher is the value of current flow, weaker is the magnetic field

1

a) B and C
b) A and C
c) A and B
d) A, B, C and D

68.What capacity of fuse wire is to be used for geyser? **1**

a) 10A
b) 15A
c) 20A
d) 5A

69.The phenomena of electromagnetic induction is **1**

a) the process of generating magnetic field due to a current passing through a coil
b) the process of charging a body
c) the process of rotating coil of an electric motor.
d) producing induced current in a coil by the relative motion between a magnet and the coil

70.Magnetic field lines determine **1**

a) Only the direction of magnetic field
b) Both the direction and the relative strength of magnetic field
c) Only the relative strength of the magnetic field
d) The shape of magnetic field

71.What is the current rating of domestic circuits used for appliances like electric bulb, tube light and fans? **1**

a) 15 ampere
b) 2 ampere
c) 5 ampere
d) 10 ampere

72.Match the following with correct response.

(1) Appliances with exposed metal parts always need (2) The unidirectional current flow in the circuit (3) The current which changes its direction at regular intervals (4) Device that makes use of the fact that magnetism in presence of electricity produces motion (A) D.C (B) Electric motor (C) A.C (D) Three pin plug

1

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

73.Which of the following involves electro magnetic induction? **1**

a) A magnetic field exerts a force on a current- carrying wire
b) An electric current produces a magnetic field.
c) A rod is charged with electricity
d) The relative motion between a magnet and a coil produces an electric current.

74.Statement A : H. C. Oersted, a Danesh physicist first noticed the magnetic effect of electric current. **1**

Statement B : The strength of the magnetic field is indicated by the closeness of the field lines.

a) Statement A is true, B is false
b) Statement B is true, A is false
c) Both the statement A and B are true
d) Statement A is true, B is false

75.What are the constituents of Alnico? **1**

a) Al, Ni, Na
b) Al, Ni, Co
c) Mg, Mn, Al, Zn
d) Zn, Pb, Al, Ni

76.A commutator changes the direction of current in the coil of **1**

a) a DC motor and an AC generator
b) an AC generator
c) a DC motor and a DC generator
d) a DC motor

77.An electric fuse can prevent accidents arising from- **1**

a) An overload as well as short circuit.
b) A short circuit but not due to overload
c) An overload but not due to short circuit.
d) Neither an overload nor a short circuit.

78.Match the following with correct response. **1**

(1) Dynamo

(2) Area around a magnet in which It's attracting or repelling power can be experienced

(3) Device which converts mechanical energy into electrical energy

(4) Andre marie ampere

(A) Works on electromagnetic principle

(B) Generator

(C) Magnetism

(D) Current

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

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79.A compass needle is kept far below, and parallel to a long straight current carrying wire. What is likely to happen to the compass needle? **1**

a) Compass needle will defect towards right
b) Deflects towards the west
c) Compass needle is likely to remain unaffected
d) Compares needle will deflect towards left

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80.When the main switch of the house circuit is put off, it disconnects the

A. Live wire B. Neutral wire C. Earth wireD. None of the above

1

a) A, B and C
b) A and C
c) A and B
d) D

Social Science

81. Which one of the following is not true regarding the Gandhi-Irwin Pact of 1931?

a) The British government agreed to grant independence
b) The British government agreed to release the political prisoners
c) Gandhiji consented to participate in a Round Table Conference
d) Mahatma Gandhiji decided to call off the Civil Disobedience Movement

82. Which of the following was not a part of Gandhiji's satyagraha?

a) Not a weapon of the weak but a weapon which forced the adversary to accept the truth without violence

b) Emphasis on the power of truth and search for truth

c) Satyagraha as a pure soul-force

d) A physical force which sought destruction of the enemy

83. The various social groups that joined the Non-Cooperation-Khilafat Movement of 1921, were:

a) The rich in the cities, the poor in the villages and the people in plantations

b) The middle class in cities, the peasants and the tribal in the countryside and plantation workers

c) The Brahmans in cities, the peasants in the villages and workers in villages

d) The students in cities, the farmers in villages and the owners of the plantations

84. In 1916, Gandhiji travelled to Champaran in Bihar to inspire the peasant to struggle against the:

a) Untouchables

b) Upper caste people

c) Oppressive plantation system

d) Landless agriculture labourers

85. Who was the first writer to create the image of 'Bharat Mata' as an identity of India and how?

a) Bankim Chandra Chattopadhyay in 1870, by writing the song "Vande Mataram" and later including it in his novel 'Anand Math'

b) Rabindranath Tagore through his collection of ballads, nursery rhymes and myth

c) Mahatma Gandhiji during his salt march and satyagraha.

d) Abanindranath Tagore by his paintings of a mother figure in 1905

86. The Non-Cooperation Movement was started by Mahatma Gandhi in support of:

a) Khilafat and Swaraj
b) Swaraj
c) Khilafat
d) Chauri Chaura

87. The two great writers of Bengal and Madras, who contributed to nationalism in the late nineteenth century through folklore were :

a) Rabindranath Tagore and Natesa Sastri
b) Abanindranath Tagore and Ravi Verma
c) Jamini Roy and Ravi Verma
d) Abindra Nath Tagore and Rabindra Nath Tagore

88. Who organised the dalits into the Depressed Classes Association?

a) Subhas Chandra Bose
b) B.R. Ambedkar
c) Mahatma Gandhi
d) Jawaharlal Nehru

89. Who wrote the 'Vande Mataram'?

a) Bankim Chandra Chattopadhyay
b) Rabindranath Tagore
c) Abanindranath Tagore
d) Sardar Vallabhbhai Patel

90. Which of the following statements is/ are true about the Dandi March of Mahatma Gandhi?

a) Mahatma Gandhi marched over 240 miles with 78 of his trusted followers covering 10 miles a day
b) On 6th April, Gandhiji ceremonially violated the Salt Law, manufacturing salt by boiling seawater
c) It started on 11 March, 1930 and ended on 6 April, 1930
d) All the these

91. This popular Bhadu song in the Damodar valley region narrates the troubles faced by people owing to the flooding of Damodar river known as

a) the river loss
b) the river happiness
c) the river prosperity
d) the river of sorrow

92. Today, in western Rajasthan, sadly the practice of rooftop rainwater harvesting is on the decline as plenty of water is available due

a) rivers
b) dams construction
c) to the perennial Rajasthan Canal
d) to the tap connections

93. A _____is a barrier across flowing water that obstructs directs or retards the flow, often creating a reservoir, lake or impoundment.

a) canal b) Dam

c) bunds d) lake

94. In the first century B.C., Sringaverapura near Allahabad had sophisticated water harvesting system channelling the flood water of the _____river.

a) Yamuna b) Indus

c) Godavari d) Ganga

95. India receives nearly _____ per cent of the global precipitation.

a) 6 b) 8

c) 4 d) 10

96. Post-independent India witnessed intensive industrialisation and urbanisation, creating vast _____

a) employment opportunities b) unemployment

c) farming inputs d) production

97. Many thought that given the disadvantages and rising resistance against the multi -purpose projects _____is an alternative for water scarcity.

