

1. Five year hence a man's age will be three times his son's age and five year ago he was seven times as old as his son. The present age of the man and his son respectively are

- A. 40, 10
- B. 45, 15
- C. 48, 16
- D. 42, 14

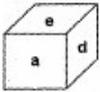
2. Which statement can not be justified for real numbers?

- A. $(a + b) + c = a + (b + c)$
- B. $a - (b \div c) = (a - b) \div c$
- C. $(ab)c = a(bc)$
- D. $(a + b) + 0 = 0 + (a + b)$

3. Arman said "This girl is the wife of the grandson of my mother". Who is Arman to the girl?

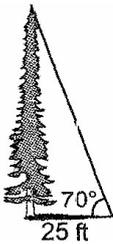
- A. Father
- B. Grand father
- C. Husband
- D. Father-in-law

4. In a dice a, b, c and d are written on the adjacent faces, in a clockwise order and e and f at the top and bottom. When c is at the top, what will be at the bottom ?



- A. a
- B. b
- C. c
- D. e

5. In the given diagram, the length of the tree's shadow is 25 feet. The angle of elevation from the tip of the shadow to the top of the tree is 70° . How tall is the tree to the nearest tenth of a foot?



Angle	sin	cos	tan
20°	0.3420	0.9397	0.3640
70°	0.9397	0.3420	2.7475
90°	1.0000	0.0000	∞

- A. 9.1 ft
- B. 23.5 ft
- C. 68.7 ft
- D. 73.10 ft

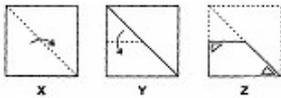
6. Which ordered pair is the solution of the system of linear equations $\begin{cases} 2x - 5y = -6 \\ 2x - 7y = -14 \end{cases}$?

- A. $\left(\frac{7}{6}, \frac{5}{3}\right)$
 B. (22, 10)
 C. $\left(\frac{-14}{3}, \frac{2}{3}\right)$
 D. (7, 4)

7. The surface area of a cube is 552.96 sq cm. Find the volume of the cube

- A. 773.5 cm³
 B. 797.35 cm³
 C. 884.7 cm³
 D. 893.47 cm³

8. The given question contains a set of three figures X, Y, and Z showing a sequence of folding of a piece of paper. Figure (Z) shows the manner in which the folded paper has been cut. These three figures are followed by four answer figures from which you have to choose a figure which would most closely resemble the unfolded form of figure (Z).

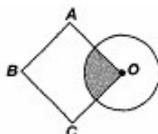


- A.
- B.
- C.
- D.

9. For one roots of $ax^2 + bx + c = 0$ to be double the other, the coefficients a, b, c must be related as follows

- A. $4b^2 = 9c$
 B. $2b^2 = 9ac$
 C. $2b^2 = 9a$
 D. $b^2 - 8ac = 0$

10. O is the centre of a circle of diameter 4 cm and OABC is a square. If the shaded area is $\frac{1}{3}$ area of the square, then the side of the square is _____



- A. $\pi\sqrt{3}$ cm
- B. $\sqrt{3\pi}$ cm
- C. $3\sqrt{\pi}$ cm
- D. 3π cm

11. In the following question, arrange the given words in the sequence in which they occur in the dictionary and then choose the correct sequence. 1. Preach 2. Praise 3. Precinct 4. Precept 5. Precede

- A. 2,1,5,4,3
- B. 2,1,3,4,5
- C. 2,5,1,4,3
- D. 1,2,4,5,3

12. In making 1000 revolutions, a wheel covers 88km. The diameter of the wheel is_____

- A. 14m
- B. 24m
- C. 28m
- D. 40m

13. It 12 men or 15 women can reap a field in 44 days. Then the number of days that 8 men and 12 women take to reap the given field would be

- A. 20
- B. 45
- C. 42
- D. 40

14. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double that of a red ball then the number of blue balls in the bag is

- A. 10
- B. 5
- C. 8
- D. 7

15. If $\frac{\sqrt{a+2b} + \sqrt{a-2b}}{\sqrt{a+b} - \sqrt{a-2b}}$, then value of $bx^2 - ax + b$ is_____

- A. 0
- B. 2
- C. 1
- D. Can't be determined

16. Chemically rust is

- A. Hydrated ferrous oxide
- B. hydrated ferric oxide
- C. only ferric oxide

D. none of these

17. Read the given statements and mark the correct option.

Statement 1: The balancing of chemical equations is based on law of conservation of mass.

Statement 2: Total mass of reactants is equal to total mass of products in chemical reaction

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1
- B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1
- C. Statement 1 is true and statement 2 is false
- D. Both statements 1 and 2 are false

18. Which of the following is not a thermal decomposition reaction?

- A. $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$
- B. $2\text{FeSO}_4 \rightarrow \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$
- C. $\text{ZnCO}_3 \rightarrow \text{ZnO} + \text{CO}_2$
- D. $2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$

19. Plaster of Paris is made from

- A. Lime stone
- B. Slaked Lime
- C. Quick lime
- D. Gypsum

20. Read the given statements and mark the correct option

Statement 1: pH of hydrochloric acid solution is less than that of acetic acid solution of the same concentration.

