01. If a wire of resistance 4Ω is melted and recast to half its length, by using entire material available the new resistance of wire will be
(A) 1Ω (B) 2Ω
(C) 8Ω (D) can't be said as area is not known

02. When a force retards the motion of a body, the work done is
(A) Positive (B) zero (C) negative (D) undefined

03. If electric current is compared with flow of water then the flow of electron can be seen as flow of " ____", the tab can be compared with " ____" and positive terminal of source can be considered as point at " _____".
(A) "water"," bulb" " upper level" (B) "current"," resistance" " positive potential"
(C) "water"," key" " upper level" (D) "negative charges"," T-joint" " upper level"

04. Which of the following statements is true?
(A) A convex lens has 4 dioptrepower having a focal length 0.25 m
(B) A convex lens has –4 dioptrepower having a focal length 0.25 m
(C) A concave lens has 4 dioptrepower having a focal length 0.25 m
(D) A concave lens has –4 dioptrepower having a focal length 0.25 m ven

05. A light ray is incident at an angle of incidence i from a denser medium to a rarer medium so that reflected and refracted rays make an angle 90^0 mutually with each other. The angle of reflection & refraction are r & r' respectively. Then the critical angle is
(A) $\tan^{-1}(\sin i)$ (B) $\sin^{-1}(\tan i)$ (C) $\sin^{-1}(\tan r')$ (D) $\sin^{-1}(\cot r)$

06. An aeroplane flying at height of 20,000 m at a speed of 300km h^{-1} has
(A) only potential energy (B) only kinetic energy
(C) both, potential and kinetic energy (D) none of the above

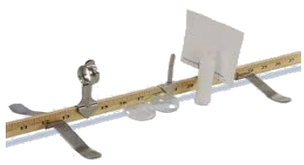
07. Which of the following is mathematical equation of Ohm's law?
(A) V = IR (B) I = RV (C) $V = I^2R$ (D) both (A) and (B)

08. The ratio of thickness of plates of two transparent medium A & B is 6:4. If light takes equal time in passing through them, then refractive index of B w.r.t. A will be
(A) 1.33 (B) 1.75 (C) 1.4 (D) 1.5

09. The device which is used for converting mechanical energy into electrical energy is called:
(A) electric motor (B) Electric generator (C) transformer (D) battery

10. Two conductors of resistance RΩ are connected in series and then in parallel. The ratio of the resistance in series and parallel combination is:
(A) 1 (B) 2 (C) 4 (D) 6

11. An object 4cm high is placed on optical bench (an instrument used in optical experiments as shown in figure) at a mark indicating 20cm in front of a convex mirror which is placed at a mark 35cm. The radius of curvature of mirror is 10 cm. Then the image formed will be at the mark given by

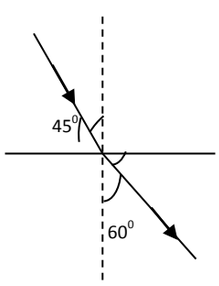


(A) 3.75 cm (B) 32.25 cm
(C) 7.5 cm (D) 38.75 cm

12. The danger signals installed at the top of tall buildings are red in colour. These can be easily seen from a distance because among all other colours, the red light
(A) is scattered the most by smoke or fog (B) is scattered the least by smoke or fog
(C) is more sensitive for retina (D) moves fastest in air

13. Vasundhara is standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of the same size and that of the legs smaller. The following is the order of combinations for the magic mirror from the bottom.
(A) Plane, convex and concave (B) Convex, concave and plane
(C) Concave, plane and convex (D) Convex, plane and concave

14. Figure shows a ray of light as it travels from medium B to medium A. Refractive index of the medium B relative to medium A is



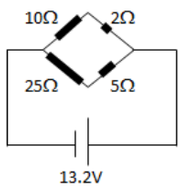
(A) $\sqrt{\frac{3}{2}}$ (B) $\sqrt{\frac{2}{3}}$ (C) $\sqrt{\frac{1}{2}}$ (D) $\sqrt{2}$

15. Which of the following can make a parallel beam of light when light from a point source is incident on it?
(A) Concave mirror as well as convex lens (B) Convex mirror as well as concave lens
(C) Two plane mirrors at 90° to each other (D) Concave mirror as well as concave lens

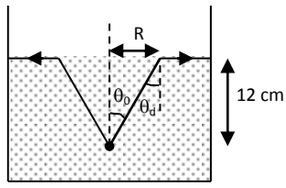
16. A coin and a feather are dropped together in a vacuum. Then
(A) The coin will reach the ground first (B) The feather will reach the ground first
(C) Both will reach the ground at the same time (D) The feather will not fall down

