JIPMER MBBS Entrance Question Paper – 2017 PHYSICS

1. Two 20 g flatworms climb over a very thin wall, 10 cm high. One of the worm is 20 cm long, the other is wider and only 10 cm long. Which of the following statement is correct regarding them?

a) 20 cm worm has done more work against gravity

(b) 10 cm worm has done more work against gravity

(c) Both worms have done equal work against gravity

(d) Ratio of work done by both the worms is 4 : 5

Answer: (b)

2. A rocket is intended to leave the Earth's gravitational field. The fuel in tis main engine is a little less than the amount that is necessary and an auxiliary engine, (only capable of operating for a short time) has to be used as well. When is it best to switch on the auxiliary engine?

(a) at take-off

(b) when the rocket has nearly stopped with respect to the Earth.

(c) It doesn't matter.

(d) Can't say

Answer: (a)

3. The turns of a solenoid, designed to provide a given magnetic flux density along its axis, are wound to fill the space between two concentric cylinders of fixed radii. How should the diameter d of the wire used be chosen so as tominimize the heat dissipated in the windings?

(a) Wire should be multiple of 5d

(b) Wire should be multiple of d/3

(c) Wire is independent of d

(d) Can't say

Answer: (c)

fitted with two air-tight frictionless pistons. The pistons are

connected to each other by a metallic wire. Initially, the pressure of the gas is p_0 and temperature is t_0, atmospheric pressure is also p_0. Now, the temperature of the gas is increased to $2t_0$, the tension of wire will be
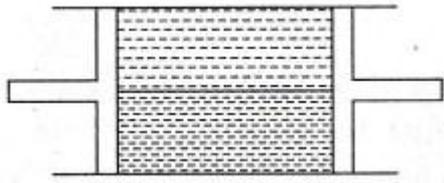
(a) $2p_0A$

(b) p_0A

(c) $p_0A/2$

(d) $4p_0A$

Answer: (b)

5. A particle of mass m is executing oscillation about the origin on X-axis. Its potential energy is $V(x) = K|x|^3$. Where K is a positive constant. If the amplitude of oscillation is a, then its time period T is proportional to

(a) $1/\sqrt{a}$

(b) a

(c) $\sqrt{a}$

(d) $a^{3/2}$

Answer: (a)

6. A body is projected vertically upwards. The times corresponding to height h while ascending and while descending are t_1 and t_2, respectively.

Then, the velocity of projection will be (take g as acceleration due to gravity)

(a) $\dfrac{g\sqrt{t_1 t_2}}{2}$

(b) $\dfrac{g(t_1 + t_2)}{2}$

(c) $g\sqrt{t_1 t_2}$

(d) $g\dfrac{t_1 t_2}{(t_1 + t_2)}$

Answer: (b)

7. A long straight wire is carrying current I in +z direction. The x – y plane contains a closed circular loop carrying current I_2 and not encircling the straight wire. The force on the loop will be

(a) $\mu_0 I_1 l_0 / 2\pi$

(b) $\mu_0 I_1 l_0 / 4\pi$

(c) zero

(d) depends on the distance of the centre of the loop from the wire

Answer: (d)

8. When the radioactive isotope $_{88}Ra^{226}$ decays in a series by emission of three alpha (α) and a beta (ß) particle, the isotope X which remains undecay is

(a) $_{83}X^{214}$

b) $_{84}X^{218}$

(c) $_{84}X^{220}$

(d) $_{87}X^{223}$

Answer: (a)

9. A solid cylinder is attached to a horizontal massless spring as shown in figure. If the cylinder rolls without slipping, the time period of oscillation of the cylinder is
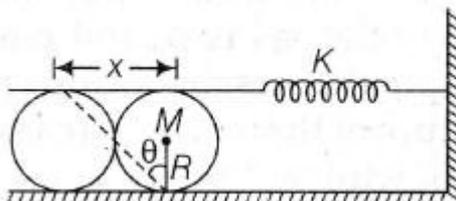
(a) $2\pi\sqrt{\dfrac{x}{g}}$

(b) $2\pi\sqrt{\dfrac{2M}{3K}}$

(c) $2\pi\sqrt{\dfrac{3M}{8K}}$

(d) $2\pi\sqrt{\dfrac{3M}{2K}}$

Answer: (c)

10. N lamps each of resistance r, are fed by a machine of resistance R. If light emitted by any lamp is proportional to the square of the heat produced, prove that the most efficient way of arranging them is to place them in parallel arcs, each containing n lamps, where n is the integer nearest to
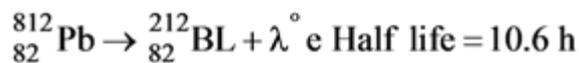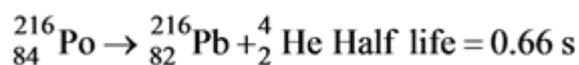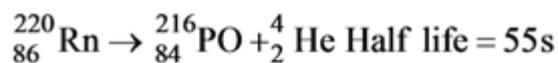
(a) $\left(\dfrac{r}{NR}\right)^{3/2}$

(b) $\left(\dfrac{NR}{r}\right)^{1/2}$

(c) $(NRr)^{3/2}$

(d) $(NRr)^{1/2}$

Answer: (b)

11. Radioactive decay will occur as follows

$$^{220}_{86}Rn \rightarrow ^{216}_{84}PO + ^{4}_{2}He \quad \text{Half life} = 55s$$

$$^{216}_{84}Po \rightarrow ^{216}_{82}Pb + ^{4}_{2}He \quad \text{Half life} = 0.66\ s$$

$$^{812}_{82}Pb \rightarrow ^{212}_{82}BL + \lambda^{\circ}e \quad \text{Half life} = 10.6\ h$$

If a certain mass of radon (Rn = 220) is allowed to decay in a certain container; then after 5 minutes the element with the greater mass willbe

(a) radon

(b) polonium
(c) lead

(d) bismuth

Answer: (c)

12. A stream of a liquid of density ρ flowing horizontally with speed v rushes out of a tube of radius r and hits a vertical wall nearly normally. Assuming that the liquid does not rebound from the wall, the force exerted on the wall by the impact of the liquid is given by

(a) $\pi r \rho v$

(b) $\pi r \rho v^2$

(c) $\pi r^2 \rho v$

(d) $\pi r^2 \rho v^2$

Answer: (d)

13. The x and y coordinates of a particle moving in a plane are given by x(t) = a cos (pt) and y(t) = b sin (pt) where a, b (<a) and pare positive constants of appropriate dimensions and t is time. Then, which of the following is not true?

(a) The path of the particle is an ellipse.

(b) Velocity and acceleration of the particle are perpendicular to each other at t = π/2p

(c) Acceleration of the particle is always directed towards a fixed point.

(d) Distance travelled by the particle in time interval between t = 0 and t = π/2P is a

Answer: (d)

14. White light is used to illuminate two slits in Young's double slit experiment. The separation between the slits is b and the screen is at a distance d (>>b) from the slits. At a point on the screen directly in front of one of the slits, which wavelengths are missing?

(a) $\dfrac{b}{d}, \dfrac{b}{3d}, \dfrac{b}{5d}$

(b) $\dfrac{b^2}{2d}, \dfrac{b^2}{4d}, \dfrac{b^2}{6d}$

(c) $\dfrac{b^2}{d}, \dfrac{b^2}{3d}, \dfrac{b^2}{5d}$

(d) $\dfrac{b}{2d}, \dfrac{b}{4d}, \dfrac{b}{6d}$

Answer: (c)

15. A skier starts from rest at point A and slides down the hill without turning or breaking. The friction coefficient is μ. When he stops at point B, his horizontal displacement is S. What is the height difference between points A and B

(The velocity of the skier is small so that the additional pressure on the snow due to the curvature can be neglected. Neglect also the friction of air and the dependence of μ on the velocity of the skier.)
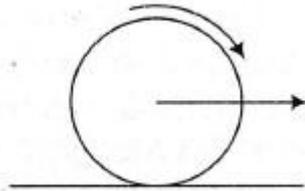
(a) h = μS

(b) $h = \mu/S$

(c) $h = 2\mu S$

(d) $h = \mu S^2$

Answer: (a)

16. A bicycle wheel rolls without slipping on a horizontal floor. Which one of the following is true about the motion of points on the rim of the wheel, relative to the axis at the wheel's centre?

(a) Points near the top move faster than points near the bottom

(b) Points near the bottom move faster than points near the top

(c) All points on the rim move with the same speed

(d) All points have the velocity vectors that are pointing in the radial direction towards the centre of the wheel

Answer: (a)

17. The planets with radii R_1 and R_2 have densities ρ_1, ρ_2 Their atmospheric pressures are p_1 and p_2 respectively. Therefore, the ratio of masses of their atmosphere, neglecting variation of g within the limits of atmosphere is

(a) $\rho_1 R_2 p_1 / \rho_2 R_1 p_2$

(b) $\rho_1 R_2 p_2 / p P_2 R_1 \rho_1$

(c) $\rho_1 R_1 p_1 / \rho_2 R_2 p_2$

(d) $\rho_1 R_1 p_2 / \rho_2 R_2 p_1$

Answer: (d)

18. A thin symmetrical double convex lens of refractive index μ_2 = 1.5 is placed between a medium of refractive index μ_1 = 1.4 to the left and another medium of refractive index μ_3 = 1.6 to the right. Then, the system behaves as

(a) a convex lens

(b) a concave lens

(c) a glass plate

(d) a convexo concave lens

Answer: (c)

19. A wide hose pipe is held horizontally by a fireman. It delivers water through a nozzle at one litre per second. On increasing the pressure, this increases to two litres per second. The fireman has now to

(a) push forward twice as hard

(b) push forward four times as hard

(c) push backward four times as hard

(d) push backward twice as hard.

Answer: (b)

20. The wavelength λ of a photon and the de-Broglie wavelength of an electron have the same value. Find the ratio of energy of photon to the kinetic energy of electron in terms of mass m, speed of light c and planck constant.