Statement 2 : In equimolar solutions, the number of titrable protons present in hydrochloric acid is less than that present in acetic acid

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1
- B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1
- C. Statement 1 is true and statement 2 is false
- D. Statement 1 is false and statement 2 is true

21. Which of the following is evolved when Na_2CO_3 is heated?

- A. CO_2
- B. CO
- C. O_2
- D. No

22. The common method for extraction of metals from the oxide one is

- A. Reduction with carbon
- B. reduction with hydrogen
- C. reduction with aluminium
- D. electrolytic method

23. A process employed for the concentration of sulphide ore is

- A. Forth floatation
- B. Roasting
- C. electrolysis
- D. bessemerisation

24. Read the following passage and answer

Metals are usually hard. Hence metals are strong and can withstand heavy loads over them. Due to this property they are difficult to cut and can be used in the construction of heavy machines, buildings, etc. On the other hand, non-metals are usually brittle. On hammering them they break into small pieces converting themselves into fine powder. Among the following, the strongest one is

- A. Hydrogen
- B. Oxygen
- C. Manganese
- D. Chlorine

25. Name the compound that is formed by fermentation of sugar and is a volatile liquid

- A. Ethanol
- B. Ethane
- C. Ethene
- D. Ethyne

26. A double bond between two carbon atoms is formed by

- A. The transfer of two electrons from one carbon atom to the other
- B. The transfer of one electron from one carbon atom to the other
- C. Sharing two electron pairs
- D. The sharing of two electrons

27. In the preparation of wood charcoal, liquid pyroligneous acid is obtained. It consists of

- A. Acetone
- B. Methanol
- C. Acetic acid
- D. Vinegar

28. Which of the following position of elements have same number of valence electrons as that of element of atomic number 6?

- (i) Group 14 and period 5
- (ii) Group 14 and period 4
- (iii) Group 6 and period 4
- (iv) Group 14 and period 3

Correct statements are

- A. (i) & (ii)
- B. (i), (ii) & (iii)
- C. (i), (ii) & (iv)
- D. All of these

29. The electron affinity of

- A. Carbon is greater than oxygen

- B. Sulphur is less than oxygen
- C. Iodine is greater than bromine
- D. Bromine is less than chlorine

30. Amoeba shows following kind of nutrition

- A. autotrophic
- B. holozoic
- C. saprotrophic
- D. parasitic

31. The given flowchart shows one of the pathway of glucose break-down. Identify 'P' and 'Q'.

Glucose $\xrightarrow{\text{In cytoplasm}}$ P $\xrightarrow{\text{In muscle cells}}$ Q + Energy

- A. Ethanol and carbon dioxide
- B. Pyruvate and carbon dioxide
- C. Pyruvate and lactate
- D. Ethanol and pyruvate

32. Given below are the events of photosynthesis. Identify which of the following is/are not correct?

- (i) Absorption of light energy by chlorophyll.
- (ii) Conversion of light energy to chemical energy and splitting of carbon dioxide into carbohydrates and oxygen.
- (iii) Reduction of carbon dioxide to carbohydrates.
- (iv) Conversion of chemical energy to radiant energy and splitting of water molecules into hydrogen and oxygen

- A. (i) & (ii)
- B. (ii) only
- C. (ii) & (iii)
- D. (ii) & (iv)

33. Which of the following statements is false?

- A. Placenta allows exchange of materials between mother and foetus
- B. The foetal part of the placenta consists of the cells of the chorion which produce projections called chorionic villi
- C. Antibody cannot cross the placenta from mother to foetus
- D. Placenta also secretes pregnancy hormones in greater amounts

34. Which of the following statements is/are not true about vegetative propagation in plants?

- (i) It makes possible the propagation of some seedless fruit plants like banana, oranges, grapes etc.
- (ii) It is the mean to produce genetically identical off-springs.
- (iii) It brings more adaptability of plants to the changed environments.
- (iv) It brings early flowering and fruiting in plants.
- (v) It brings adequate dispersal of vegetative propagules and thus reduces over crowding

- A. (ii) & (iv)
- B. (ii), (iv) & (v)
- C. (i), (iii) & (iv)
- D. (iii) & (v)

35. Who has suggested that first primitive organism arose from a collection of chemicals through a progressive series of chemical reactions?