17. A racing car has a uniform acceleration of $4m/s^{2.}$ The distance covered by the car in 10 seconds after the start is:
(A) 200m (B) 100m (C) 300m (D) 400m

18. The current through 2 ohm resistance will be
(A) 1.2 A
(B) 1.4 A
(C) 0.4 A
(D) 1.0 A



19. A fish looking up through the water sees the outside world contained in a circular horizon. If the refractive index of water is 4/3 and the fish is 12 cm below the surface, the radius of this circle in cm is
(A) $36\sqrt{5}$ (B) $4\sqrt{5}$
(C) $36\sqrt{7}$ (D) $36/\sqrt{7}$



20. Which of the colours of visible light has minimum wavelength?
(A) Violet (B) red (C) yellow (D) green

21. Electron volt is a measure of:
(A) Charge (B) Current (C) Electric potential (D) Energy

22. A circular disk of copper has a symmetrical hole at its centre. The disc is uniformly heated. The diameter of the hole will
(A) increase (B) decrease (C) remain the same (D) None of these

23. In case of a moving body
(A) displacement = distance (B) displacement ≥ distance
(C) displacement ≤ distance (D) displacement < distance

24. Two bodies of masses 1 kg and 4 kg have equal kinetic energies. The ratio of their momentum is:
(A) 4 :1 (B) 1 : 4 (C) 2 : 1 (D) 1 : 2

25. The power of a lens whose focal length is 25 cm is :
(A) 4 Dioptre (B) 25 Dioptre (C) 0.04 Dioptre (D) 2.5 Dioptre

26. The acidity problem can be controlled by adding basic substances like____
(A) NaOH (B)antacids (C)sodium carbonates (D)all of the above

27. ___is used in medicine such as tincture iodine, cough syrups and many tonics.
(A) Methanol (B) ethanol (C) acetic acid (D) all

28. The correct decreasing order of reactivity of the elements is
(A) Zn > Fe > Al > Cu (B) Cu > Fe > Al > Zn
(C) Al > Zn > Fe > Cu (D) Fe > Al > Zn > Cu

29. Valency of potassium and boron is/are:
(A)3, 2 (B)1,3 (C)1, 2 (D)both having 2 valency

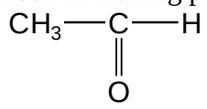
30. The ratio of weights of Hydrogen and Oxygen in H_2O_2 is___
(A) 8:1 (B) 1:8 (C) 1:9 (D) 1:16

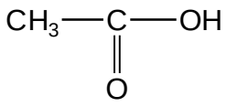
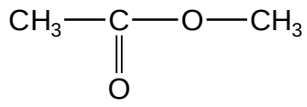
31. When dry slaked lime reacts with chlorine gas, it forms___
(A) washing soda (B) bleaching powder (C) soap (D) all of the above

32. In the reaction: $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$, HCl gets ____to Cl_2.
(A) reduced (B)oxidized
(C) both oxidized and reduced (D) none of these

33. Which of the following methods is suitable for preventing an iron vessel from rusting ?
(A) Applying grease (B) Applying paint
(C) Applying a coating of zinc (D) All the above

34. Which of the following is a sweet smelling substance used in making perfumes?

(A) CH_3OH (B) 

(C)  (D) 

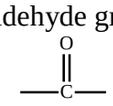
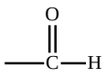
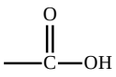
35. Take about 1.0gm of $CaCO_3$ in a test tube. Heat it over a flam, it gives quicklime with a colorless CO_2 gas. The reaction is called as__

(A) decomposition reaction (B) displacement reaction
(C) double decomposition reaction (D) double displacement reaction

36. The acidity problem can be controlled by adding basic substances like____

(A) NaOH (B) antacids (C)sodium carbonates (D)all of the above

37. The aldehyde group is

(A)  (B)  (C)  (D) 

38. The corrosion of Fe due to the formation of

(A) FeO (B) Fe_3O_4 (C) $Fe_2O_3 \cdot xH_2O$ (D) $Fe(OH)_3$

39. Valency of He, Ne gases is/are:

(A) 0 (B) 1 (C) 2 (D) 0 & 1

40. 'Cerium' belongs to__

(A) non-metal (B) metal (C) transition metal (D) lanthanide

41. _____ are different forms of carbonate?