a) water management system b) water storage system

c) less use of water d) water harvesting system

98. Where water is sufficiently available to meet the needs of the people, but, the area still suffers from water scarcity due to which of the following reasons?

a) more usage b) over experimental attitude

c) much of it may be polluted by domestic and industrial wastes. d) unequal distribution

99. The rivers which flows to the west side in India are _____ .

a) Narmada & Tapi b) Ganga & Godavari

c) Ganga & Yamuna d) Krishna & Godavari

100. _____ per cent of the freshwater occurs as ice sheets and glaciers in Antarctica, Greenland and the mountainous regions of the world

a) 60 b) 90

c) 50 d) 70

101. When power is taken away from Central and State governments and given to local government, it is called:

a) Conflict Resolution
b) mutual understanding
c) separation
d) decentralisation

102. In _____, the boundaries of several old States of India were changed in order to create new States.

a) 1950
b) 1948
c) 1947
d) 1954

103. Identify the State which are created not on the basis of language but to recognise differences based on culture, ethnicity or geography.

a) Nagaland,Uttarakhand and Jharkhand
b) Nagaland
c) Jharkhand
d) Uttarakhand

104. Besides Hindi, there are other languages recognised as Scheduled Languages by the Indian Constitution.

a) 26
b) 29
c) 22
d) 21

105. Name the community who got the benefit of economic development and education much later in Belgium?

a) French-speaking
b) German-speaking
c) Dutch-speaking
d) English-speaking

106. Panchayats in _____ and municipalities in _____were set up in all the States.

a) districts, villages
b) villages, urban areas
c) villages, rural areas
d) urban areas, cities

107. According to Indian constitution, the _____ has the power to legislate on the 'residuary' subjects.

a) Local Government
b) Union Government
c) International Government
d) State Government

108. All the panchayat samitis or mandals in a district together constitute the

a) village cluster
b) zilla parishad
c) block
d) gram panchayat

109. Choose the right statement as to when the major national parties had to enter into an alliance with many parties including several regional parties to form a government at the Centre?

a) no party is allowed without having a coalition
b) when there no single party get a clear majority in the Rajya Sabha
c) when there no single party get a clear majority in the Lok Sabha & Rajya Sabha
d) when there no single party get a clear majority in the Lok Sabha

110. Panchayats and Municipalities are under the direct control of which government?

a) coalition b) centre

c) state d) opposition

111. Which sector has risen the most with the development of tertiary sector?

a) Agriculture b) Information and communication technology

c) Real estate d) Industrial

112. Which of the following activity is of secondary sector ?

a) Providing loans to the farmer b) Manufacturing clothes

c) Cultivating cotton d) Providing storage facility for the cultivated cotton

113. How can we generate employment in urban areas?

a) Setting up a flour mill b) Opening a cold storage

c) Setting up an agricultural bank d) Promoting tourism

114. Which of the following is a private enterprise?

a) Indian Postal department b) Indian Railways c) MTNL d) WIPRO

115. Which was the largest producing sector in 1973 - 74?

a) Primary sector b) Secondary sector c) Manufacturing sector d) Tertiary sector

116. Which of the following activity is not from the tertiary sector?

a) Fishing b) Banking c) Transportation d) Communication

117. National Sample Survey Organization conducts the surveys on employment and unemployment in every-

a) Six years b) Five years c) Ten years d) Seven years

118. Which sector is also known as Service sector?

a) Secondary sector b) Primary sector c) IT sector d) Tertiary sector

119. Underemployment is mainly found in

a) Agriculture b) Banking c) Services d) Industry

120. How can government increase employment in rural areas?

a) Building schools b) building healthcare institutions

c) Investing money in transportation and storage of crops d) promoting tourism

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Solution

Class 10 - Mathematics

MCQ July

Section A

1. (c)

   $\frac{7}{9}$

   Explanation:

   Let the fraction be $\frac{x}{y}$.

   According to question

   $\frac{x+2}{y+2} = \frac{9}{11}$

   $\Rightarrow 11x + 22 = 9y + 18$

   $\Rightarrow 11x - 9y = -4$ .....(i)

   And $\frac{x+3}{y+3} = \frac{5}{6}$

   $\Rightarrow 6x + 18 = 5y + 15$

   $\Rightarrow 6x - 5y = -3$ .....(ii)

   On solving eq. (i) and eq. (ii), we get

   $x = 7, y = 9$

   Therefore, the fraction is $\frac{7}{9}$

2. (d)

   6

   Explanation:

   For non-zero solution $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2} \Rightarrow \frac{3}{k} = \frac{5}{10} = \frac{0}{0}$ Taking, $\frac{3}{k} = \frac{5}{10} \Rightarrow k = \frac{3 \times 10}{5} = 6$

3. (b)

   a = 5 and b = 2

   Explanation:

   $2x^3 + ax^2 + 2bx + 1$

   $= 2x^3 + 2x^2 + (a - 2)x^2 + (a - 2)x + (2b - a + 2)x + (2b - a + 2) - (2b - a + 2) + 1$

   $= 2x^2(x + 1) + (a - 2)x(x + 1) + (2b - a + 2)(x + 1) + a - 2b - 1$

   $= (x + 1)[2x^2 + (a - 2)x + (2b - a + 2)] + (a - 2b - 1)$

   Since x+1 is a factor of $2x^3+ax^2+2bx+1$, we conclude that:

a - 2b - 1 = 0

a = 2b + 1

b = (a - 1)/2

So any couple of reals of the form (a; (a-1)/2) will yield a polynomial that will have x+1 as a factor.

For instance:

If a=1, then b=0 and:

$2x^3 + ax^2 + 2bx + 1$

$= 2x^3 + x^2 + 1$

$= 2x^3 + 2x^2 - x^2 - x + x + 1$

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

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

and x+1 is indeed a factor.

If a=3, then b=1 and:

$2x^3 + ax^2 + 2bx + 1$

$= 2x^3 + 3x^2 + 2x + 1$

$= 2x^3 + 2x^2 + x^2 + x + x + 1$

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

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

and x+1 is indeed a factor.

So there is an infinity of (a; b) that would make x+1 a factor of $2x^3+ax^2+2bx+1$ and they are all of the form (a; (a-1)/2) with 'a' being any real value.