(a) $\dfrac{\lambda mc}{h}$

(b) $\dfrac{hmc}{\lambda}$

(c) $\dfrac{2hmc}{\lambda}$

(d) $\dfrac{2\lambda mc}{h}$

Answer: (d)

21. A non-conducting ring of radius 0.5 m carries a total charge of 1.11 × 10^{-10} C distributed non-uniformly on its circumference producing on its circumference on electric field **E**, everywhere in space.

The value of line integral $\int_{l=\infty}^{l=0}(-\mathbf{E}\times\mathbf{dl})$ (l = 0 being centre of ring) in volts is

(a) +2

(b) −1

(c) −2

(d) Zero

Answer: (a)

22. The upper half of an inclined p lane of inclination θ is perfectly smooth while the lower half rough. A block starting from rest at the top of the plane will again come to rest at the bottom if the coefficient of friction between the block and the lower half of the plane is given by

(a) μ = 2 tanθ

(b) μ = tanθ

(c) μ = 2 /(tanθ)

(d) μ = 1/ tanθ

Answer: (a)

23. Two masses 10 kg and 20 kg respectively are connected by a massless spring as shown in figure. A force of 200 N acts on the 20 kg mass. At the instant shown is figure the 10 kg mass has acceleration of 12 m/s^2. The value of acceleration of 20 kg mass is
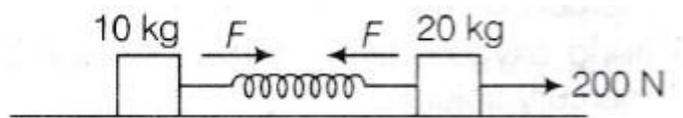
(a) 4 m/s^2

(b) 10 m/s^2

(c) 20 m/s^2

(d) 30 m/s^2

Answer: (a)

24. A cylinder rolls up an inclined plane, reaches some height and then rolls down (without slipping throughout these motions). The directions of the frictional force acting on the cylinder are

(a) up the incline while ascending and down the incline while descending.

(b) up the inline while ascending as well as descending.

(c) down the incline while ascending and up the incline while descending.

(d) down the incline while ascending as well as descending.

Answer: (b)

25. A liquid is allowed into a tube of truncated cone shape. Identify the correct statement from the following.

(a) The speed is high at the wider end and low at the narrow end.

(b) The speed is low at the wider end and high at the narrow end.

(c) The speed is same at both ends in an streamline flow.

(d) The liquid flows with uniform velocity in the tube.

Answer: (b)

26. Two soap bubble coalesce. It is noticed that, whilst joined together, the radii of the two bubbles are a and b where a > b. Then the radius of curvature of interface between the two bubbles will be

(a) $a - b$

(b) $a + b$

(c) $ab/(a - b)$

(d) $ab / (a + b)$

Answer: (c)

27. The displacement of a particle along the x-axis is given by $x = a \sin^2 \omega$ The motion of the particle corresponds to

(a) simple harmonic motion of frequency ω/π

(b) simple harmonic motion of frequency $3\omega/2\pi$

(c) non simple harmonic motion

(d) simple harmonic motion of frequency $\omega/2\pi$

Answer: (c)

28. Mercury boils at 367° However, mercury thermometers are made such that they can measure temperature upto 500°C. This is done by

(a) maintaining vacuum aboves mercury column in the stem of the thermometer

(b) filling nitrogen gas at high pressure above the mercury column.

(c) filling oxygen gas at high pressure above the mercury column.

(d) filling nitrogen gas at low pressure above the mercury column.

Answer: (b)

29. Two identical glass spheres filled with air are connected by a horizontal glass tube. The glass tube contains a pellet of mercury at its mid-points. Air in one sphere is at 0°C and the other is at 20° If both the vessels are heated through 10°C, then neglecting the expansions of the bulbs and the tube

(a) the mercury pellet gets displaced towards the sphere at lower temperature.

(b) the mercury pellet gets displaced towards the sphere at higher temperature.

(c) the mercury pellet does not get displaced at all

(d) the temperature rise causes the pellet to expand without any displacement.

Answer: (c)

30. A nucleus $_Z^A X$ has mass represented by $m(A, Z)$. If m_p and m_n denote the mass of proton and neutron respectively and BE the binding energy (in MeV) then,

(a) $BE = [m(A, Z) - Zm_p - (A - Z)m_n]C^2$

(b) $BE = [Zm_p + (A - Z)m_n - m(A, Z)]C^2$

(c) $BE = [Zm_p + Am_n - m(A, Z)] C^2$
(d) $BE = m(A, Z) - Zm_p - (A - Z) m_N$

Answer: (b)

31. A graph between pressure P(along y-axis) and absolute temperature, T(along x-axis) for equal moles of two gases has been drawn. Given that volume of second gas is more than volume of first gas. Which of the following statement is correct?

(a) Slope of gas 1 is less than gas 2

(b) Slope of gas 1 is more than gas 2

(c) Both have some slopes

(d) None of the above

Answer: (b)

32. A piece of blue glass heated to a high temperature and a piece of red glass at room temperature are taken inside a dimly-lit room. Then,

(a) the blue piece will look blue and the red piece will look red as usual.

(b) the red piece will look brighter red and the blue piece will look ordinary blue.

(c) the blue will look brighter as compared to the red piece.

(d) both the pieces will look equal red.

Answer: (c)

33. A certain charge Q is divided into two parts q and Q – q. How the charge Q and q must be related so that when q and (Q – q) is placed at a certain distance apart experience maximum electrostatic repulsion?

(a) $Q = 2q$

(b) $Q = 3q$

(c) $Q = 4q$

(d) $Q = 4q + c$

Answer: (a)

34. A charged particle 'q' is shot with speed v towards another fixed charged particle Q. It approaches Q upto a closest distance r and then returns. If q were given a speed 2v, the closest distance of approach would be

(a) r

(b) 2r

(c) r/2

(d) r/4

Answer: (d)

35. A long block A of mass M is at rest on a smooth horizontal surface. A small block B of mass M/2 is placed on A at one end and projected along A with some velocity v. The coefficient of friction between the block is μ. Then, the accelerations of blocks A and B before reaching a common velocity will be respectively
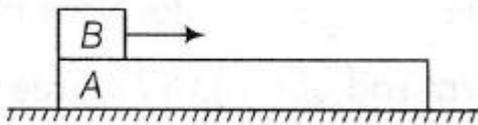
(a) μg/2, (towards right), μg/2(towards left)

(b) μg(towards right), μg(towards left)

(c) μg/2(towards right), μg(towards left)

(d) μg(toward right), μg/2(towards left)

Answer: (c)

36. A beam of light composed of red and green rays is incident obliquely at a point on the face of a rectangular glass slab. When coming out on the opposite parallel face, the red and green rays emerge from

(a) two points propagating in two different non-parallel directions.

(b) two points propagating in two different parallel directions.

one point propagating in two different directions.

(c) one point propagating in the same direction.

Answer: (b)

37. The plane face of a plano convex lens is silvered. If μ be the refractive index and R, the radius of curvature of curved surface, then system will behave like a concave mirror of curvature

(a) μR

(b) R^2/μ

(c) R / (μ − 1)

(d) [(μ + 1)/(μ − 1)]R

Answer: (c)

38. The maximum numbers of possible interference maxima for slit separation equal to twice the wavelength in Young's double slit experiment is

(a) infinite

(b) five

(c) three

(d) zero

Answer: (b)

39. An isotropic point source of light is suspended h metre vertically above the centre of circular table of radius r metre. Then, the ratio of illumenances at the centre to that at the edge of the table is
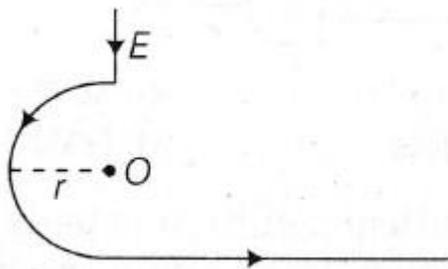
(a) $1+\left(\dfrac{r^2}{h^2}\right)$

(b) $1+\left(\dfrac{h^2}{r^2}\right)$

(c) $\left\{1 + \dfrac{r^2}{h^2}\right\}^{3/2}$

(d) $\left\{1 + \dfrac{h^2}{r^2}\right\}^{3/2}$

Answer: (c)

40. In the given figure, what is the magnetic field induction at point O.
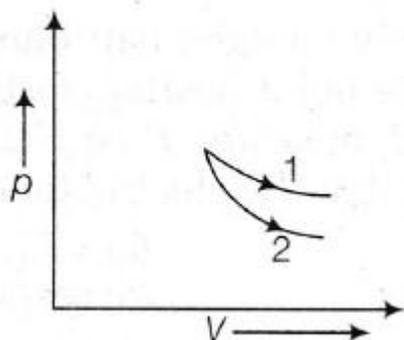

(a) $\dfrac{\mu_0 I}{4\pi r}$

(b) $\dfrac{\mu_0 I}{4\pi r} + \dfrac{\mu_0 I}{2\pi r}$

(c) $\dfrac{\mu_0 I}{4r} + \dfrac{\mu_0 I}{4\pi r}$

(d) $\dfrac{\mu_0 I}{4r} - \dfrac{\mu_0 I}{4\pi r}$

Answer: (c)

41. p-V plots for two gases during adiabatic process as shown in figure plots 1 and 2 should correspond respectively to

(a) He and O_2

(b) O_2 and He

(c) He and Ar

(d) O_2 and N_2

Answer: (b)

42. The half-life period of a radioactive element X is same as the mean life of another radioactive element Y. Initially, both of them have the same numbers of atoms then,

(a) X and Y have the same decay rate initially.