(A) limestone (B) chalk (C) marble (D) all of the above

42. The process of alkaline hydrolysis of oils or fats is known as___

(A) hydrolysis (B) acidification (C) esterification (D) none of the above

43. The reaction involved in thermite process is

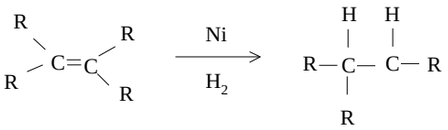
(A) $Fe_2O_{3(s)} + 2Al_{(s)} \rightarrow 2Fe_{(l)} + Al_2O_{3(s)}$ (B) $3MnO_{2(s)} + 4Al_{(s)} \rightarrow 3Mn_{(l)} + 2Al_2O_{3(s)}$

(C) $Fe_2O_{3(s)} + 6Na_{(s)} \rightarrow 2Fe_{(l)} + 3Na_2O_{(s)}$ (D) $Fe_2O_{3(s)} + 3Ca_{(s)} \rightarrow 2Fe_{(l)} + 3CaO_{(s)}$

44. Which of the following compound is used to dry a gas in the laboratory?

(A) $CaSO_4$ (B) $NaHCO_3$ (C) NaOH (D) $CaCl_2$

45. Which of the following is a substitution reaction?

(A) 

(B) $CH_3CH_2OH \xrightarrow[\Delta]{KMnO_4/OH^-} CH_3COOH$

(C) $CH_4 + Cl_2 \xrightarrow{\text{Sunlight}} CH_3Cl + HCl$ (D) $CH_3CH_2OH \xrightarrow[\text{conc. } H_2SO_4]{\Delta} CH_2{=}CH_2$

46. Esters are sweet smelling substance which reacts in presence of acid or base to give back__?

(A) carboxylic acid (B) alcohol (C) Ketone (D) both (A) & (B)

47. Which of the following is hardest natural substance?

(A) Boron (B) Graphite (C) Diamond (D) Fullerene

48. In the reaction: $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$, HCl gets ____to Cl_2.

(A)reduced (B)oxidized
(C)both oxidized and reduced (D) none of these

49. Our body works within the pH range?

(A)7.0 to 7.8 (B)3.8 to 7.2 (C)7.4 to 8.4 (D)none of the above range

50. Oil of vitriol is

(A) H_2SO_4 (B) HCl (C) HNO_3 (D) CH_3COOH

51. A & B entered into partnership with capitals in the ratio 4 : 5, after 3 months, A withdraw $\frac{1}{4}$ of his capital & B withdraw $\frac{1}{5}$ of his capital. The gain at the end of 10 months was Rs. 760. Then A's share in this profit is

(A) 330 (B) 360 (C) 380 (D) 430

52. At constant temperature, pressure of a definite mass of gas is inversely proportional to the volume. If the pressure is reduced by 20%, find respective change in volume

(A) -16.66% (B) $+25\%$ (C) -25% (D) $+16.66\%$

53. A man on the deck of a ship is $16\,m$ above water level. He observed that the angle of elevation of the top of a cliff is 45° and the angle of depression of the base is 30°. What is the height of the cliff?

(A) 43.712 (B) 44.631 (C) 45.236 (D) 42.146

54. The difference between an exterior angle of (n-1) sided regular polygon and an exterior angle of (n+2) sided regular polygon is 6^o then the value of n is

(A) 13 (B) 14 (C) 12 (D)15

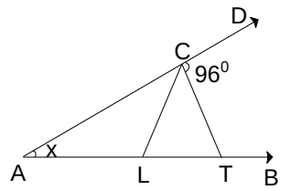
55. The incomes of A, B, C are in the ratio of 12 : 9 : 7 and their spending are in the ratio is 15 : 9 : 8. If A saves 25% of his income, what is the ratio of the savings of A, B and C?

(A) 15 : 18 : 11 (B) 11 : 18 : 15 (C) 11 : 15 : 18 (D) None

56. If $\sin A : \cos A = 4 : 7$, then the value of $\frac{7\sin A - 3\cos A}{7\sin A + 2\cos A}$ is

(A) $3/14$ (B) $3/2$ (C) $1/3$ (D) $1/6$

57. In the given figure $AL = LC = CT$ and $\angle TCD = 96^\circ$. Then measure of $\angle LTC$ is



(A) 32° (B) 84° (C) 64° (D) cannot be determined

58 Simplify $\left|\sqrt[3]{\sqrt[6]{a^9}}\right|^4 \left|\sqrt[6]{\sqrt[3]{a^9}}\right|^4$; the result is:

(A) a^{16} (B) a^{12} (C) a^8 (D) a^4

59. There are two candles of equal lengths and of different thickness. The thicker one lasts for six hours. The thinner one last two hours less than the thicker one. Ramesh lights the two candles at the same time. When he went to bed he saw the thicker one is twice the length of the thinner one. How long ago did Ramesh light the two candles?