- A. Stanley Miller
- B. J.B.S. Haldane
- C. O.Urey
- D. Louis Pasteur

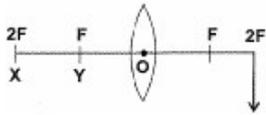
36. Which of the following statements regarding natural selection is/are true

- A. It is a process in which members of a population inherit traits that enable them to better survive and produce offspring
- B. It is based on the isolation of natural populations and selective breeding of organisms
- C. It provides diversity without any adaptation
- D. All of the above

37. Wing of a bird and wing of an insect are

- A. Homologous organs
- B. analogous organs
- C. vestigial organ
- D. both (a) and (b)

38. To produce an image by a convex lens, in the position shown (see figure) the object would have to be placed



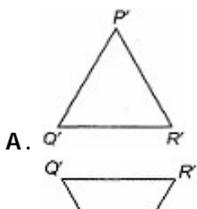
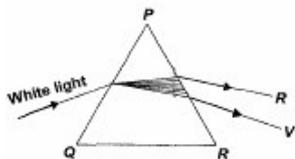
- A. Between Y and O
- B. At Y
- C. Between X and Y
- D. At X

39. Read the given statements and mark the correct option.

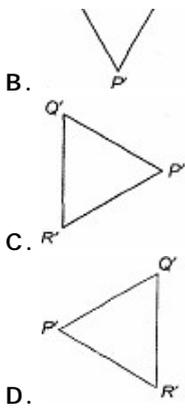
Statement 1 : If refractive index of one medium is equal to refractive index of second medium, then beam does not bend at all
 Statement 2 : The bending of light does not depend on refractive indices of media

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1
- B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1
- C. Statement 1 is true but statement 2 is false
- D. Statement 1 is false but statement 2 is true

40. Two identical prisms PQR and P'Q'R' are given. White light is passed through PQR as shown below. In which of the following positions P'Q'R' will again yield white light?



- A.



41. Read the given statements and mark the correct option.

Statement 1: A normal human eye can clearly see all the objects at the different distances.

Statement 2 : The human eye has the capacity to suitably adjust the focal length of its lens to a certain extent

- A. Both statements I and 2 are true and statement 2 is the correct explanation of statement 1
- B. Both statements I and 2 are true but statement 2 is not the correct explanation of statement 1
- C. Statement 1 is true, but statement 2 is false
- D. Both statement 1 and statement 2 are false

42. When a person is myopic, he/ she can clearly see

- A. both nearby and for off objects
- B. Only nearby objects
- C. only far off objects
- D. Neither nearby nor for off objects

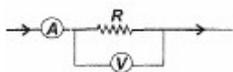
43. Read the given statements and mark the correct option.

Statement 1 : The direction of electric current is taken as opposite to the direction of the flow of electrons.

Statement 2: Electrons are negative charges

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1
- B. Both statements 1 and 2 are true and statement 2 is not the correct explanation of statement 1
- C. Statement 1 is true but statement 2 is false
- D. Both statements 1 and 2 are false

44. In the circuit shown here, the ammeter A reads 5 A and the voltmeter V reads 20 V. The correct value of resistance R is



- A. Exactly 4Ω
- B. Slightly greater than 4Ω
- C. Slightly less than 4Ω
- D. Zero

45. Match column I with column II and select the correct option from the codes given below

Column I	Column II
(a) Fleming's left hand rule	(i) Application of electromagnetic induction
(b) Fleming's right hand rule	(ii) Direction of magnetic force on carrying conductor in uniform a current magnetic field
(C) Solenoid	(iii) Similar to bar magnet

A.	A	B	C	D
(ii)	(iii)	(iv)	(ii)	

B.	A	B	C	D
(ii)	(iv)	(iii)	(i)	

C.	A	B	C	D
(iv)	(iii)	(i)	(ii)	

D.	A	B	C	D
(iii)	(i)	(ii)	(iv)	

46. The most important safety device method used for protecting electrical appliances from short circuiting or overloading is

- A. Earthing
- B. use of stabilizer
- C. use of electric meter
- D. fuse

47. Read the passage carefully and answer. Geothermal energy is heat of earth and is the naturally occurring thermal energy formed within rock formations and the fluids held within those formations. It is underground water which gets converted into hot water and steam when it comes in contact with hot rocks. There are only certain places, called hot spots. These hot spots are formed when geological changes push the molten rocks, called magma. Main disadvantage of geothermal energy is

- A. Power production has lower efficiency
- B. Geothermal energy is inexhaustible
- C. Geothermal energy is not available everywhere
- D. All of these

48. India's first atomic power station is

- A. Bhabha Atomic Research Centre
- B. Tarapur Atomic Power Station
- C. Narora Atomic Power Station
- D. None of these

49. The second trophic level is always of

- A. herbivores
- B. autotrophs
- C. carnivores
- D. producers

50. The main purpose of water harvesting is not to hold rain water on the surface of the earth but to make rain water percolate under the ground so as to recharge ground water. Which of the following sentences is/are true for water stored in the ground?

- (i) It does not evaporate.
- (ii) It spreads out to recharge wells and provides moisture for crops over a wide area.
- (iii) It does not promote breeding of mosquitoes.

- (iv) It is protected from contamination by human and animal wastes.
- (v) It is utilised for benefit of the local population

- A. (i), (ii) & (iii)
- B. (i), (iii) & (v)
- C. (ii), (iii) & (iv)
- D. All of these