(b) X and Y decay at the same rate always

(c) Y will decay at a faster rate than X

(d) X will decay at a faster rate than Y

Answer: (c)

43. A source emits electromagnetic waves of wavelength 3m. One beam reaches the observer directly and other after reflection from a water surface, travelling 1.5m extra distance and with intensity reduced to 1/4 as compared to intensity due to the direct beam alone. The resultant intensity will be

(a) (1/4) fold

(b) (3/4) fold

(c) (5/4) fold

(d) (9/4) fold

Answer: (d)

44. The following circuit represents
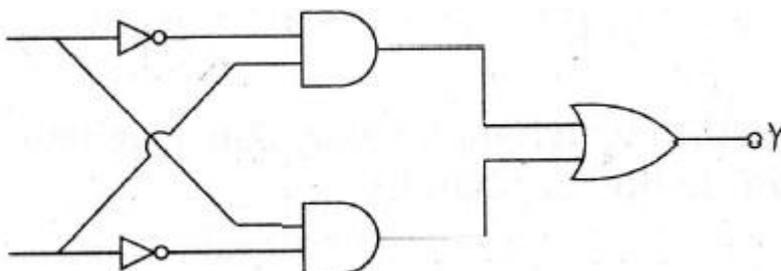
(a) OR gate

(b) XOR gate

(c) AND gate

(d) NAND gate

Answer: (b)

45. Two identical conducting balls A and B have positive

charges q_1 and q_2 But $q_1 \neq q_2$/ The balls are brought together so that they touch each other and then kept in their original positions. The force between them is

(a) less than that before the balls touched

(b) greater than that before the balls touched

(c) same as that before the balls touched

(d) zero

Answer: (b)

46. A positively charged ball hangs from a silk thread. We put a positive test charges q_0 at a point and measure F/q_0, then it can be predicted that the electric field strength E

(a) $> F/q_0$

(b) $= F/q$

(c) $< F/q_0$

(d) cannot be estimated

Answer: (a)

47. Capacitor C_1 of capacitance 1 μF and capacitor C_2 of capacitance 2 μF are separately charged fully by a common battery. The two capacitors are then separately allowed to discharged through equal resistors at time $t = 0$

(a) the current in each of the two discharging circuits is zero at $t = 0$

(b) the currents in the two discharging circuits at $t = 0$ are equal but non-zero

(c) the currents in the two discharging circuits at $t = 0$

(d) Capacitor C_1 loses 40% of its initial charge sooner than C_2 loses 40% of initial charge.

Answer: (b)

48. A uniform electric field and a uniform magnetic field acting along the same direction in a certain region. If an electron is projected along the direction of the fields with a certain velocity, then

(a) it will turn towards left of direction of motion.

(b) it will turn towards right of direction of motion.

(c) its velocity will increase.

(d) its velocity will decrease.

Answer: (d)

49. To reduce the range of voltmeter, its resistance need to be reduced. A voltmeter has resistance R_0 and range V. Which of the following resistances when connected in parallel will convert it into a voltmeter of range V/n?
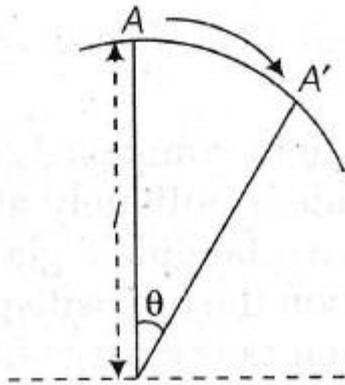
(a) nR_0

(b) $(n + 1)R_0$

(c) $(n - 1)R$

(d) None of these

Answer: (d)

50. A uniform rod of length l is free to rotate in a vertical plane about a fixed horizontal axis through B. The rod begins rotating from rest from its unstable equilibrium position. When, it has turned through an angle θ, its angular velocity ω is given by

(a) $\sqrt{\left(\dfrac{6g}{l}\right)}\sin\dfrac{\theta}{2}$

(b) $\sqrt{\left(\dfrac{6g}{l}\right)}\cos\dfrac{\theta}{2}$

(c) $\sqrt{\left(\dfrac{6g}{l}\right)}\sin\theta$

(d) $\sqrt{\left(\dfrac{6g}{l}\right)}\cos\theta$

Answer: (a)

51. A stick of length L and mass M lies on a frictionless horizontal surface on which it is free to move in any way. A ball of mass m moving with speed V collides elastically with the stick as shown in fig below. If after the collision, the ball comes to rest, then what should be the mass of the ball?
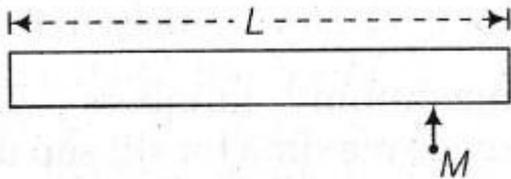

(a) m = 2M

(b) m = M

(c) m = M/2

(d) m = M/4

Answer: (d)

52. The mass of a proton is 1847 times that of an electron. A electron and a proton are injected into a uniform electric field at right angle to the direction of the filed with the same initial K.E.

(a) the electron trajectory will be less curved than the proton trajectory.

(b) both the trajectories will be straight.

(c) the proton trajectory will be less curved than the electron trajectory.

(d) both the trajectories will be equally curved.

Answer: (d)

53. Two condensers, one of capacity C and the other of capacity C/2, are connected to a V-volt battery, as shown.
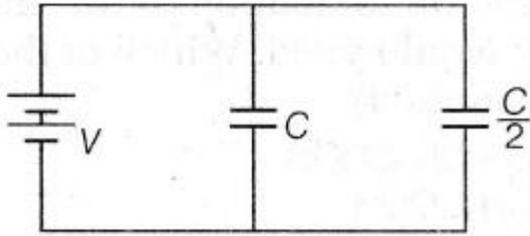
The work done in charging fully both the condensers is

(a) CV^2

(b) $\dfrac{1}{4}CV^2$

(c) $\dfrac{3}{4}CV^2$

(d) $\dfrac{1}{2}CV^2$

Answer: (c)

54. A capacitor of capacitance 5µF is connected as shown in the figure. The internal resistance of the cell is 0.5Ω. The amount of charge on the capacitor plates is

(a) 80 µC

(b) 40 µC

(c) 20 µC
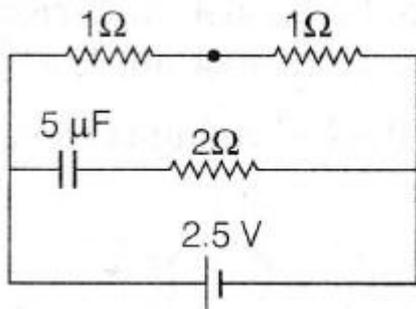
(d) 10 µC

Answer: (d)

55. A photo cell is illuminated by a small bright source placed 1m away. When the same source of light is placed

2m away, the electrons emitted by photo cathode

(a) carry one quarter of their previous energy

(b) carry one quarter of their previous momenta

(c) are half as numerous

(d) are one quarter as numerous

Answer: (d)

56. ABC is right angled triangular plane of uniform thickness. The sides are such that AB > BC as shown in figure. I_1, I_2, I_3 are momenta of inertia about AB, BC and AC, respectively. Then which of the following relations is correct?
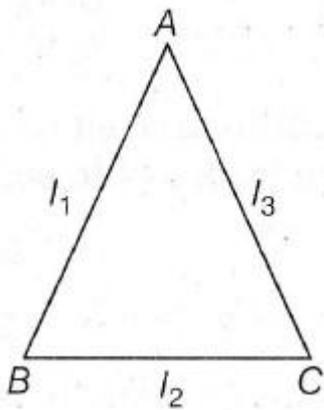
(a) $I_1 = I_2 = I_3$

(b) $I_2 > I_1 > I_3$

(c) $I_3 < I_2 < I_1$

(d) $I_3 > I_1 > I_2$

Answer: (b)

57. An ice-berg of density 900 kgm^{-3} is floating in water of density 1000 kgm^{-3}. The percentage of volume of ice-berg outside the water is

(a) 20%

(b) 35%

(c) 10%

(d) 11%

Answer: (c)

58. The potential of an atom is given by $V = V_0 \log_e(r/r_0)$ where r_0 is a constant and r is the radius of the orbit. Assuming Bohr's model to be applicable, which variation of r_n with n is possible (n being principal quantum number)?

(a) $r_n \propto n$

(b) $r_n \propto 1/n$

(c) $r_n \propto n^2$

(d) $r_n \propto 1/n^2$

Answer: (a)

59. The temperature of source and sink of a heat engine are 127°C and 27°C, respectively. An inventor claims its efficiency to be 26%, then

(a) it is impossible

(b) it is possible with high probability

(c) it is possible with low probability

(d) Data are insufficient

Answer: (a)

60. You are given resistance wire of length 50 cm and a battery of negligible resistance. In which of the following cases is largest amount of heat generated?

(a) When the wire is connected to the battery directly

(b) When the wire is divided into two parts and both the parts are connected to the battery in parallel.

(c) When the wire is divided into four parts and all the four parts are connected to the battery in parallel.

(d) When only half of the wire is connected to the battery.

