

JIPMER Question Paper 2017

Duration : 2 : 30 Hrs

Exam JIPMER		Total Questions 200			
Marks for Correct Answer 4	Negative Marks 1	Physics 60	Chemistry 60	Biology 60	English 20

Physics

1. A rocket is intended to leave the Earth's gravitational field. The fuel in its 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

Correct: a

2. A transformer having efficiency of 75% is working on 220 V and 4.4 kW power supply. If the current in the secondary coil is 5A. What will be the voltage across secondary coil and the current in primary coil?

- (a) $V_s = 220V, i_p = 20A$
- (b) $V_s = 660V, i_p = 15A$
- (c) $V_s = 660V, i_p = 20A$
- (d) $V_s = 220V, i_p = 15A$

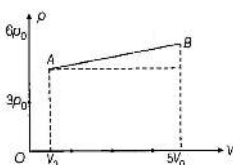
Correct: c

3. 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

Correct: b

4. One mole of a monoatomic ideal gas undergoes the process $A \rightarrow B$ in the given p-V diagram. The molar heat capacity for this process is



- (a) $\frac{3R}{2}$

- (b) $\frac{13R}{6}$
- (c) $\frac{5R}{2}$
- (d) $2R$

Correct: b

5. A pan with a set of weights is attached to a light spring. The period of vertical oscillation is 0.5s. When some additional weights are put in pan, then the period of oscillations increases by 0.1s. The extension caused by the additional weight is

- (a) 5.5 cm
- (b) 3.8 cm
- (c) 2.7 cm
- (d) 1.3 cm

Correct: c

6. 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 to minimize 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

Correct: c

7. If $\mathbf{A} + \mathbf{B} = \mathbf{C}$ and that \mathbf{C} is perpendicular to \mathbf{A} . What is the angle between \mathbf{A} and \mathbf{B} , if $|\mathbf{A}| = |\mathbf{C}|$?

- (a) $\frac{\pi}{4}$ rad
- (b) $\frac{\pi}{2}$ rad
- (c) $\frac{3\pi}{4}$ rad
- (d) π rad

Correct: c

8. A beam of light travelling along X-axis is described by the electric field $E_Y = 600 \frac{\text{V}}{\text{m}} \sin \omega \left(t - \frac{x}{c} \right)$ the maximum magnetic force on a charge $q = 2e$ moving along Y-axis with the speed of $3 \times 10^8 \text{m/s}$ is

- (a) $19.2 \times 10^{-17} \text{N}$
- (b) $1.92 \times 10^{-17} \text{N}$
- (c) 0.192N
- (d) None of these

Correct: b

9. A body is whirled in a horizontal circle of radius 25 cm. It has an angular velocity of 13 rad/s. What is its linear velocity at any point on circular path?

- (a) 2 m/s
- (b) 3 m/s
- (c) 3.25 m/s
- (d) 4.25 m/s

Correct: c

10. 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) $a^{3/2}$

Correct: a

11. A block having 12g of element is placed in a room. This element is a radioactive element with half-life of 15 yr. After how many years will there be just 1.5 g of the element in the box?

- (a) 40 yr
- (b) 45 yr
- (c) 20 yr
- (d) 15 yr

Correct: b

12. When the radioactive isotope ${}_{88}\text{Ra}^{226}$ decays in a series by emission of three alpha (α) and a beta (β) particle, the isotope X which remains un decay is

- (a) ${}_{83}\text{X}^{214}$
- (b) ${}_{84}\text{X}^{218}$
- (c) ${}_{84}\text{X}^{220}$
- (d) ${}_{87}\text{X}^{223}$

Correct: a

13. An L-C-R series circuit with a resistance of 100Ω is connected to 200 V (AC source) and angular frequency 300 rad/s. When only the capacitor is removed, then the current lags behind the voltage by 60° . When only the inductor is removed the current leads the voltage by 60° . The average power dissipated in original L-C-R circuit is