4. (b)

$x^\circ = 85^\circ and\, y^\circ = 55^\circ$

Explanation:

According to the question, $x^\circ + y^\circ + 40^\circ = 180^\circ \Rightarrow x^\circ + y^\circ = 140^\circ$ .....(i)

and $x^\circ - y^\circ = 30^\circ$ .....(ii)

On solving eq. (i) and eq. (ii),

x+y+x-y=140+30

2x=170

x=85°

Putting the value of x in equation 1, we get

85°+y=140°

y=140°-85°

y=55°

we get $x^\circ = 85^\circ, y^\circ = 55^\circ$

5. (a)

aq $\neq$ bp

Explanation:

Given: $a_1 = a, a_2 = p, b_1 = b, b_2 = q, c_1 = c$ and $c_2 = r$ .Since, the pair of given linear equations has a unique solution. $\therefore \frac{a_1}{a_2} \neq \frac{b_1}{b_2} \Rightarrow \frac{a}{p} \neq \frac{b}{q} \Rightarrow aq \neq bp$

6. (a)

has infinitely many solutions

Explanation:

Given:

$a_1 = 1, a_2 = 3, b_1 = -4, b_2 = -12, c_1 = 8$ and $c_2 = 24$

Here $\frac{a_1}{a_2} = \frac{1}{3}, \frac{b_1}{b_2} = \frac{-4}{-12} = \frac{1}{3}, \frac{c_1}{c_2} = \frac{8}{24} = \frac{1}{3}$

$\therefore \frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

Therefore, the system has infinitely many solutions.

7. (b)

$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

Explanation:

The system of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ has infinitely many solutions because both the equation satisfy the condition i.e

$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

8. (c)

$\alpha = 3 \; and \; \beta = 1$

Explanation:

Given: $x - y = 2$ .....(i)

And $x + y = 4$ .....(ii)

Adding eq. (i) and (ii) for elimination of y, we get

$2x = 6 \Rightarrow x = 3$

Putting the values of x in eq. (i), we get

$3 - y = 2 \Rightarrow y = 1$

$\therefore x = \alpha = 3$ and $y = \beta = 1$

9. (d)

$k \neq 8$

Explanation:

Given: $a_1 = 3, a_2 = 6, b_1 = -4, b_2 = -k, c_1 = -7$ and $c_2 = -5$

If there is a unique solution, then $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \Rightarrow \frac{3}{6} \neq \frac{-4}{-k} \Rightarrow -3k \neq -4 \times 6 \Rightarrow$ $k \neq 8$

10. (a)

18 sq. units

Explanation:

The triangle formed by the lines y = x, x = 6 and y = 0 is shaded.

The area of the shaded region, i.e., $x = y$

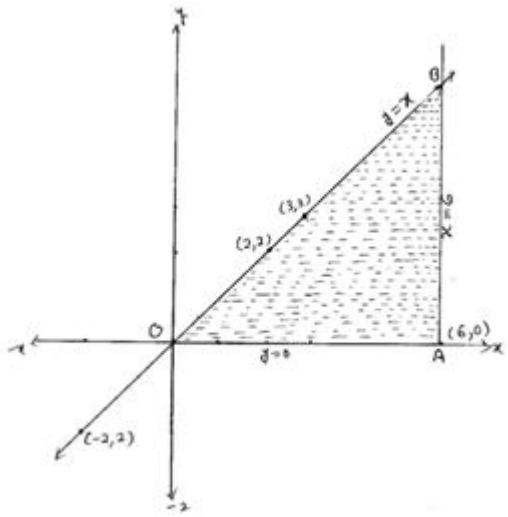
We got a right-angled triangle with base 6 units and height 6 units

Triangle OAB = $\frac{1}{2}$ × OA × AB

Hence area of triangle =(1/2) × 6 × 6 = 18 sq units

= $\frac{1}{2} \times 6 \times 6$ = 18 sq.units

x	2	-2	3
y	2	-2	3



11. (c)

18

Explanation:

Let unit digit = x , Tens digit = y , therefore original no will be 10y+x.

Sum of digits are 9 So that x + y = 9 .....(1)

nine times this number is twice the number obtained by reversing the order of the digits 9 (10 y + x) = 2 (10 x + y)

90y + 9x = 20 x + 2y

88y – 11x = 0

Divide by 11 we get 8y - x = 0 .....(2)

Adding equations 1 and 2 , we get

9 y = 9

Y = 9/9 = 1

Putting this value in equation 1 we get

x+ y = 9

x + 1 = 9

x = 8.

Therefore the number is 10(1)+8 = 18

12. (c)

12 sq. units

Explanation:

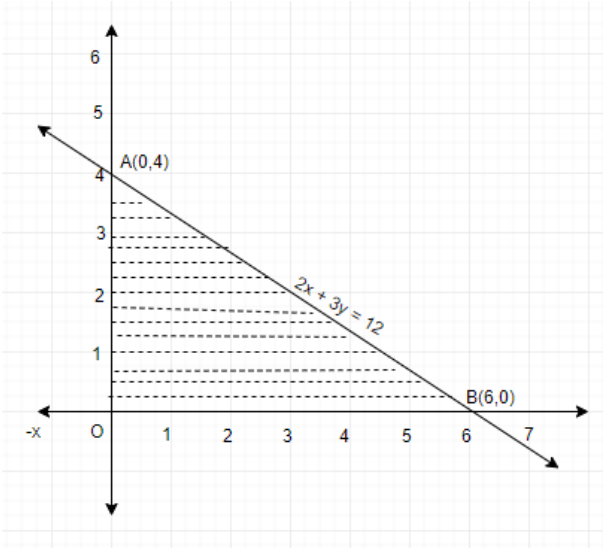
The triangle formed by the lines $2x + 3y = 12$ with co-ordinate axes is shaded.

The area of the shaded region, i.e., $2x + 3y = 12$

Triangle OAB = $\frac{1}{2}$ $\times$ OA $\times$ AB

= $\frac{1}{2} \times 6 \times 4$ = 12 sq. units

x	0	3	6
y	4	2	0



13. (b)

18 sq. units

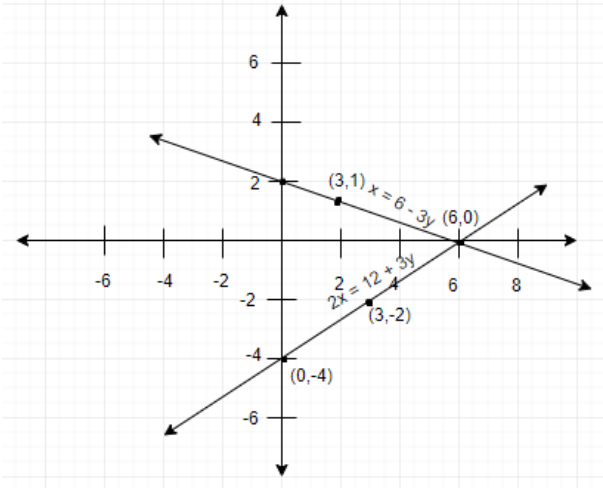
Explanation:

Here are the two solutions of each of the given equations. $x + 3y = 6$

x	0	3	6
y	2	1	0

$2x - 3y = 12$

x	0	3	6
y	-4	-2	0



∴ Area of triangle = $\frac{1}{2}$ × Base × Height = $\frac{1}{2} \times 6 \times 6$ = 18 sq. units

14. (c)

40 km/hr

Explanation:

Let the actual speed of the train be x km/hr

Time taken to cover 360 km at this speed = $\frac{360}{x}$ hrs.