Answer: (c)

CHEMISTRY

61. The compressibility of a gas is less than unity at STP, therefore

(a) V_m > 22.4 L

(b) V_m < 22.4 L

(c) V_m = 22.4 L

(d) V_m = 44.8 L

Answer: (b)

62. Among the following set of quantum numbers, the impossible set is
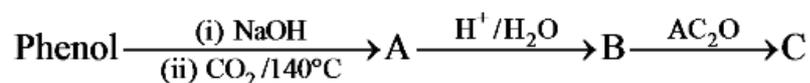
(a) n : 3; l : 2; m : 3; s : –1/2

(b) n : 4; l : 0; m : 0; s : 1/2

(c) n : 5; l : 3; m : 0; s : –1/2

(d) n : 3; l : 2; m : –2; s : 1/2

Answer: (a)

63.

$$\text{Phenol} \xrightarrow[\text{(ii) } CO_2 / 140°C]{\text{(i) NaOH}} A \xrightarrow{H^+ / H_2O} B \xrightarrow{AC_2O} C$$

In the above reaction, end product 'C' is

(a) salicylaldehyde

(b) salicylic acid

(c) phenyl acetate

(d) aspirin

Answer: (d)

64. The normality of 10% (w/v) of acetic acid is

(a) 1 N

(b) 1.3 N

(c) 1.7 N

(d) 1.9 N

Answer: (c)

65. Which of the following is least soluble in water?
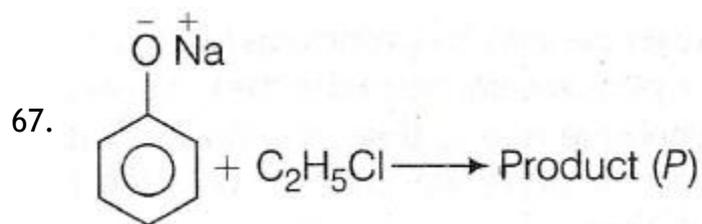
(a) C_2H_6

(b) CH_3OH

(c) CH_3NH_2

(d) C_6H_5OH

Answer: (a)

66.

$$\text{Iso}-\text{propyl chloride} + A \xrightarrow{\Delta} 2-\text{ethoxy propane} + \text{NaCl.}$$
The compound (A) is

(a) C_2H_5Cl

(b) C_2H_5ONa

(c) CH_2N_2

(d) CH_3ONa

Answer: (b)

67.

The product (P) is

(a)

(b)

(c)

(d)
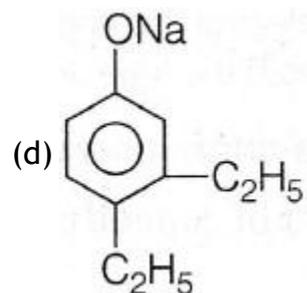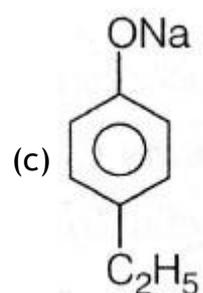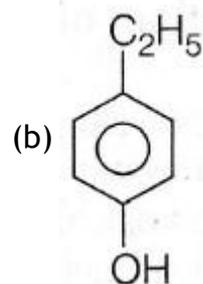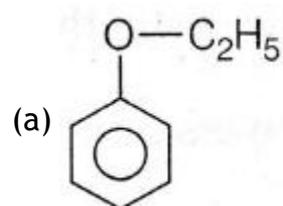
Answer: (a)

68. 1-butyne on oxidation with hot alkaline $KMnO_4$ would yield. Which of the following as end product?

(a) $CH_3CH_2CH_2COOH$

(b) CH_3CH_2COOH

(c) $CH_3CH_2COOH + CO_2 + H_2O$

(d) $CH_3CH_2COOH + HCOOH$

Answer: (c)

69. A cubic unit cell of a metal with molar mass of 63.55 g mol^{-1} has an edge length of 362 pm. Its density is 8.92 g cm^{-3}. The type of unit cell is

(a) primitive

(b) face centred

(c) end centred

(d) body centred

Answer: (b)

70. Which of the following is the major product in the reaction of HOBr with propene?
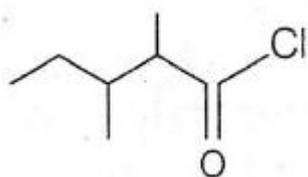
(a) 2-bromo, 1-propanol

(b) 3-bromo, 1-propanol

(c) 2-bromo, 2-propanol

(d) 1-bromo, 2-propanol

Answer: (d)

71. Which of the following is the correct IUPAC name?

(a) 3, 4-dimethyl pentanoyl chloride

(b) 1-chloro-1-oxo-2, 3-dimethyl pentane

(c) 2-ethyl-3-methyl butanoyl chloride

(d) 2, 3-dimethyl pentanoyl chloride

Answer: (d)

72. Consider the following solutions,

A = 0.1 glucose, B = 0.05 M NaCl,

C = 0.05 M $BaCl_2$, D = 0.1 M $AlCl_3$

Which of the following pairs is isotonic?

(a) A and B

(b) A and D

(c) A and C

(d) B and C

Answer: (a)

73. Which of the following compound is not coloured?

(a) Na_2CuCl

(b) $Na_2Cd \cdot Cl_4$

(c) $FeSO_4$

(d) Vl_3

Answer: (b)

74. Which of the following oxide is most acidic?

(a) As_2O_3

(b) P_2O_5

(c) Sb_2O_3

(d) Bi_2O_3

Answer: (b)

75. When CO_2 is bubbled through a solution of barium peroxide in water then

(a) carbonic acid is formed

(b) O_2 is released

(c) H_2O_2 is formed

(d) no reaction occurs

Answer: (c)

76. The correct increasing order of ionic radii of the following Ce^{3+}, La^{3+}, Pm^{3+} and Yb^{3+} is

(a) $Yb^{3+} < Pm^{3+} < Ce^{3+} < La^{3+}$

(b) $Ce^{3+} < Yb^{3+} < Pm^{3+} < Ce^{3+}$

(c) $Yb^{3+} < Pm^{3+} < La^{3+} < Ce^{3+}$

(d) $Pm^{3+} < La^{3+} < Ce^{3+} < Yb^{3+}$

Answer: (a)

77. The shape of gaseous $SnCl_2$ is

(a) tetrahedral

(b) linear

(c) angular

(d) T-shape

Answer: (c)

78. Which of the following aqueous solution should have highest boiling point?

(a) 1.0 M NaOH

(b) 1.0 M Na$_2$SO$_4$

(c) 1.0 M NH$_4$NO$_3$

(d) 1.0 MKNO$_3$

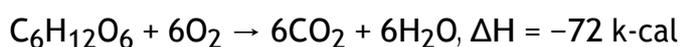**Answer: (b)**

79. When a lead storage battery is discharged;

(a) SO$_2$ is evolved

(b) lead sulphate is consumed

(c) lead is formed

(d) sulphuric acid is consumed

Answer: (d)

80. Combustion of glucose takes place according to the equation,

C$_6$H$_{12}$O$_6$ + 6O$_2$ → 6CO$_2$ + 6H$_2$O, ΔH = −72 k-cal

The energy required for combustion of 1.6 g of glucose is

(a) 0.064 k-cal

(b) 0.64 k-cal

(c) 6.4 k-cal

(d) 64 k-cal

Answer: (b)

81. When the heat of reaction at constant pressure is −5 × 10^3 cal and entropy change is 7.4 cal deg^{-1} at 25°C, the reaction is predicted as

(a) reversible

(b) spontaneous

(c) non-spontaneous

(d) irreversible

Answer: (b)

82. Which of the following is not expected to show paramagnetism?

(a) $[Ni(H_2O)]^{2+}$

(b) $Ni(CO)_4$

(c) $[Ni(NH_3)_4]^{2+}$

(d) $[Co(NH_3)_6]^{2+}$

Answer: (b)

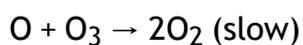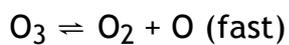83. In which of the following compounds, sulphur show maximum oxidation number?

(a) H_2SO_4

(b) SO_3

(c) $H_2S_2O_7$

(d) All have same oxidation number for sulphur

Answer: (d)

84. For the chemical reaction, $2O_3 \rightleftharpoons 3O_2$

The reaction proceed as follows

$O_3 \rightleftharpoons O_2 + O$ (fast)

$O + O_3 \rightarrow 2O_2$ (slow)

The rate law expression will be

(a) $r = k'[O_3]^2$

(b) $r = k'[O_3]^2[O_2]^{-1}$

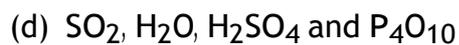(c) $r = k'[O_3][O_2]$

(d) Unpredictable

Answer: (b)

85. Which of the following is the correct order of stability for the given superoxides?

(a) $KO_2 > RbO_2 < CsO_2$

(b) $CsO_2 < RbO_2 < KO_2$

(c) $RbO_2 < CsO_2 < KO_2$

(d) $KO_2 < CsO_2 < RbO_2$
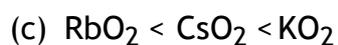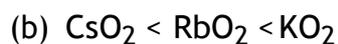
Answer: (a)

86. Among the following compounds, which will produce $POCl_3$ with PCl_5.

(a) Only O_2

(b) O_2 and CO_2

(c) CO_2, O_2 and P_4O_{10}

(d) SO_2, H_2O, H_2SO_4 and P_4O_{10}
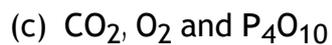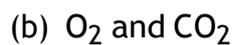
Answer: (d)

87. In the following graph.
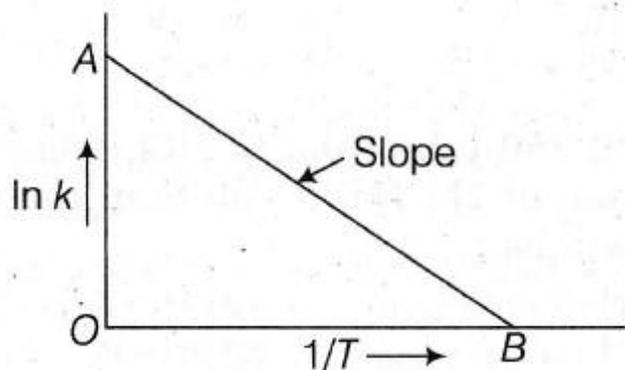
The slope of line AB gives the information of

(a) value of $\dfrac{E_a}{2.303}$

(b) value of $\dfrac{2.303}{E_a}$

(c) value of $-\dfrac{E_a}{2.303\,R}$

(d) value of $-\dfrac{E_a}{2.303\,RT}$

Answer: (c)