- (a) 50 W
- (b) 100 W
- (c) 200 W
- (d) 400 W

Correct: d

14. 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) $\pi\rho V$
- (b) $\pi r\rho v^2$
- (c) $\pi r^2\rho v$
- (d) $\pi r^2\rho v^2$

Correct: d

15. A metal rod at a temperature of 145°C , radiates energy at a rate of 17W. If its temperature is increased to 273°C , then it will radiate at the rate of

- (a) 49.6 W
- (b) 17.5 W
- (c) 50.3 W
- (d) 67.5 W

Correct: a

16. 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 ($d \gg b$) from the slits. At a point on the screen directly in front of one of the slits, which wavelengths are missing?

- (a) $\frac{b}{d}, \frac{b}{3d}, \frac{b}{5d}$
- (b) $\frac{b^2}{2d}, \frac{b^2}{4d}, \frac{b^2}{6d}$
- (c) $\frac{b^2}{d}, \frac{b^2}{3d}, \frac{b^2}{5d}$

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

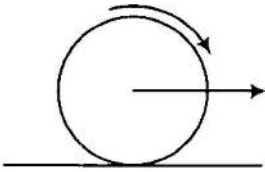
Correct: c

17. A square wire of side 2.0 cm is placed 20 cm in front of a concave mirror of focal length 10 cm with its centre on the axis of the mirror and its plane normal to the axis. The area enclosed by the image of wire is

- (a) 7.5cm^2
- (b) 6cm^2
- (c) 2cm^2
- (d) 4cm^2

Correct: d

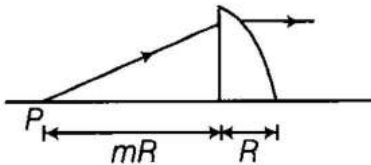
18. A bicycle wheel rolls without slipping on a horizontal floor. Which one of the following is true about the motion of points on the rim of the wheel, relative to the axis at the wheel's centre?



- (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

Correct: a

19. A quarter cylinder of radius R and refractive index 1.5 is placed on a table. A point object P is kept at a distance of mR from it as shown in figure. For what value of m for which a ray from P will emerge parallel to the table?



- (a) $2/3$
- (b) $3/2$
- (c) $4/3$
- (d) $3/4$

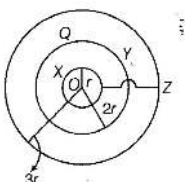
Correct: c

20. 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.

Correct: b

21. The concentric, conducting spherical shells X, Y and Z with radii, $2r$ and $3r$, respectively. X and Z are connected by a conducting wire and Y is uniformly charged to charge Q as shown in figure. Charges on shells X and Z will be



- (a) $q_x = \frac{Q}{4}, q_z = \frac{-Q}{6}$
 (b) $q_x = \frac{-Q}{4}, q_z = \frac{Q}{4}$
 (c) $q_x = \frac{Q}{4}, q_z = \frac{-Q}{4}$
 (d) $q_x = \frac{-Q}{6}, q_z = \frac{Q}{4}$

Correct: b

22. The temperature of a gas is raised from 27°C to 927°C . The root mean square speed

- (a) gets halved
 (b) gets doubled
 (c) is $\sqrt{\left(\frac{927}{27}\right)}$ times the earlier value
 (d) remains the same

Correct: b

23. A non-conducting ring of radius 0.5m carries a total charge of $1.11 \times 10^{-10}\text{C}$ distributed non-uniformly on its circumference producing on its circumference an electric field E , everywhere in space. The value of the line integral $\int_{1=\infty}^{1=0} (-\mathbf{E} \cdot d\mathbf{l})$ (being centre of ring) in volts is