Time taken to cover 360 km at the increased speed = $\frac{360}{x+5}$ hrs.

According to condition, $\frac{360}{x} - \frac{360}{x+5} = 1$

$\Rightarrow 360\left[\frac{1}{x} - \frac{1}{x+5}\right] = 1$

$\Rightarrow 360\left[\frac{x+5-x}{x(x+5)}\right] = 1$

$\Rightarrow 360\left[\frac{5}{x(x+5)}\right] = 1$

$\Rightarrow x^2 + 5x - 1800 = 0$

$\Rightarrow x^2 + 45x - 40x - 1800 = 0$

$\Rightarrow x\left(x + 45\right) - 40\left(x + 45\right) = 0$

$\Rightarrow \left(x - 40\right)\left(x + 45\right) = 0$

$\Rightarrow x - 40 = 0$ and $x + 45 = 0$

$\Rightarrow x = 40$ km/hr and $x = -45$ km/hr [But $x = -45$ is not possible]

Therefore, the actual speed of train is 40 km/hr.

15. (b)

7 years

Explanation:

Let Rohan's present age be x years.

Then Rohan's mother age will be $\left(x + 26\right)$ years.

And after 3 years their ages will be $\left(x + 3\right)$ and $\left(x + 29\right)$ years. According to question,

$\left(x + 3\right)\left(x + 29\right) = 360$

$\Rightarrow x^2 + 29x + 3x + 87 = 360$

$\Rightarrow x^2 + 32x - 273 = 0$

$\Rightarrow x^2 + 39x - 7x - 273 = 0$

$\Rightarrow x\left(x + 39\right) - 7\left(x + 39\right) = 0$

$\Rightarrow \left(x - 7\right)\left(x + 39\right) = 0$

$\Rightarrow x - 7 = 0$ and $x + 39 = 0$

$\Rightarrow x = 7$ and $x = -39$ [$x = -39$ is not possible]

Therefore, Rohan's present is 7 years.

16. (a)

100

Explanation:

Let Arjun had x arrows.

According to question, $\frac{x}{2}+6+3+4\sqrt{x}+1=x$

$\Rightarrow 10+4\sqrt{x}=\frac{x}{2}$

$\Rightarrow 20+8\sqrt{x}=x$

$\Rightarrow 8\sqrt{x}=x-20$

$\Rightarrow 64x=x^2-40x+400$

$\Rightarrow x^2-104x+400=0$

$\Rightarrow x^2-100x-4x+400=0$

$\Rightarrow x\left(x-100\right)-4\left(x-100\right)=0$

$\Rightarrow \left(x-100\right)\left(x-4\right)=0$

$\Rightarrow x-100=0$ and $x-4=0$

$\Rightarrow x=100$ and $x=4$ [which is not possible]

Therefore, Arjun had 100 arrows.

17. (d)

Real and Distinct roots

Explanation:

Comparing the given equation to the below equation

$ax^2 + bx + c = 0$

$a = 2, b = 5\sqrt{3}, c = 6$

$D = b^2 - 4ac$

$D = (5\sqrt{3})^2 - 4\times2\times6$

$D = 75 - 48$

$D = 27$

$D > 0.$

If $b^2–4ac > 0$, then equation have real and distinct roots.

18. (a)

$x(x+1)=240$

Explanation:

Let one of the two consecutive integers be x then the other consecutive integer will be $\left(x+1\right)$ $\therefore$ According to question, $\left(x\right)\times\left(x+1\right)=240\Rightarrow$

$x(x+1) = 240$

19. (c)

No Real roots

Explanation:

D = b^2 - 4ac

D = 4^2 - $4 \times 3 \times 5$

D = 16 - 60

D = - 44

D < 0. Hence No Real roots.

20. (d)

100

Explanation:

Let the number of students be x

$\therefore$ Each student would get = $\frac{500}{x}$ bananas

$\therefore$ If there were 25 more students, then each student would get = $\frac{500}{x+25}$ bananas

According to question, $\frac{500}{x} - \frac{500}{x+25} = 1$

$\Rightarrow \frac{500x+12500-500x}{x(x+25)} = 1$

$\Rightarrow \frac{12500}{x^2+25x} = 1$

$\Rightarrow x^2 + 25x - 12500 = 0$

$\Rightarrow x^2 + 125x - 100x - 12500 = 0$

$\Rightarrow x(x+125) - 100(x+125) = 0$

$\Rightarrow (x+125)(x-100) = 0$

$\Rightarrow x + 125 = 0$ and $x - 100 = 0$

$\Rightarrow x = -125$ and $x = 100$ [$x = -125$ is not possible]

Therefore, the number of students is 100.

21. (c)

Real and Equal roots

Explanation:

D = b^2 - 4ac

D = (-20)^2 - 4$\times$4$\times$25

D = 400 - 400

D = 0. Hence Real and equal roots.

22. (a)

20

Explanation:

Given: $n\left(n+1\right)=420$

$\Rightarrow n^2+n=420$

$\Rightarrow n^2+n-420=0$

$\Rightarrow n^2+21n-20n-420=0$

$\Rightarrow n\left(n+21\right)-20\left(n+21\right)=0$

$\Rightarrow \left(n-20\right)\left(n+21\right)=0$

$\Rightarrow n-20=0, n+21=0$

$\Rightarrow n=20$ and $n=-21$ [$n=-21$ is not possible]

Therefore, the value of n is 20.

23. (b)

$\frac{b^2}{4a}$

Explanation:

If $ax^2+bx+c=0$ has equal roots, then

$b^2-4ac=0$

$\Rightarrow 4ac=b^2$

$\Rightarrow c=\frac{b^2}{4a}$

24. (c)

5

Explanation:

Given: $p\left(x\right)=3x^2-px-2=0$

$\therefore p\left(2\right)=3\left(2\right)^2-p\left(2\right)-2=0$

$\Rightarrow 12-2p-2=0$

$\Rightarrow -2p=-10$

$\Rightarrow p=5$

25. (a)

– 2

Explanation:

Given: Putting X= -2 in given equations

$p(x) = 2x^2 + x - 6 = 0$ and $q(x) = x^2 - 3x - 10 = 0$

$\therefore p(-2) = 2(-2)^2 + (-2) - 6 = 0$ = 8 – 2 – 6 = 8 – 8 = 0

$\therefore q(-2) = (-2)^2 - 3(-2) - 10 = 0$ = 4 + 6 – 10 = 10 – 10 = 0

Since $p(-2) = 0$ and $q(-2) = 0$

therefore, -2 is the common root of $2x^2 + x - 6 = 0$ and

$x^2 - 3x - 10 = 0$.

26. (a)

$b^2 - 4ac = 0$

Explanation:

A quadratic equation $ax^2 + bx + c = 0$ has real and equal roots, if

$b^2 - 4ac = 0$.