88. Among the following compounds, which compound is polar as well as exhibit sp^2-hyrbidization by the central atom

(a) H_2CO_3

(b) SiF_4

(c) BF_3

(d) $HClO_3$

Answer: (a)

89. Which one among the following is added to soap to impart antiseptic property?

(a) Sodium lauryl sulphate

(b) Sodium dodecyl benzene sulphonates

(c) Rosin

(d) Bithional

Answer: (d)

90. How many Faradays are required to reduce 1 mol of BrO_3^- to Br^-.

(a) 3

(b) 5

(c) 6

(d) 4

Answer: (c)

91. The energy released when 6 moles of octane is burnt in air will be [Given, ΔH_f for $CO_2(g)$, $H_2O(g)$ and $C_8H_8(l)$, respectively are −490, −240 and +160 J/mol]

(a) −37.4 kJ

(b) −20 kJ

(c) −6.2 kJ

(d) −35.5 kJ

Answer: (d)

92. When I^- is oxidized by MnO_4^- in alkaline medium, I^- converts into

(a) IO_3^-

(b) I_2

(c) IO_4^-

(d) IO^-

Answer: (a)

93. The value of reaction quotient (Q), for the following cell

Zn(s) | Zn^{2+}(0.01 M)| | Ag^+ (1.25 M) | Ag (s) is

(a) 156

(b) 125

(c) 1.25×10^{-2}

(d) 6.4×10^{-3}

Answer: (d)

94. When 750 mL of 0.5 M HCl is mixed with 250 mL of 2M NaOH solution, the value of pH will be

(a) pH = 7

(b) pH > 7

(c) pH < 7

(d) pH = 0

Answer: (b)

95. The most stable carbonium ion among the following is

(a) $C_6H_5 - CH_2 \overset{+}{C}H_2$

(b) $CH_3 \overset{+}{C}H_2$

(c) $C_6H_5 - \overset{+}{C} - C_6H_5$

(d) $C_6H_5 \overset{+}{C}H_2$

Answer: (c)

96. Which of the following is not applicable to the phenomenon of adsorption?

(a) $\Delta H > 0$
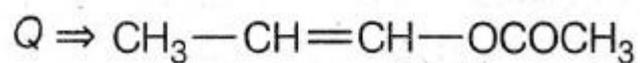
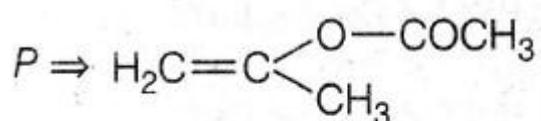(b) $\Delta G < 0$

(c) $\Delta S < 0$

(d) $\Delta H < 0$

Answer: (d)

97. In cyamide extraction process of silver from argentite ore, the oxidizing and reducing agents are respectively.

(a) O_2 and CO_2

(b) O_2 and Zn dust

(c) HNO_3 and Zn dust

(d) HNO_3 and CO

Answer: (b)

98. The product of acid hydrolysis of (P) and (Q) can be distinguished by

$$P \Rightarrow H_2C{=}C\Big\langle{\overset{O-COCH_3}{\underset{CH_3}{}}}$$

$$Q \Rightarrow CH_3-CH{=}CH-OCOCH_3$$

(a) Lucas reagent

(b) 2, 4-DNP

(c) Fehling's solution

(d) $NaHSO_3$

Answer: (c)

99. Clemmensen reaction of ketone is carried out in the presence of

(a) $LiAlH_4$

(b) Zn-Hg with HCl

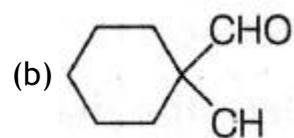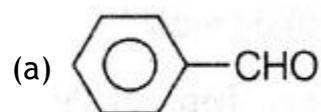(c) glycol with KOH

(d) H_2 with Pt as catalyst

Answer: (b)

100. The standard reduction potential for Zn^{2+}/Zn, Ni^{2+}/Ni and Fe^{2+}/Fe are –76, –0.23 and –0.44 V, respectively.

The reaction $X + Y^{2+} \rightarrow X^{2+} + Y$ will be spontaneous when

(a) X = Ni, Y = Fe

(b) X = Ni, Y = Zn

(c) X = Fe, Y = Zn

(d) X = Zn, Y = Ni

Answer: (d)

101. Cannizzaro reaction is not shown by

(a)

(b)

(c) CH_3CHO

(d) HCHO

Answer: (c)

102. The main product formed in the following reaction is

HO—⬡—NH$_2$ + CH$_3$COCl

(1 equivalent)⟶ Product.

(a) HO—⬡—NHCOCH$_3$

(b) CH$_3$COO—⬡—NH$_2$

(c)

OH
⬡
COCH$_3$
NH$_2$

(d)

OH
⬡
COCH$_3$
NH$_2$
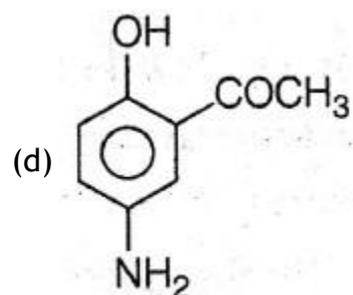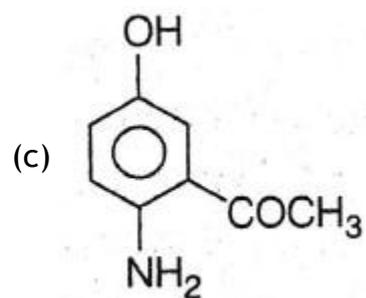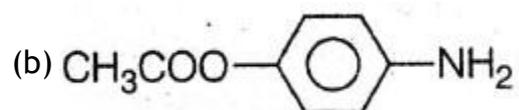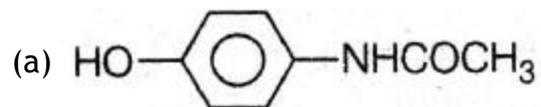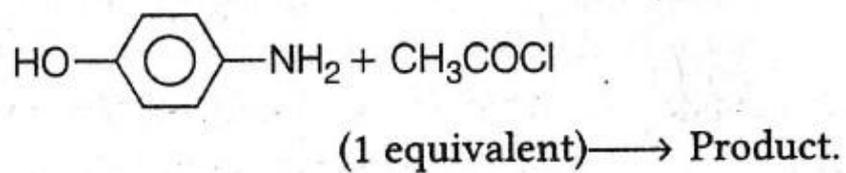
Answer: (a)

103. The correct order of basic strength of the following are
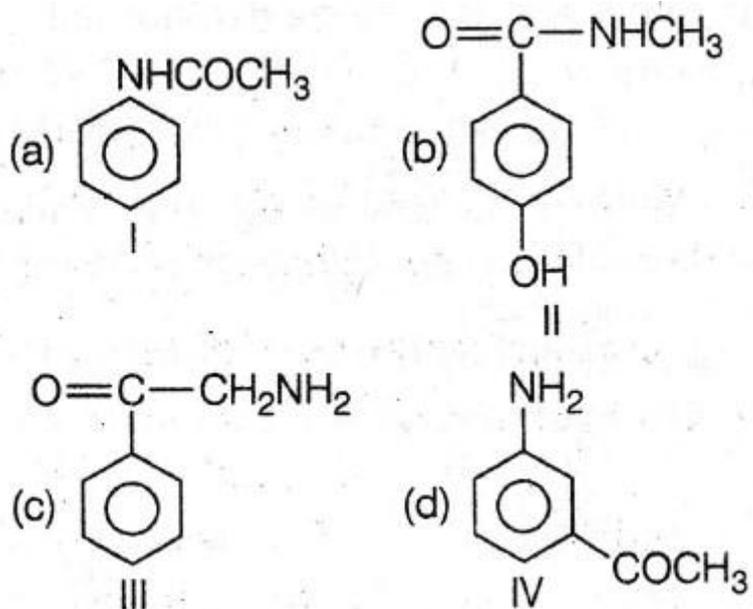
(a) I > II > III > IV

(b) IV > II > III > I

(c) III > IV > II > I

(d) III > II > IV > I

Answer: (d)

104. In the reaction,
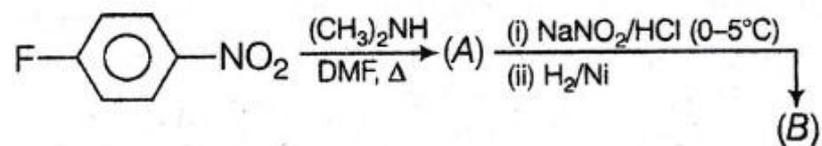
In the given reaction (B) is

(a)

(b)

(c)

(d)
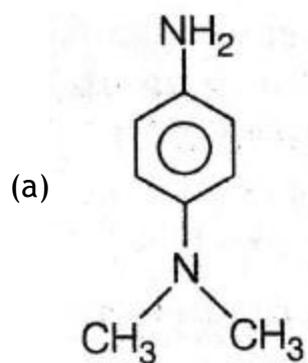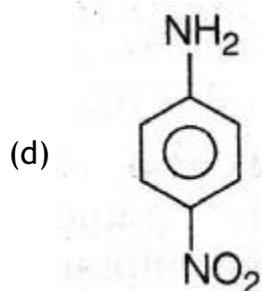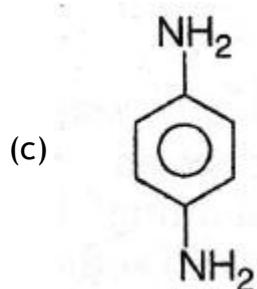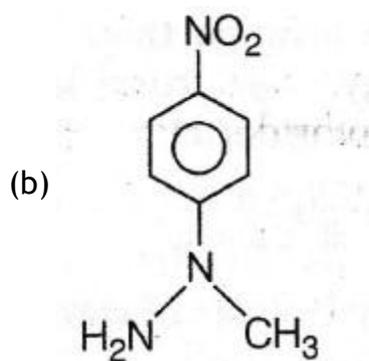
Answer: (a)

105. Polymer formation from monomers starts by

(a) condensation reaction between monomers

(b) coordination reaction between monomers

(c) conversion of one monomer into other monomer

(d) hydrolysis of monomers

Answer: (a)

106. Match the type of series given in Column I with the wavelength range given in Column II and choose the correct option.