- (a) + 2
 (b) - 1
 (c) - 2
 (d) Zero

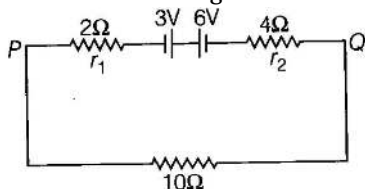
Correct: a

24. A stone projected with a velocity u at an angle θ with the horizontal reaches maximum height H_1 . When it is projected with velocity u at an angle $\left(\frac{\pi}{2} - \theta\right)$ with the horizontal, it reaches maximum height H_2 . The relation between the horizontal range R of the projectile, H_1 and H_2 is

- (a) $R = 4\sqrt{H_1 H_2}$
 (b) $R = 4(H_1 - H_2)$
 (c) $R = 4(H_1 + H_2)$
 (d) $R = \frac{H_1^2}{H_2^2}$

Correct: a

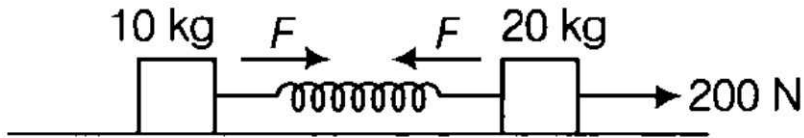
25. Two batteries of emf 3V and 6V with internal resistances 2Ω and 4Ω are connected in a circuit with resistance of 10Ω as shown in figure. The current and potential difference between the points P and Q are



- (a) $\frac{3}{16}\text{A}$ and $\frac{8}{15}\text{V}$
 (b) $\frac{16}{3}\text{A}$ and $\frac{15}{8}\text{V}$
 (c) $\frac{3}{16}\text{A}$ and 8V
 (d) $\frac{3}{16}\text{A}$ and $\frac{15}{8}\text{V}$

Correct: d

26. Two masses 10kg and 20kg respectively are connected by a massless spring as shown in figure. A force of 200N acts on the 20kg mass. At the instant shown in figure the 10kg mass has acceleration of $\frac{3}{16}\text{m/s}^2$. The value of acceleration of 20kg mass is



- (a) 4m/s^2
- (b) 10m/s^2
- (c) 20m/s^2
- (d) 30m/s^2

Correct: a

27. A capillary tube of length L and radius r is connected with another capillary tube of the same length but half the radius in series. The rate of steady volume flow of water through first capillary tube under a pressure difference of p is V . The rate of steady volume flow through the combination will be (the pressure difference across the combination is p)

- (a) $17 V$
- (b) $16/17 V$
- (c) $V/17$
- (d) $17/16 V$

Correct: c

28. Two soap bubbles 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) $ab/(a + b)$

Correct: c

29. An isotropic point source emits light with wavelength 500 nm . The radiation power of the source is $P = 10 \text{ W}$. Find the number of photons passing through unit area per second at a distance of 3 m from the source.

- (a) $5.92 \times 10^{17}/\text{m}^2\text{s}$
- (b) $2.23 \times 10^{17}/\text{m}^2\text{s}$
- (c) $2.23 \times 10^{18}/\text{m}^2\text{s}$
- (d) $5.92 \times 10^{18}/\text{m}^2\text{s}$

Correct: b

30. If a proton and anti-proton come close to each other and annihilate, how much energy will be released?

- (a) $1.5 \times 10^{-10} \text{ J}$
- (b) $3 \times 10^{-10} \text{ J}$
- (c) $4.5 \times 10^{-10} \text{ J}$
- (d) $2 \times 10^{-10} \text{ J}$

Correct: 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?

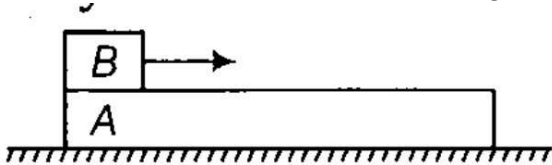
- (a) Slope of gas 1 is less than gas 2
- (b) Slope of gas 1 is more than gas 2
- (c) Both have some slopes
- (d) None of the above