27. (a)

16

Explanation:

Given: a = 5, d = 3 and a_n = 50

$\therefore a_n = a + (n-1)d$

$\Rightarrow 50 = 5 + (n-1) \times 3$

$\Rightarrow 45 = (n-1) \times 3$

$\Rightarrow$45/3=n-1

$\Rightarrow n - 1 = 15$

$\Rightarrow n = 16$

28. (c)

Arithmetic Progression

Explanation:

Progressions with equal common difference are known as Arithmetic Progression. i.e the difference between any two consecutive terms is constant

throughout the series, this constant difference is called common difference usually denoted by the letter d

if a is the 1st term, d is the common difference, then the AP is represented by a, a+d, a+2d, a+3d .... $a + (n - 1)d$

29. (a)

3

Explanation:

If the numbers $x, 2x + k, 3x + 6$ are in A.P.,

then $2x + k - x = 3x + 6 - 2x - k$

$\Rightarrow x + k = x + 6 - k$

$\Rightarrow 2k = 6$

$\Rightarrow k = 3$

30. (c)

28

Explanation:

Given: d = – 4, n = 7 and a_n = 4

$\therefore a_n = a + (n - 1)\, d$

$\Rightarrow 4 = a + (7 - 1) \times (-4)$

$\Rightarrow$ 4= a+6 $\times$-4

$\Rightarrow 4 = a - 24$

$\Rightarrow a = 28$

31. (a)

5k + 4 and 6k + 5

Explanation:

Given: $k, 2k + 1, 3k + 2, 4k + 3, ...$

Here $d = 2k + 1 - k = k + 1$

Therefore, the next two terms are

$4k + 3 + k + 1 = 5k + 4$ and $5k + 4 + k + 1 = 6k + 5$

32. (a)

1

Explanation:

Given: $a_m = \frac{1}{n} \Rightarrow a + (m-1)\,d = \frac{1}{n}$ .....(i)

And $a_n = \frac{1}{m} \Rightarrow a + (n-1)\,d = \frac{1}{m}$ .....(ii)

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

$(m-1)\,d - (n-1)\,d = \frac{1}{n} - \frac{1}{m}$

$\Rightarrow d\,(m-1-n+1) = \frac{m-n}{mn}$

$\Rightarrow d\,(m-n) = \frac{m-n}{mn} \Rightarrow d = \frac{1}{mn}$

Putting the value of d in eq. (i), we get

$a + (m-1)\,\frac{1}{mn} = \frac{1}{n}$

$\Rightarrow a = \frac{1}{n} - \frac{m-1}{mn} = \frac{1}{mn}$

$\therefore a_{mn} = a + (mn-1)\,d = \frac{1}{mn} + (mn-1)\,\frac{1}{mn} = \frac{1}{mn} \times mn = 1$

33. (b)

Rs.2400

Explanation:

Simple Interest = (P $\times$ R $\times$ T) /100 $\frac{P \times R \times T}{100}$

So S.I in first yr. $\Rightarrow$(P $\times$ R $\times$ T) / 100 $\frac{P \times R \times T}{100}$

$\Rightarrow$ 1000 x 1 x 8 $\div$ 100 $\frac{1000 \times 1 \times 8}{100}$

$\Rightarrow$ 80

Interest In second Yr. $\Rightarrow$ (1000$\times$ 2 $\times$ 8) / 100 $\frac{1000 \times 2 \times 8}{100}$

$\Rightarrow$ 160

Similarly in third Yr. $\Rightarrow$ 240

So, we get the A.P. like this i.e. 80, 160, 240 .....

Therefore a = 80 , d = 80.

we have to find out the interest at the end of 30 yr.

$\Rightarrow$ a_n = a + (n-1) d

$\Rightarrow$ 80 + (30 - 1) 80

$\Rightarrow$ 80 + 29 $\times$ 80

$\Rightarrow$ 2400

Therefore, the Interest at the end of 30 yrs is 2400.

34. (a)

0

Explanation:

Given: $a, b, c, l, m$are in A.P.

Therefore

a + m = 2c .....(1)

b + l = 2c .....(2)

a - 4b + 6c - 4l + m

= a + m + 6c - 4b - 4l

= a + m + 6c - 4(b+l)

substituting from 1 and 2

= 2c + 6c - 8c

= 0

35. (c)

– 3

Explanation:

Given: $a_n = -3n + 7$

Putting $n = 1, 2, 3$, we get

$a = -3 \times 1 + 7 = -3 + 7 = 4$

$a_2 = -3 \times 2 + 7 = -6 + 7 = 1$

$a_3 = -3 \times 3 + 7 = -9 + 7 = -2$

$\therefore$ Common difference $(d) = a_2 - a = 1 - 4 = -3$

36. (a)

6

Explanation:

Given: $\mathrm{S}_n = 3n^2 + 7n$

Putting $n = 1, 2, 3$, we get

$\mathrm{S} = a = 3 \times (1)^2 + 7 \times 1 = 3 + 7 = 10$

$\mathrm{S}_2 = 3 \times (2)^2 + 7 \times 2 = 12 + 14 = 26$

$\mathrm{S}_3 = 3 \times (3)^2 + 7 \times 3 = 27 + 21 = 48$

Now, $a_2 = \mathrm{S}_2 - \mathrm{S}_1 = 26 - 10 = 16$

$\therefore$ Common difference $(d) = a_2 - a = 16 - 10 = 6$

37. (c)

an AP with d = 4

Explanation:

Given: list of numbers – 10, – 6, – 2, 2, ...

Here, $-6-(-10)=-6+10=4$

$-2-(-6)=-2+6=4$

$2-(-2)=2+2=4$

Therefore, the list of given numbers is an A.P with common difference 4.

38. (a)

m + 9n

Explanation:

Given: $a=m, d=n$

$\therefore a_{10}=m+(10-1)\,n$ = $m+9n$

39. (d)

35

Explanation:

Given: $a=21, d=18-21=-3$ and $a_n=-81$

$\therefore a_n=a+(n-1)\,d$

$\Rightarrow -81=21+(n-1)\times(-3)$

$\Rightarrow -102=(n-1)\times(-3)$

$\Rightarrow \frac{-102}{-3}$=(n-1)

$\Rightarrow n-1=34$

$\Rightarrow n=35$

40. (b)

60

Explanation:

Multiples of 4 lie between 10 and 250 are

12, 16, ..., 248

Here $a=12, d=16-12=4$ and $a_n=248$

$\therefore a_n=a+(n-1)\,d$

$\Rightarrow 248=12+(n-1)\times(4)$

$\Rightarrow 236=(n-1)\times(4)$

$\Rightarrow$236/4=n-1

$\Rightarrow n-1=59$

$\Rightarrow n=60$

Solution

Class 10 - Science

MCQ JULY(2019)

Section A

41. (a)
copper carbonate

Explanation:
The green color that occurs when copper is exposed to air and water is copper carbonate. It forms from the reaction of carbon dioxode in the atmosphere with coper catalyzed by water vapor.