Column I	Column II
A. Lyman	1. Ultraviolet
B. Paschen	2. Near infrared
C. Balmer	3 Far infrared
D. Pfund	4. Visible

(a) A – 1; B – 2; C – 4; D – 3

(b) A – 4; B – 3; C – 1; D – 2

(c) A – 3; B – 1; C – 2; D – 4

(d) A – 4; B – 3; C – 2; D – 1

Answer: (a)

107. Which of the following coordination compounds would exhibit optical isomerism?

(a) Pentamminenitrocobalt (III) iodide

(b) *Tris*-(ethylenediamine) cobalt (III) bromide

(c) *Trans*-dicyanobis (ethylenediamine)

(d) Diamminedinitroplatisum (II)

Answer: (b)

108. The electrons identified by quantum numbers n and l, are as follows

(I) n = 4, l = 1

(II) n = 4, l = 0

(III) n = 3, l = 2

(IV) n = 3, l = 1

If we arrange them in order of increasing energy, i.e. from lowest to highest, the correct order is

(a) IV < II < III < I

(b) II < IV < I < III

(c) I < III < II < IV

(d) III < I < IV < II

Answer: (a)

109. On hydrolysis of starch, we finally get

(a) glucose

(b) fructose

(c) Both (a) and (b)

(d) sucrose

Answer: (a)

110. Which of the following sodium compound/compound(s) are formed when an organic compound containing both nitrogen and sulphur is fused with sodium?

(a) Cyanide and sulphide

(b) Thiocyanate

(c) Sulphite and cyanide

(d) Nitrate and sulphide

Answer: (b)

111. Which of the following region is coldest?

(a) Stratosphere

(b) Troposphere

(c) Mesosphere

(d) Thermosphere

Answer: (c)

112. A solid AB has NaCl structure. If the radius of cation A^+ is 170 pm, then the maximum possible radius of the anion B^- is

(a) 397.4 pm

(b) 347.9 pm

(c) 210.9 pm

(d) 410.6 pm

Answer: (d)

113. A first order reaction is 50% completed in 1.26×10^{14} How much time would it takes for 100% completion?

(a) 1.26×10^{15} s

(b) 2.52×10^{14} s

(c) 2.52×10^{28} s

(d) Infinite

Answer: (d)

114. Flux is used to

(a) remove all type of impurities

(b) reduce metal oxide

(c) remove carbonate and sulphate

(d) remove silica and undesirable metal oxides

Answer: (d)

115. Sulphur reacts with chlorine in 1 : 2 ratio and forms X. Hydrolysis of X gives a sulphur compound Y. The hybridization of central atom in the anion Y is

(a) sp^3

(b) sp^2

(c) sp^3d

(d) sp

Answer: (a)

116. Aqueous 10% $NaHCO_3$ solution is used as a reagent for identifying 'A'. Which of the following compounds yield 'A' on hydrolysis?

(a) $CH_3COOC_2H_5$

(b) $C_2H_5 - COO - C_2H_5$

(c) CH_3CHO

(d) CH_3CH_2OH

Answer: (a)

117. Which of the following fibres is made of polyamides?

(a) Dacron

(b) Orion

(c) Nylon

(d) Rayon

Answer: (c)

118. Consider the following reaction,

$$X \xrightarrow{\text{Bromination}} Y \xrightarrow[\text{+ HCl}]{\text{NaNO}_2}$$

$$Z \xrightarrow[\text{C}_2\text{H}_5\text{OH}]{\text{Boiling}} \text{Tribromo-benzene.}$$
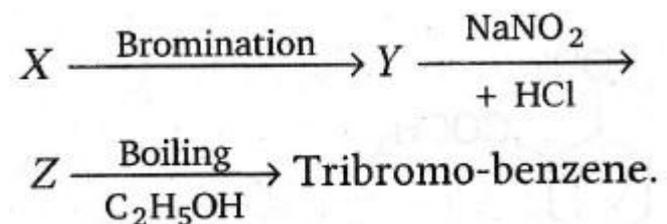
X is

(a) benzoic acid

(b) salicylic acid

(c) phenol

(d) aniline

Answer: (d)

119. The volume of water to be added to 100 cm^3 of 0.5 N H$_2$SO$_4$ to get decinormal concentration is

(a) 100 cm^3

(b) 450 cm^3

(c) 500 cm^3

(d) 400 cm^3

Answer: (d)

120. In which of the following the oxidation number of oxygen has been arranged in increasing order?

(a) BaO$_2$ < KO$_2$ < O$_3$ < OF$_2$

(b) OF$_2$ < KO$_2$ < BaO$_2$ < O$_3$

(c) BaO$_2$ < O$_3$ < OF$_2$ < KO$_2$

(d) KO$_2$ < OF$_2$ < O$_3$ < BaO$_2$

Answer: (a)

[ ] **JIPMER MBBS Entrance Question Paper – 2017**

BIOLOGY

121. One of the breeding techniques useful to eliminate harmful recessive genes by selection is

(a) artificial insemination

(b) outbreeding

(c) inbreeding

(d) MOET

Answer: (c)

122. Herbicide that blocks electron transport from PS-II to PS-I by inhibiting electron flow between plastoquinone → cytochrome is

(a) DCMU

(b) Paraquat

(c) DCPIP

(d) None of these

Answer: (a)

123. **Statement** I Microtubules are formed only in animals cells.

Statement II Microtubules are made up of a protein called myosin.

Choose the correct option

(a) Statement I is correct and statement II is incorrect.

(b) Statement II is correct and statement I is incorrect.

(c) Both statements are correct.

(d) Both statements are incorrect.

Answer: (d)

124. Some functions of nutrient element are given below

(I) Important constituent of proteins involved in ETS.

(II) Activator of catalase.

(III) Important constituent of cytochrome..

(IV) Essential for chlorophyll synthesis.

The concerned nutrient is

(a) Cu

(b) Fe

(c) Ca

(d) Mo

Answer: (b)

125. Torsion of visceral mass is seen in animals belonging to class

(a) Cephalopoda

(b) Scaphopoda

(c) Amphineura

(d) Gastropoda

Answer: (d)

126. A plant is provided with ideal conditions for photosynthesis and supplied with isotope 14 CO_2. When the products of the process are analyzed carefully, what would be the nature of products?

(a) Glucose and oxygen are labelled

(b) Oxygen is labelled, but glucose is normal

(c) Glucose and oxygen are normal

(d) Glucose is labelled, but oxygen is normal

Answer: (d)

127. Match the following columns,

	Column I		Column II
A.	Sacral nerves	1.	1 Pair
B.	Thoraic nerves	2.	8 Pairs
C.	Cocygeal nerves	3.	7 Pairs
D.	Cervical nerves	4.	12 Pairs
		5.	5 Pairs

(a) A – 4; B – 1; C – 3; D – 2

(b) A – 5; B – 3; C – 1; D – 2

(c) A – 5; B – 4; C – 1; D – 2

(d) A – 2; B – 5; C – 3; D – 1

Answer: (c)

128. Pick the hormone which is not secreted by human placenta.

(a) hCG

(b) hPL

(c) Prolactin

(d) Oestrogen

Answer: (c)

129. Fixation of one CO_2 molecule through Calvin cycle requires.

(a) 1 ATP and 2NADPH$_2$

(b) 2 ATP and 2NADPH$_2$

(c) 3ATP and 2NADH$_2$

(d) 2ATP and 1NADPH$_2$

130. Oxygen dissociation curve of haemoglobin is

(a) sigmoid

(b) hyperbolic

(c) linear

(d) hypobolic

131. A hormone, secreted by the endocrinal cells of duodenal mucosa which influences the release of pancreatic juice is

(a) relaxin

(b) cholecystokinin

(c) secretin

(d) progesterone

132. Cotyledons and testa are edible parts of

(a) ground nut and pomegranate

(b) walnut and tamarind

(c) french bean and coconut

(d) cashew nut and litchi

133. Intrinsic and extrinsic pathways of blood clotting are interlinked at the activation steps of which of the following factors?

(a) Factor IX

(b) Factor IV

(c) Factor X

(d) Factor XIII-a

Answer: (c)

134. Match the storage products listed under column I with the organism given under column II, choose the appropriate option from the given options

Column I	Column II
A. Glycogen	1. *Sargassum*
B. Pyrenoids	2. *Nostoc*
C. Laminarin and mannitol	3. *Polysiphonia*
D. Floridean starch	4. *Spirogyra*
	5. *Agaricus*

(a) A – 3; B – 4; C – 1; D – 5

(b) A – 4; B – 3; C – 5; D – 2

(c) A – 5; B – 4; C – 1; D – 3

(d) A – 2; B – 1; C – 4; D – 3

Answer: (c)

135. With respect to angiosperms, identify the incorrect pair from the following

(a) antipodal-2n

(b) vegetative all of male gametophyte – n

(c) primary endosperm nucleus – 3n

(d) cell of nucellus of ovule – 2n

Answer: (a)

136. The globular head of myosin contains

(a) calcium ions in large quantities

(b) troponin

(c) ATPase enzyme

(d) ATP

Answer: (c)

137. Parbhani Kranti, a variety of bhindi (lady finger) is resistant to

(a) bacterial blight

(b) yellow mosaic virus

(c) black rot

(d) leaf curl

Answer: (b)

138. Gastrula is the embryonic stage in which

(a) cleavage occurs

(b) blastocoels forms

(c) germinal layers form

(d) villi form

Answer: (c)

139. Dense regular connective tissue is present in

(a) ligament and tendons

(b) joint capsule and Wharton's Jelly

(c) periosteum and endosteum

(d) pericardium and heart valves

Answer: (a)

140. Minisatellites or VNTR's are used in

(a) DNA fingerprinting

(b) Polymerase Chain Reaction, (PCR)

(c) gene therapy

(d) gene mapping

Answer: (a)

141. Note the following features and choose the ones applicable to *Wuchereriabancrofti*.

(I) Coelozoic parasite

(II) Histozoic parasite

(III) Monogenetic parasite

(IV) Digenetic parasite

(V) Monomorphic, acoelomate parasite

(VI) Dimorphic, pseudocoelomate paraiste

(a) II, III, V

(b) II, III, VI

(c) II, IV, VI

(d) I, III, VI

Answer: (c)

142. hnRNA undergoes two additional process. Out of them in one process an unusual nucleotide (methyl GPT) is added to the 5' end of What would you called this?