Correct: b

32. A bat emitting an ultrasonic wave of frequency $4.5 \times 10^4 \text{ Hz}$ at speed of 6 m/s between two parallel walls. The two frequencies heard by the bat will be
- (a) $4.67 \times 10^4 \text{ Hz}$, $4.34 \times 10^4 \text{ Hz}$
 (b) $4.34 \times 10^4 \text{ Hz}$, $4.67 \times 10^4 \text{ Hz}$
 (c) $4.5 \times 10^4 \text{ Hz}$, $5.4 \times 10^4 \text{ Hz}$
 (d) $4.67 \times 10^3 \text{ Hz}$, $4.34 \times 10^4 \text{ Hz}$

Correct: b

33. 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) $\frac{\mu g}{2}$ (towards right), $\frac{\mu g}{2}$ (towards left)
 (b) μg (towards right), $\frac{\mu g}{2}$ (towards left)
 (c) $\frac{\mu g}{2}$ (towards right), $\frac{\mu g}{2}$ (towards left)
 (d) μg (towards right), $\frac{\mu g}{2}$ (towards left)

Correct: c

34. A rod made up of metal is 1.2 m long and 0.8 cm in diameter. Its resistance is $3.5 \times 10^{-3} \Omega$. Another disc made of the same metal is 2.0 cm in diameter and 1.25 mm thick. What is the resistance between the round faces of the disc?

- (a) $1.35 \times 10^{-8} \Omega$
 (b) $2.70 \times 10^{-7} \Omega$
 (c) $5.82 \times 10^{-7} \Omega$
 (d) $8.10 \times 10^{-5} \Omega$

Correct: c

35. 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) $R/(\mu - 1)$
 (d) $\{(\mu + 1)/(\mu - 1)\}R$

Correct: c

36. The magnification produced by an astronomical telescope for normal adjustment is 10 and the length of the telescope is 1.1 m. The magnification, when the image is formed at least distance of distinct vision is

- (a) 6
 (b) 18
 (c) 16
 (d) 14

Correct: d

37. 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 illuminances at the centre to that at the edge of the table is

- (a) $1 + \left(\frac{r^2}{h^2}\right)$

- (b) $1 + \left(\frac{h^2}{r^2}\right)$
 (c) $\left\{1 + \frac{r^2}{h^2}\right\}^{3/2}$
 (d) $\left\{1 + \frac{n^2}{r^2}\right\}^{3/2}$

Correct: c

38. Angular width of central maximum in the Fraunhofer diffraction pattern of a slit is measured. The slit is illuminated by light of wavelength 6000 \AA . When the slit is illuminated by light of another wavelength, then the angular width decreases by 30%. The same decrease in angular width of central maximum is obtained when the original apparatus is immersed in a liquid. The refractive index of the liquid will be

- (a) 1.25
 (b) 1.42
 (c) 1.67
 (d) 1.5

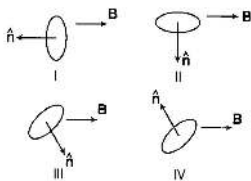
Correct: b

39. 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

Correct: c

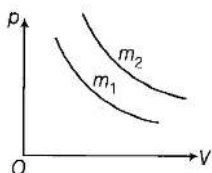
40. A current carrying loop is placed in a uniform magnetic field in four different orientations I, II, III and IV as shown in figure. Arrange them in decreasing order of potential energy.



- (a) $I > III > II > IV$
 (b) $I > II > III > IV$
 (c) $I > IV > II > III$
 (d) $III > IV > I > II$

Correct: c

41. Two different isotherms representing the relationship between pressure p and volume V at a given temperature of the same ideal gas are shown for masses m_1 and m_2 then



- (a) Nothing can be predicted
 (b) $m_1 < m_2$
 (c) $m_1 = m_2$
 (d) $m_1 > m_2$

Correct: b

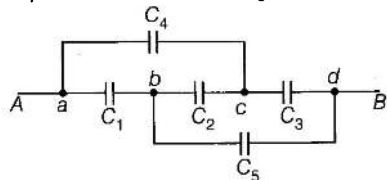
42. Two identical conducting balls A and B have positive charges q_1 , and q_1 , , respectively. But $q_1 \neq q_2$ The balls are

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

Correct: b

43. In the given figure, the capacitors C_1, C_3, C_4, C_5 have a capacitance $4\mu F$ each. If the capacitor C_2 has a capacitance $10\mu F$ then effective capacitance between A and B will be



- (a) $2\mu F$
- (b) $6\mu F$
- (c) $4\mu F$
- (d) $8\mu F$

Correct: c

44. 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.