42. (b)
calcium hydroxide

Explanation:
Calcium hydroxide (traditionally called slaked lime) is an inorganic compound with the chemical formula $Ca(OH)_2$. It is a colorless crystal or white powder and is obtained when calcium oxide (called lime or quicklime) is mixed, or slaked with water. It has many names including hydrated lime, caustic lime, builders' lime, slack lime, cal, or pickling lime. Calcium hydroxide is used in many applications, including food preparation. Limewater is the common name for a saturated solution of calcium hydroxide.

43. (a)
Exothermic reaction

Explanation:
The decomposition of plant and animal organic waste by the action of microbes into useful compost is an exothermic reaction because large amount of energy is released in this process. It is different from other chemical reactions, as they need energy to break the bond. But in these reaction the breakdown is carried out by microbes.

44. (b)
soft and dull

Explanation:
When you dip an iron nail in CuSO4, iron replaces copper from $CuSO_4$, since it is more reactive than copper. The displaced copper gets deposited on the nail, which is soft and dull in nature.
$Fe + CuSO_4 \rightarrow FeSO_4 + Cu$

45. (c)
pale green

Explanation:
$FeSO_4$ is chemical formula of Iron(II) sulphate or ferrous sulphate. The colour of ferrous sulphate solution is pale green.

46. (c)
zinc and aluminium

Explanation:
Al and Zn are more reactive than Fe, thus they displace iron (black residue) from ferrous sulphate solution.

47. (d)
A white insoluble substance is formed

Explanation:
When barium chloride combines with sodium sulphate in the form of their aqueous solutions, a white precipitate of barium sulphate is formed which is insoluble in water. The reaction also creates sodium chloride, which remains dissolved in water and so cannot be seen.
$BaCl_2(aq) + Na_2SO_4(aq) \rightarrow BaSO_4(s)_{(\text{White precipitate})} + 2NaCl(aq)$
It is known as precipitation reaction.

48. (c)
$CaCO_3$

Explanation:
Marble is made of calcium carbonate, $CaCO_3$, which is also what limestone is made from. The only difference between limestone and marble is the

crystalline structure. Limestone crystals are much smaller than that of marble, and limestone is much more porous.

49. (a)

NO_2 , O_2

Explanation:

A decomposition reaction takes place on heating $Pb(NO_3)_2$ to form PbO, NO_2 and O_2.

Lead (II) nitrate → Lead (II) oxide + Nitrogen dioxide + Oxygen

$2\ Pb(NO_3)_2\ (s) \rightarrow 2\ PbO\ (s) + 4\ NO_2\ (g) + O_2\ (g)$

50. (b)

A. B. C and D

Explanation:

(A) When electricity is passed in water, it decomposes into hydrogen and oxygen. $2H_2O \rightarrow 2H_2 + O_2$

(B) Nitrogen is an unreactive gas it prevents oxidation in turn it prevents rancidity of chips.

(C) Melting of ice is a physical change because it is a change in only the physical properties of the substance and it can be reversed, i.e, the substance formed can be restored back to their original form.

(D) Corrosion occurs in the presence of moisture. For example when iron is exposed to moist air, it reacts with oxygen to form rust.

So, all statement are correct.

51. (d)

hydrated ferric oxide

Explanation:

Rust is an iron oxide, a usually red oxide formed by the redox reaction of iron and oxygen in the presence of water or air moisture.Chemically, rust is hydrated ferric oxide (Fe2O3.nH2O)

52. (c)

A and D

Explanation:
Calcium hydroxide when dissolved in water is an exothermic reaction and produces an alkaline media

53. (d)
$NH_4Cl \rightarrow NH_3 + HCl$

Explanation:
Decomposition reactions are those in which a substance splits into two or more simpler substances.
A general decomposition reaction can be represented as : $AB \rightarrow A + B$
NH_4Cl breaks up into two simple substances. So. given reaction is decomposition reaction.

54. (c)
safranin

Explanation:
Safranin is pinkish red in colour.

55. (d)
To prevent the material from drying

Explanation:
Glycerine is a good dehydrating agent. It avoids the drying of the specimen. Besides, glycerine tends to reflect light due to its refractive nature. As a result of it, image appears clearer under the microscope. Due to these reasons, glycerine is used while preparing temporary mount of leaf peel.

56. (b)
Absence of KOH

Explanation:
KOH absorbs the CO_2 gas so in the absence of KOH, CO_2 gas turns lime water milky.

57. (c)
Brush

Explanation:
To avoid damage of the peel, we generally used brush.

58. (a)
lower surface of the leaf

Explanation:
Stomata are mainly present on the lower surface of the leaf.

59. (b)
freshly plucked leaf

Explanation:
A freshly plucked leaf will have living cells and the epidermis will be fully stretched, therefore we can observe proper shape of the cells.

60. (c)
into the cell

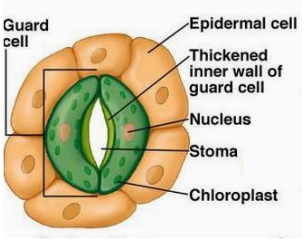
Explanation:
If a cell is placed in a solution having solute concentration lower (hypotonic) than that of the cell, water will move from the solution into the cell through the process of endosmosis.

61. (a)
soaking with filter paper

Explanation:
Filter paper absorbs the extra stain.

62. (c)
D

Explanation:



Chloroplast is marked by 'D' in the figure.

63. (c)

to absorb carbon dioxide released by germinating seeds

Explanation:

This is the function of KOH in the experiment.

64. (b)

Rectum

Explanation:

The small intestine comprises of three divisions - the proximal duodenum, the middle jejunum, and the distal ileum. The rectum, although a part of the gastro-intestinal tract, begins after the large intestine ends. Hence, it is not a part of the small intestine.

65. (d)

Water level will not rise in bent tube and CO_2 will not be absorbed

Explanation:

The rise in the level of water indicates that CO_2 is produced by germinating seeds during respiration. Actually, the germinating seeds respire and produce CO_2, which is absorbed by KOH solution. This creates a vacuum in the conical flask. The air present in the bent glass tube moves into the conical flask. This pulls the water in the bent tube further up.

So, if a student puts germinating seeds into the conical flask and miss to put KOH solution in hanging test tube then water level will not rise in bent tube and CO_2 will not be absorbed.

66. (c)

endosmosis rate will be more

Explanation:

Endosmosis rate will be more.

67. (c) A and B

Explanation:

A. A fuse is made of an alloy of tin and lead because it is important that the device acts without heating too much.

B. A switch in the electrical circuit is always connected to the live wire so that the socket/appliance is not live when it is switched off.

C. Alternating current is defined as the flow of charge that changes direction periodically.

D. Higher is the value of current flow, stronger is the magnetic field

So, Statement A and B are correct statement.