(a) Tailing

(b) Splicing

(c) Termination

(d) Capping

Answer: (d)

143. Which type of immunoglobin is/are abundantly found in foetus?

(a) IgE

(b) IgG

(c) IgM

(d) IgD

Answer: (b)

144. IUCN stands for

(a) Indian Union for Conservation of Nature

(b) International Union for Conservation of Nature

(c) International Union for Chemical Nomenclature

(d) International Union for Conservation for Nutrients

Answer: (b)

145. The secretory phase in the human menstrual cycle is also called as

(a) luteal phase and last for about 6 days

(b) follicular phase lasting for about 6 days

(c) luteal phase and last for about 13 days

(d) follicular phase and last for about 13 days

Answer: (c)

146. Which one of the following statements is correct?

(a) Hard outer layer of pollen is called intine

(b) Sporogenous tissue is haploid

(c) Endothelium produces the microspores

(d) Tapetum nourishes the developing pollen

Answer: (d)

147. Variation in gene frequencies within population can occur by chance rather than by natural selection. This is reffered to as

(a) genetic flow

(b) genetic drift

(c) random mating

(d) genetic load

Answer: (b)

148. The first stable product of fixation of atmospheric nitrogen in leguminous plant is

(a) NO_2^-

(b) ammonia

(c) NO_3^-

(d) glutamate

Answer: (b)

149. If two persons with 'AB' blood group marry and have sufficiently large number of children, these children could be classified as 'A' blood group. 'AB blood group 'B' blood group in 1 : 2 : 1 ratio.

Modern technique of protein electrophoresis reveals presence of both 'A' and 'B' type proteins in 'AB' blood group individuals. This is an example of

(a) codominance

(b) incomplete dominance

(c) partial dominance

(d) complete dominance

Answer: (a)

150. Which of the following DNA sequences qualifies to be designated as a palindrome?

(a) 5'-GACCAG-3' in one strand

(b) 3'-GACCAG-5' in one strand

(c) 5'-GACGAG-3', 3'-CIGGIC-5'

(d) 5'-AGCGCT-3', 3'-TCGCGA-5'

Answer: (d)

151. Which one of the following pairs is not correctly matched?

(a) Vitamin-B_{12} : Pernicious anaemia

(b) Vitamin-B_6 : Loss of appetite

(c) Vitamin-B_1 : Beri-beri

(d) Vitamin-B_2: Pellagra

Answer: (d)

152. Humoral immunity is mediated by

(a) R-cells

(b) T-cells

(c) NK-cells

(d) plasma cells

Answer: (d)

153. In the lac operon model, lactose molecules function as

(a) inducers, which bind with the operator gene

(b) repressors, which bind with the operator gene

(c) inducers, which bind with the repressor protein

(d) corepressors, which bind with repressor protein

Answer: (c)

154. Which one of the following generally acts as an antagonist to gibberellins?

(a) Zeatin

(b) Ethylene

(c) ABA

(d) IAA

Answer: (c)

155. The *ornithine* cycle removes two waste products from the blood in liver. These products are

(a) CO_2 and urea

(b) ammonia and urea

(c) CO_2 and ammonia

(d) ammonia and uric acid

Answer: (b)

156. Macromolecule chitin is

(a) nitrogen containing polysaccharide

(b) phosphorous containing polysaccharide

(c) sulphur containing polysaccharide

(d) simple polysaccharide

Answer: (a)

157. Which of the following statement is correct in relation to the endocrine system?

(a) Adenohypophysis is under diriect neural regulation of the hypothalamus

(b) Organs in the body like gastro-intestinal tract, heart, kidney and liver do not produce any hormones

(c) Non-nutrient chemical produced by the body in trace amount that act as inter-cellular messanger are known as hormones

(d) Releasing and inhibitory hormones are produced by the pituitary gland

Answer: (c)

158. Following are the two statements regarding the origin of life.

(I) The earliest organisms that appeared on the earth were non-green and presumably anaerobes.

(II) The first autotrophic organisms were the chemoautotrophs that never released oxygen of the above statements which one of the following options is correct?

(a) II is correct, but I is false

(b) Both I and II are correct

(c) Both I and II are false

(d) I is correct, but II is false

Answer: (b)

159. Taxonomic key is one of the taxonomic tools in the identification and classification of plants and animals. It is used in the preparation of

(a) monographs

(b) flora

(c) Both (a) and (b)

(d) None of these

Answer: (b)

160. Match the following columns.

	Column I		Column II
A.	Pinocytosis	1.	*Euglena gracilis*
B.	Holozoic	2.	*Paramecium*
C.	Parasitic	3.	*Amoeba proteus*
D.	Mixotrophic	4.	*Monocystis*

(a) A – 3; B – 2; C – 4; D – 1

(b) A – 2; B – 3; C – 4; D – 1

(c) A – 4; B – 3; C – 1; D – 2

(d) A – 1; B – 4; C – 2; D – 3

Answer: (a)

161. Phellogen and phellem respectively denote

(a) cork and cork cambium

(b) cork cambium and cork

(c) secondary cortex and cork

(d) cork and secondary cortex

Answer: (b)

Which one of the following combinations is incorrect?

(a) Rio convention : Air pollution

(b) Kyoto protocol : Climate change

(c) Montreal protocol : Ozone depletion

(d) Ramsar convention : Wetland conservation

Answer: (a)

162. 'Organ of Jacobson' helps in

(a) touch

(b) vision

(c) smell

(d) hearing

Answer: (c)

163. Which one correctly describe reproduction and life cycle of fern?

(a) Spore → Gamete → Prothallus → Sporophyte

(b) Gamete → Spore → Prothallus → Plant

(c) Prothallus → Sporophyte → Gamete → Fern

(d) Sporangia → Spore → Prothallus → Sporophyte → Plant

Answer: (d)

164. Monoclonal antibodies and polyclonal antibodies are produced by

(a) T-memory cells

(b) NK-cells

(c) plasma cells of B-lymphocytes

(d) memory cells of B-lymphocytes

Answer: (c)

165. All monerons

(a) contain DNA and RNA

(b) demonstrate a long circular strand of DNA, not formed enclosed in a nuclear membrane

(c) are bacteria

(d) All of the above

Answer: (d)

166. Match the following columns

Column I	Column II
A. *Opuntia*	1. Stem thorns
B. *Asparagus*	2. Phylloclades
C. *Citrus*	3. Cladodes

(a) A – 1; B – 2; C – 3

(b) A – 2; B – 3; C – 1

(c) A – 3; B – 2; C – 1

(d) A – 2; B – 1; C – 3

Answer: (b)

167. The chromosome in which centromere is situated close to one end are

(a) metacentric

(b) acrocentric

(c) telocentric

(d) sub-metacentric

Answer: (b)

168. Sliding filament theory can be best explained as

(a) when myofilaments slide pass each other actin filaments shorten while myosin filament donot shorten

(b) actin myosin filament shorten and slide pass each

other

(c) actin and myosin filaments do not shorten, but rather slide pass each other

(d)   when myofilament slide pass each other myosin filament shorten while actin filament do not shorten

Answer: (b)

169. Select the correct combination of statements regarding Myasthenia gravis

(I) It is an auto immune disorder.

(II) It causes insufficient acetylecholine binding that effects muscular contraction.

(III) Antibodies are developed against acetylcholine.

(IV) Antibodies are developed against acetylcholine receptors.

(V) It causes drooping of eyelids.

(a) I, III, IV, VI

(b) I, III, V, II

(c) I, II, IV, VI

(d) II, III, IV, V

Answer: (c)

170. Study the following statements and select the option with correct statements.

(I) Pulvinus leaf base is present in some leguminous plants.

(II) In *Eichhornia* the petioles expand, becomes green and synthesise food.

(III) Opposite phyllotaxy is seen in guava.

(a) I and II

(b) I and III

(c) II and III

(d) I, II and III

Answer: (b)

171. The method of directly injecting a sperm into ovum in assisted reproductive technology is called

(a) GIFT

(b) ZIFT

(c) ICSI

(d) ET

Answer: (c)

172. Appearance of antibiotic resistant bacteria is an example of

(a) adaptive radiation

(b) transduction

(c) pre-existing variation

(d) divergent evolution in the population

Answer: (c)

173. Post mitotic gap phase is characterized by all, except

(a) synthesis of RNA and nucleotides

(b) no change in DNA content

(c) synthesis of histone proteins

(d) growth phase of the cell

Answer: (c)

174. Munch hypothesis is based on

(a) translocation of food due to Turgor Pressure (TP) gradient and imbibitions force

(b) translocation of food due to Turgor Pressure (TP) gradient

(c) translocation of food due to imbition force

(d) None of the above

Answer: (b)

175. Match the following columns

Column I	Column II
(A) Molecular oxygen	(1) α-ketoglutaric acid
(B) Electron acceptor	(2) Hydrogen acceptor
(C) Pyruvate dehydrogenase	(3) Cytochrome-C
(D) Decarboxylation	(4) Acetyle Co-A

(a) A – 2; B – 3; C – 4; D – 1

(b) A – 3; B – 4; C – 2; D – 1

(c) A – 2; B – 1; C – 3; D – 4

(d) A – 4; B – 3; C – 1; D – 2

Answer: (a)

176. Roquefort cheese is ripended by using a

(a) type of yeast

(b) fungus

(c) bacterium

(d) cyanobacteria

Answer: (b)

177. Identify the wrong combination

(a) *Dryopteris* : Rhizome

(b) *Cycas* : Corralloid roots

(c) *Volvox* : Colonial form

(d) *Marchantia* : Pseudoelaters

Answer: (d)

178. Foramen ovale

(a) connects the two atria in the foetal heart.