(A) 1 hrs (B) 3 hrs (C) 6 hrs (D) none

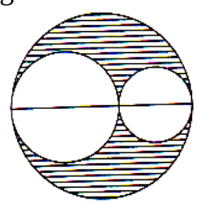
60. Inside a triangular garden there is a flower bed in the form of a similar triangle. Around the flower bed runs a uniform path of such a width that the sides of the garden are double the corresponding sides of the flower bed. The area of the path and the flower bed are in the ratio of

(A) 1:1 (B) 1:2 (C) 1:3 (D)None of these

61. On an alien planet, the inhabitants are similar to human beings, however they differ in one respect – either they have 3 heads and the normal amount of arms and legs (known as HEADERS) OR they have one head and 3 legs and 3 arms (known as LEGGERS). Last week, I was talking to a group of friends from the planet and between them they had 15 heads and 48 limbs (arms & legs). How many aliens are there in that group? (including headers and leggers)

(A) 9 (B) 10 (C) 12 (D) None of these

62. Two circles are drawn inside a big circle with diameter $\frac{2}{3}$rd and $\frac{1}{3}$rd of the diameter of the bigger circle. The area of shaded portion, if length of diameter of the circle is 21 cm, is



(A) $190\,cm^2$ (B) $154\,cm^2$ (C) $200\,cm^2$ (D) $206\,cm^2$

63. If A(-2, 5) and B(3, 2) are the two points on a straight line. If AB is extended to 'C' such that AC = 2BC, then the coordinates of 'C' are

(A) $\left(\frac{1}{2}, \frac{3}{2}\right)$ (B) $\left(\frac{7}{2}, \frac{1}{2}\right)$ (C) (8, -1) (D) (-1, 8)

64. If 27 * 3 = 243, 5 * 4 = 80, then what is the value of 3 * 7 ?

(A) 84 (B) 147 (C) 63 (D) 23

65. A man ate 100 bananas in 5 days, each day eating 6 more than previous day. How many bananas did he eat on the first day?

(A) 6 (B) 10 (C) 8 (D) 12

66. A cube and a cuboid are equal in volume. If the lengths of the edges of the cuboid are 4, 8, 16, then the length of the edge of the cube is

(A) 4 (B) 8 (C) 12 (D) 16

67. A man makes a trip by automobile at an average speed of 50km/hr. He returns over the same route at an average speed of 45km/hr. His average speed for the entire trip is

(A) $47\frac{7}{19}$ (B) $47\frac{1}{4}$ (C) $47\frac{1}{2}$ (D) none

68. The last (unit's) digit of the number obtained by multiplying the numbers
1281 × 1382 × 1483 × 1584 × 1785 × 1886 × 1987 × 2088 × 2589 will be:

(A) 0 (B) 9 (C) 7 (D) 2

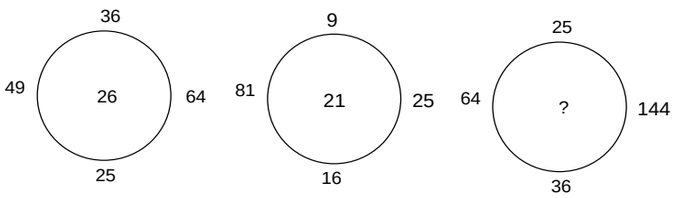
69. There are two examinations rooms A & B. If 10 students are sent from A to B, then the number of students in each room is the same. If 20 candidates are sent from B to A, then the number of students in A is double the number of students in B, then the number of students in room A is

(A) 20 (B) 80 (C) 100 (D) 200

70. In a coded language TAKE = 1790, PLOT = 5321 then code for PLATE will be

(A) 52701 (B) 53071 (C) 35710 (D) 53710

71. Find the missing number



(A) 24 (B) 25 (C) 23 (D) 31

72. A baby who was born on 29th Feb. 1896, when did he celebrate his first birthday.

(A) 28th Feb. 1897 (B) 29th Feb. 1990 (C) 29th Feb. 1904 (D) 20th Feb. 1908

73. Sonika is 10 weeks elder than Mala and Mala is 91 days younger than Jyoti. If Jyoti was born on Monday then on what day of week Sonika was born.

(A) Saturday (B) Sunday (C) Thursday (D) None

74. A clock is set right at 10 am. The clock gains 10 minutes in 24 hrs. What time will the clock show when the true time is 3 pm on the following day.

(A) 3 : 15 pm (B) 3 : 12 pm (C) 2 : 48 pm (D) 3 : 10 pm

75. A bus for Delhi leaves every thirty minutes from a bus stand. An enquiry clerk told a passenger that the bus had already left ten minutes ago and the next bus will leave at 9.35 a.m. At what time did the enquiry clerk give this information to the passenger ?

(A) 9.10 am (B) 8.55 am (C) 9.05 am (D) 9.15 am