68. (b) 15A

Explanation:

The power circuit with a 15 A fuse is used for running electric heater, electric iron, geyser, refrigerator etc as it draws more current.

69. (d) producing induced current in a coil by the relative motion between a magnet and the coil

Explanation:

When a straight coil and a magnet are moved relative to each other, a current is induced in the coil. This phenomenon is known as electromagnetic induction.

70. (b)

Both the direction and the relative strength of magnetic field

Explanation:

Magnetic Field is the region around a magnet where other magnetic material will experience a force. A magnetic field can be graphically represented by magnetic field lines which indicates its strength and direction.

71. (c) 5 ampere

Explanation:

The lighting circuit with a 5 A fuse is used for running electric bulbs, fan, radio, TV, tube lights etc

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

Explanation:

(1) Appliances with exposed metal parts always need three pin plug i.e. positive, negative and neutral.
(2) Direct current (DC) is the unidirectional flow of electric charge. A battery is a good example of a DC power supply.
(3) The current which changes its directions periodically, such type of current is called alternating current.
(4) Electric motor is a device which makes use of the fact that magnetism in presence of electricity, produces motion.

73. (d) The relative motion between a magnet and a coil produces an electric current.
Explanation:
When a straight coil and a magnet are moved relative to each other, a current is induced in the coil. This phenomenon is known as electromagnetic induction.

74. (c) Both the statement A and B are true
Explanation:
(A) Hans Christian Oersted, a Danesh physicist first noticed the magnetic effect of electric current.
(B) The strength of a magnetic field can be observed from the degree of closeness of the field lines. Where magnetic fields are closer magnetic strength is high as near poles of a magnet, and where these are far apart magnetic strength is weak.
Statement (A) and (B) are true statement.

75. (b)
Al, Ni, Co

Explanation:
Alnico is the name for an iron alloy that primarily consists of iron, aluminum (Al), nickel (Ni) and cobalt (Co). That is why it is called al-ni-co. It can also be spelled AlNiCo. Sometimes, it may also contain copper and titanium. Alnico alloys are used as permanent magnets, as they are ferromagnetic.

76. (c) a DC motor and a DC generator
Explanation:
The commutation in DC machine or more specifically commutation in DC generator is the process in which generated alternating current in the

armature winding of a dc machine is converted into direct current after going through the commutator and the stationary brushes. Again in DC Motor, the input DC is to be converted in alternating form in armature and that is also done through commutation. This transformation of current from the rotating armature of a DC machine to the stationary brushes needs to maintain continuously moving contact between the commutator segments and the brushes.

77. (a)
An overload as well as short circuit.

Explanation:
An electric fuse can disconnect power supply from the circuit by causing a break in the circuit , thereby preventing the circuit from overload or short circuit . Thus heavy current is not allowed to flow through the circuit and the circuit and electric appliances are protected.

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

Explanation:
(1) Dynamo is a device that makes direct current electric power using electromagnetism. It is also known as a generator. Dynamos and generators work using the wild complex phenomena of electromagnetism.
(2) Magnetism is one aspect of the combined electromagnetic force. It refers to physical phenomena arising from the force caused by magnets, objects that produce fields that attract or repel other objects.
3) A generator converts mechanical energy into electrical energy, while a motor converts electrical energy into mechanical energy. Both the devices work because of electromagnetic induction, which is when a voltage is induced by a changing magnetic field.
(4) Andre-Marie Ampere was a French physicist and mathematician who was one of the founders of the science of classical electromagnetism. The SI unit of measurement of electric current, the ampere, is named after him.

79. (b)
Deflects towards the west

Explanation:

If we Place a straight current carrying wire (the direction of the flow current is from north to south) such that the wire is placed below a compass needle such that the wire is parallel to the compass needle, the north pole of the compass needle deflects towards the west.

80. (c) A and B

Explanation:

When the main switch in a building is turned off or the breaker trips or the fuse burns, power to both live and neutral lines is disconnected. The earth or ground line is a safety line that must never be disconnected.

Solution

Class 10 - Social Science

MCQ Examination July (2019-20)

Section A

81. (a)

    The British government agreed to grant independence

    Explanation:

    As per Gandhi-Irwin Pact ,Gandhiji consented to participate in a Round Table Conference in London and the government agreed to release the political prisoners. In December 1931, Gandhiji went to London for the conference, but the negotiations broke down and he returned disappointed.

82. (d) A physical force which sought destruction of the enemy

    Explanation:

    The idea of satyagraha emphasised the power of truth and the need to search for truth. It suggested that if the cause was true, if the struggle was against injustice, then physical force was not necessary to fight the oppressor. Without seeking vengeance or being aggressive, a satyagrahi could win the battle through nonviolence. By this struggle, truth was bound to ultimately triumph. Mahatma Gandhi believed that this dharma of non-violence could unite all Indians.

83. (b)

    The middle class in cities, the peasants and the tribal in the countryside and plantation workers

    Explanation:

    The movement started with middle-class participation in the cities.

    - Thousands of students left government-controlled schools and colleges, headmasters and teachers resigned, and lawyers gave up their legal practices.
    - It drew into its fold the struggles of peasants and tribals which were developing in different parts of India in the years after the war.
    - Plantations Workers too had their own understanding of Mahatma Gandhi and the notion of swaraj.

84. (c) Oppressive plantation system
Explanation:
After arriving in India, Mahatma Gandhi successfully organised satyagraha movements in various places. In 1916, he travelled to Champaran in Bihar to inspire the peasants to struggle against the oppressive plantation system

85. (d) Abanindranath Tagore by his paintings of a mother figure in 1905
Explanation:
Bharat Mata, the mother figure is shown as dispensing learning, food and clothing. The mala in one hand emphasises her ascetic quality created by Abanindranath Tagore, 1905.

86. (a) Khilafat and Swaraj
Explanation:
Gandhiji saw Khilafat Movement as an opportunity to bring Muslims under the umbrella of a unified national movement. At the Calcutta session of the Congress in September 1920, he convinced other leaders of the need to start a non-cooperation movement in support of Khilafat as well as for swaraj.

87. (a) Rabindranath Tagore and Natesa Sastri
Explanation:
In Bengal, Rabindranath Tagore himself began collecting ballads, nursery rhymes and myths, and led the movement for folk revival. In Madras, Natesa Sastri published a massive four-volume collection of Tamil folk tales, The Folklore of Southern India. He believed that folklore was national literature; it was 'the most trustworthy manifestation of people's real thoughts and characteristics'.

88. (b)
B.R. Ambedkar

Explanation:
Dr B.R. Ambedkar, organised the dalits into the Depressed Classes Association in 1930 . He clashed with Mahatma Gandhi at the second Round Table Conference by demanding separate electorates for dalits .

89. (a) Bankim Chandra Chattopadhyay
Explanation:

In the 1870s, Bankim Chandra Chattopadhyay 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.