(b) is a condition in which the heart valves do not completely close

(c) is a shallow depression in the inter ventricular septum

(d) is a connection between the pulmonary trunk and the aorta in the foetus

Answer: (a)

179. Which one of the following graphs correctly describes disruptive selection? When studying fitness level associated with body size?

(a)

(b)

(c)

(d)
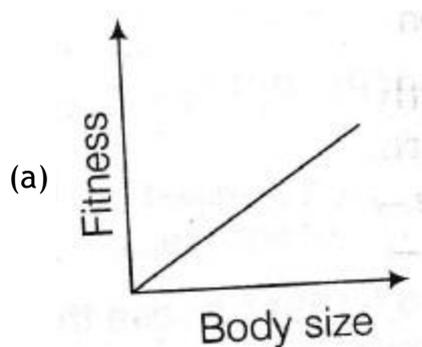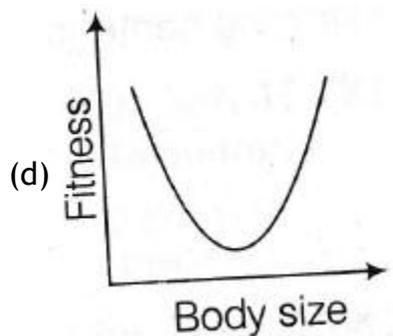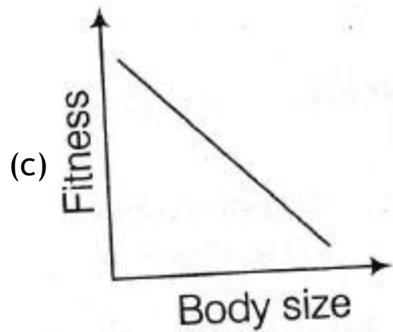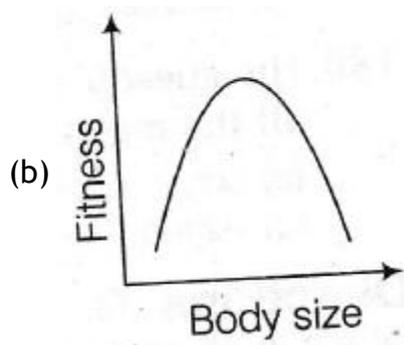
Answer: (d)

ENGLISH & QUANTITATIVE REASONING

Directions (Q. Nos. 181-183) Choose the word which best expresses the meaning of the underlined word in the sentence

181. Decay is an <u>immutable</u> factor of human life.

(a) important

(b) unique

(c) unchangeable

(d) awful

Answer: (c)

182. It was an <u>ignominious</u> defeat for the team.

(a) shameful

(b) admirable

(c) unaccountable

(d) worthy

Answer: (a)

183. His <u>conjecture</u> was better than mine.

(a) guess

(b) fact

(c) surprise

(d) doubt

Answer: (a)

Directions (Q. Nos. 184-186) Fill in the blank.

184. Freedom and equality are the..........rights of every human.

(a) inalienable

(b) inscrutable

(c) incalculable

(d) incredible

Answer: (d)

185. Pradeep's face spoke …………for the happiness he was feeling.

(a) elegantly

(b) tons

(c) volumes

(d) much

Answer: (c)

186. His speech was disappointing : it .... all the major issues.

(a) projected

(b) revealed

(c) skirted

(d) analyzed

Answer: (c)

Directions (Q. Nos. 187-189) Choose the word which is closest to the opposite in meaning of the following sentence.

187. Hydra is biologically believed to be

(a) undying

(b) perishable

(c) ancient

(d) eternal

Answer: (b)

188. The Gupta rulers **advocated** all cultural activities and thus Gupta period was called the golden era in Indian History.

(a) fostered

(b) enriched

(c) opposed

(d) spurned

Answer: (c)

189. This is a **barbarous**

(a) bad

(b) good

(c) civilised

(d) exemplary

Answer: (c)

190. Though **novice** in art shows great promise.

(a) tyro
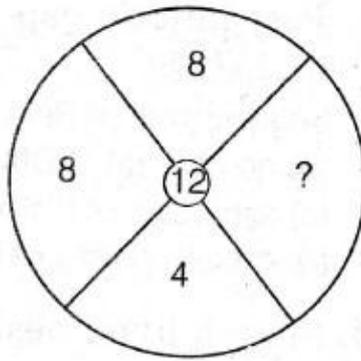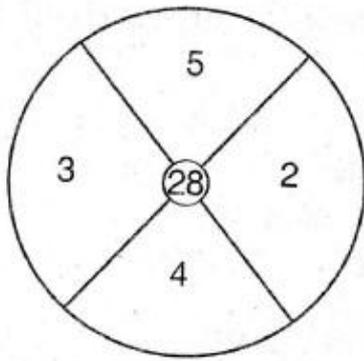
(b) inexperienced

(c) veteran

(d) green horn

Answer: (c)

191. If 15th August 2011 was Tuesday, then what day of the week was it on 17th September, 2011?

(a) Thursday

(b) Friday

(c) Saturday

(d) Sunday

Answer: (d)

192. In the following question five figures are given. Out of them, find the three figures that can be joined to form a square.

(a) 1

(b) 2

(c) 4

(d) 5

Answer: (a)

193. In a certain code language, 'DOME' is written as '8943' and 'MEAL' is written as '4321'. What group of letters can be formed for the code '38249'?

(a) EOADM

(b) MEDOA

(c) EDAMO

(d) EMDAO

Answer: (d)

194. Replace the question mark (?) in the series given below with the correct option.

4, 5, 7, 11, 19, 35, ?

(a) 67

(b) 76

(c) 55

(d) 45

Answer: (b)

195. Complete the series by replacing '?' mark.

G4T, J9R, M20P, P43N, S90L, ?

(a) S90L

(b) V185J

(c) M20P

(d) P43N

Answer: (d)

196. Neeraj starts walking towards South. After walking 15 m, he turns towards North. After walking 20 m, he turn towards East and walks 10 m. He then turns towards South and walks 5 m. How far is he from his original position and in which direction?

(a) 10 m, East

(b) 10 m, South-East

(c) 10 m, West

(d) 10 m, North-East

Answer: (b)

197. Shikha is mother-in-law of Ekta who is sister-in-law of Ankit. Pankaj is father of Sanjay, the only brother of Ankit. How is Shikha related to Ankit?

(a) Mother-in-law

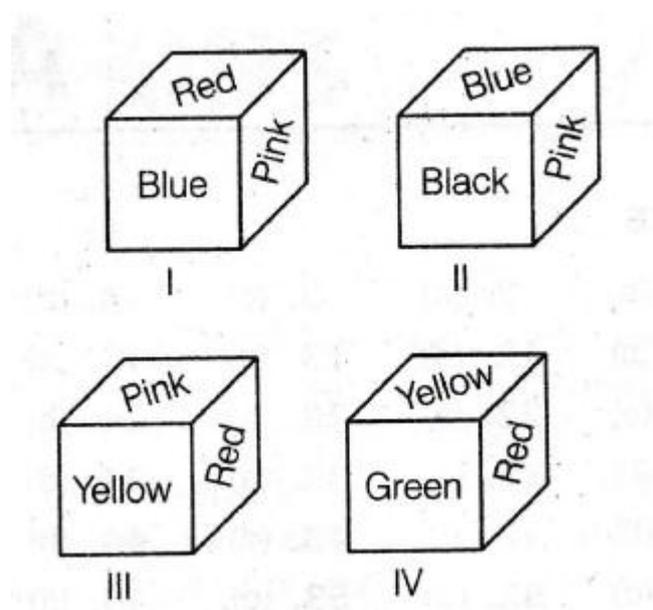(b) Aunt

(c) Wife

(d) Mother

Answer: (c)

198. In a row of forty children, P is thirteenth from the left end and Q is ninth from the right end. How many children are there between P and R, if R is fourth to the left of Q?

(a) 12

(b) 13

(c) 14

(d) 15

Answer: (a)

199. From the given four positions of a single dice, find the colour at the face opposite to the face having red colour.
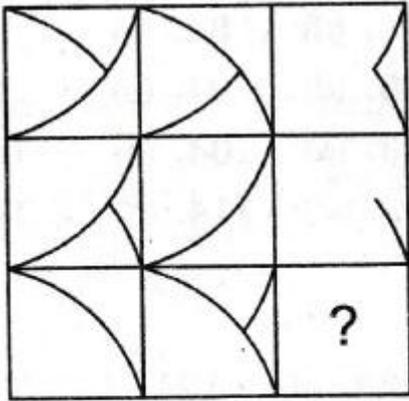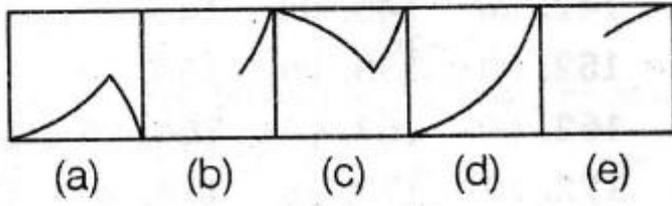

(a) Yellow

(b) Pink

(c) Green

(d) Black

Answer: (a)

200. Choose the answer figure which completes the problem figure matrix.

Problem Figure

Answer Figures

(a)   (b)   (c)   (d)   (e)

Answer: (c)