Correct: d

45. A sphere of mass m moving with velocity v hits inelastically with another stationary sphere of same mass. The ratio of their final velocities will be (in terms of e)

- (a) $\frac{v_1}{v_2} = \frac{1+e}{1-e}$
- (b) $\frac{v_1}{v_2} = \frac{1-e}{1+e}$
- (c) $\frac{v_1}{v_2} = \frac{1+e}{2}$
- (d) $\frac{v_1}{v_2} = \frac{1-e}{2}$

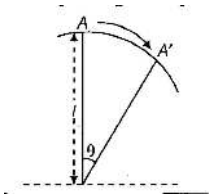
Correct: b

46. A small spherical drop falls from rest in viscous liquid. Due to friction, heat is produced. The correct relation between the rate of production of heat and the radius of the spherical drop at terminal velocity will be

- (a) $\frac{dH}{dt} \propto \frac{1}{r^5}$
- (b) $\frac{dH}{dt} \propto r^4$
- (c) $\frac{dH}{dt} \propto \frac{1}{r^4}$
- (d) $\frac{dH}{dt} \propto r^5$

Correct: d

47. 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) $\sqrt{\left(\frac{6g}{1}\right)} \sin \frac{\theta}{2}$
 (b) $\sqrt{\left(\frac{6g}{1}\right)} \cos \frac{\theta}{2}$
 (c) $\sqrt{\left(\frac{6g}{1}\right)} \sin \theta$
 (d) $\sqrt{\left(\frac{6g}{1}\right)} \cos \theta$

Correct: a

48. The total charge induced in a conducting loop when it is moved in magnetic field depends on

- (a) the rate of change of magnetic flux
 (b) initial magnetic flux only
 (c) the total change in magnetic flux
 (d) final magnetic flux only

Correct: c

49. Particles of masses $m, 2m, 3m, \dots, nm$ are placed on the same line at distances $L, 2L, 3L, \dots, nL$ from O . The distance of centre of mass from O is (a) $\frac{(2n+1)L}{4}$

- (b) $\frac{L}{(2n+1)}$
 (c) $\frac{n(n^2+1)L}{2}$
 (d) $\frac{(2n+1)L}{3}$

Correct: d

50. 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 field 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.

Correct: d

51. An ideal solenoid having 5000 turns/m has an aluminium core and carries a current of 5A. If $\chi_N = 2.3 \times 10^{-5}$, then the magnetic field developed at centre will be

- (a) 0.031 T
 (b) 0.048 T
 (c) 0.027 T
 (d) 0.050 T

Correct: a

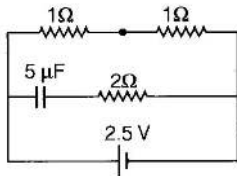
52. A ball of radius R rolls without slipping. Find the fraction of total energy associated with its rotational energy, if the radius of the gyration of the ball about an axis passing through its centre of mass is K .

- (a) $\frac{K^2}{K^2+R^2}$
 (b) $\frac{R^2}{K^2+R^2}$

- (c) $\frac{K^2 + R^2}{R^2}$
 (d) $\frac{K^2}{R^2}$

Correct: a

53. A capacitor of capacitance $5\mu\text{F}$ is connected as shown in the figure. The internal resistance of the cell is 0.582 . The amount of charge on the capacitor plates is



- (a) $80\mu\text{C}$
 (b) $40\mu\text{C}$
 (c) $20\mu\text{C}$
 (d) $10\mu\text{C}$

Correct: d

54. A body of mass $2m$ is placed on earth's surface. Calculate the change in gravitational potential energy, if this body is taken from earth's surface to a height of h , where $h = 4R$.