90. (d) All the these
Explanation:
Mahatma Gandhi started his famous salt march on 11 march, 1930 accompanied by 78 of his trusted volunteers. The march was over 240 miles, from Gandhiji’s ashram in Sabarmati to the Gujarati coastal town of Dandi. The volunteers walked for 24 days, about 10 miles a day. Thousands came to hear Mahatma Gandhi wherever he stopped, and he told them what he meant by swaraj and urged them to peacefully defy the British. On 6 April he reached Dandi, and ceremonially violated the law, manufacturing salt by boiling sea water.

91. (d) the river of sorrow
Explanation:
This popular Bhadu song in the Damodar valley region narrates the troubles faced by people owing to the flooding of Damodar river known as the' river of sorrow'.

92. (c)
to the perennial Rajasthan Canal

Explanation:
Today, in western Rajasthan, sadly the practice of rooftop rainwater harvesting is on the decline as plenty of water is available due to the perennial Rajasthan Canal, though some houses still maintain the tankas since they do not like the taste of tap water.

93. (b) Dam
Explanation:
A dam is a barrier across flowing water that obstructs, directs or retards the flow, often creating a reservoir, lake or impoundment. “Dam” refers to the reservoir rather than the structure. Most dams have a section called a spillway or weir over which or through which it is intended that water will flow either intermittently or continuously.

94. (d)
Ganga

Explanation:
In the first century B.C., Sringaverapura near Allahabad had sophisticated water harvesting system channelling the flood water of the river Ganga

95. (c)
4

Explanation:
India receives nearly 4 per cent of the global precipitation and ranks 133 in the world in terms of water availability per person per annum.

96. (a) employment opportunities
Explanation:
Post-independent India witnessed intensive industrialisation and urbanisation, creating vast employment opportunities for us.

97. (d) water harvesting system
Explanation:
Many thought that given the disadvantages and rising resistance against the multi- purpose projects, water harvesting system was a viable alternative, both socioeconomically and environmentally.

98. (c) much of it may be polluted by domestic and industrial wastes.
Explanation:
Where water is sufficiently available to meet the needs of the people, but, the area still suffers from water scarcity .This scarcity may be due to bad quality of water. Lately, there has been a growing concern that even if there is ample water to meet the needs of the people, much of it may be polluted by domestic and industrial wastes, chemicals, pesticides and fertilisers used in agriculture, thus, making it hazardous for human use.

99. (a) Narmada & Tapi
Explanation:
The rivers which flows to the west side in India is Narmada & Tapi and flows into Arabian Sea.

100. (d)

70

Explanation:
70 per cent of the freshwater occurs as ice sheets and glaciers in Antarctica, Greenland and the mountainous regions of the world

101. (d) decentralisation
Explanation:
When power is taken away from Central and State governments and given to local government, it is called decentralisation. The basic idea behind decentralisation is that there are a large number of problems and issues which are best settled at the local level.

102. (c) 1947
Explanation:
In 1947, the boundaries of several old States of India were changed in order to create new States.
This was done to ensure that people who spoke the same language lived in the same
State.

103. (a)
Nagaland,Uttarakhand and Jharkhand

Explanation:
Some States were created not on the basis of language but to recognise differences based on culture, ethnicity or geography. These include States like Nagaland, Uttarakhand and Jharkhand.

104. (d) 21
Explanation:
Hindi was identified as the official language. But Hindi is the mother tongue of only about 40 per cent of Indians. Therefore,there were many safeguards to protect other languages.Besides Hindi, there are 21 other languages recognised as Scheduled Languages by the Constitution.

105. (c) Dutch-speaking
Explanation:
The minority French-speaking community was relatively rich and powerful.

This was resented by the Dutch-speaking community who got the benefit of economic development and education much later.

106. (b) villages, urban areas
Explanation:
Panchayats in villages and municipalities in urban areas were set up in all the States.

107. (b) Union Government
Explanation:
According to our constitution, the Union Government has the power to legislate on these 'residuary' subjects.

108. (b) zilla parishad
Explanation:
All the panchayat samitis or mandals in a district together constitute the zilla (district) parishad. Most members of the zilla parishad are elected.

109. (d) when there no single party get a clear majority in the Lok Sabha
Explanation:
The period after 1990, was the beginning of the era of COALITION GOVERNMENTS at the Centre. Since no single party got a clear majority in the Lok Sabha, the major national parties had to enter into an alliance with many parties including several regional parties to form a government at the Centre. This led to a new culture of power sharing and respect for the autonomy of State Governments.

110. (c) state
Explanation:
Panchayats in villages and municipalities in urban areas were set up in all the States. But these were directly under the control of state governments.

111. (b) Information and communication technology
Explanation:
Information and communication technology has risen the most with development of tertiary sector which is the third of the three economic sectors of the three-sector theory.

112. (b)
Manufacturing clothes

Explanation:
Cloth is made in industries, let it be a power loom or handloom but both are a part of secondary sector. Therefore manufacturing clothes is the activity of secondary sector.

113. (d) Promoting tourism
Explanation:
The contribution of tourism to total employment of the Country during 2009-10, 2010-11 and 2011-12 was 10.17%, 10.78% and 11.49%, respectively. This contribution is increasing day by day and if tourism will be promoted a number of jobs will be provided in the urban areas.

114. (d) WIPRO
Explanation:
WIPRO is a private sector enterprise which is managed, controlled and owned privately.

115. (a) Primary sector
Explanation:
During 1973-74, GDP share by the primary sector was the largest. It also was the highest job provider during this period.

116. (a) Fishing
Explanation:
The tertiary sector consists of industries which provide a service, fishing does not provide any service and is an activity of primary sector. The rest of the activities are of tertiary sector.

117. (b) Five years
Explanation:
The **National Sample Survey Organisation**(**NSSO**), now known as **National Sample Survey Office** an organization under the Ministry of statistics of the Govt. of India was established in 1950. National Sample Survey Organization(NSSO)' has been consistently conducting 'Employment Unemployment Surveys' for an interval of every five years since 1973, which is considered to be the most credible and reliable sources of employment data in the country.

118. (d) Tertiary sector

Explanation:

The activities in tertiary sector generates services rather than goods, that is why it is also called the service sector. Tertiary activities are not involved in the direct production of goods instead they mainly provides services to a society.

119. (a) Agriculture

Explanation:

Underemployment is a condition where there are too many workers who are employed in a particular job relative to the number of workers who are actually required to do that job. Hence, workers are inefficiently employed in a situation of underemployment. This is mainly found in the agricultural sector as there are often too many people who are working to cultivate a particular plot of farmland. The particular farmland may not be able to support so many workers. So, even if few people are moved out , production will not affected.

120. (c) investing money in transportation and storage of crops

Explanation:

If the government invests some money in transportation and storage of crops or makes better rural roads so that mini trucks reach everywhere farmers will be able to sell their produce and more people will get employed in services like trade and transport.Therefore govt. investment on transportation and storage of crops will increase the employment in rural areas.