- (a) $\frac{2mgh}{R}$
 (b) $\frac{2}{3}mgR$
 (c) $\frac{8}{5}mgR$
 (d) $\frac{mgR}{2}$

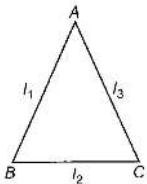
Correct: c

55. The slope of isothermal and adiabatic curves are related as

- (a) isothermal curve slope = adiabatic curve slope
 (b) isothermal curve slope = γx adiabatic curve slope
 (c) adiabatic curve slope = γx isothermal curve slope
 (d) adiabatic curve slope = $\frac{1}{2}x$ isothermal curve slope

Correct: c

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 moments 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) $I_3 > I_1 > I_2$

Correct: b

57. A liquid of density 800kg/m^3 is filled in a cylindrical vessel upto a height of 3 m . This cylindrical vessel stands on a horizontal plane. There is a circular hole on the side of the vessel. What should be the minimum diameter of the hole to move the vessel on the floor, if plug is removed. Take the coefficient of friction between the bottom of the vessel and the plane as 0.5 and total mass of vessel plus vessel as 95 kg .

- (a) 0.107 m

- (b) 0.053 m
- (c) 0.206 m
- (d) 0.535 m

Correct: a

58. The transfer ratio β of a transistor is 50. The input resistance of the transistor when used in the common emitter configuration is $2k\Omega$. The peak value of the collector AC current for an AC input voltage of 0.02 V peak is

- (a) $200\mu A$
- (b) 0.01mA
- (c) 0.25mA
- (d) $500\mu A$

Correct: d

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

Correct: 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.

Correct: c

Chemistry

61. Temperature of a gas is t K. What would be the temperature at which volume and pressure, both will reduced to half of the initial values?

- (a) $t/2$
- (b) $t/4$
- (c) $t/3$
- (d) $t/8$

Correct: b

62. Among the following set of quantum numbers, the impossible set is

- (a) 3 2 -3 $-\frac{1}{2}$
- (b) 4 0 0 $\frac{1}{2}$
- (c) 5 3 0 $-\frac{1}{2}$
- (d) 3 2 -2 $\frac{1}{2}$

Correct: a

63. When 2-methyl butyl bromide is treated with sodium ethoxide in ethanol, what will be the major product?

- (a) 2-methyl but-2-ene
- (b) 3-methyl but-1-ene

- (c) 2-methyl but-1-ene
 (d) 2-methyl sodium-butoxide

Correct: a

64. Which of the following is least soluble in water?

- (a) C_2H_6
 (b) CH_3OH
 (c) CH_3NH_2
 (d) C_6H_5OH

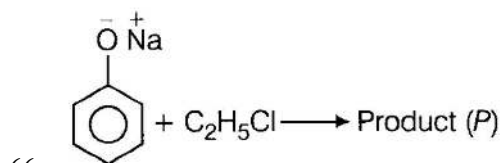
Correct: a

65. The pair of boiling point and compound are given as, $80^\circ C$ $65^\circ C$ $212^\circ C$ $184^\circ C$
 (I) (II) (III) (IV)

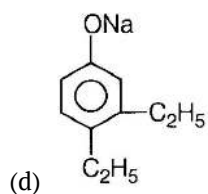
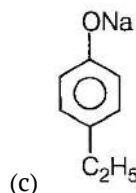
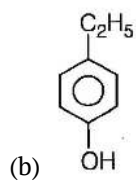
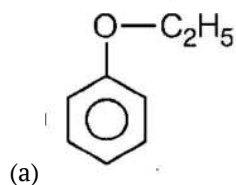
Which will show lowest vapour pressure at room temperature?

- (a) C_6H_6
 (b) CH_3OH
 (c) $C_6H_5NO_2$
 (d) $C_6H_5NH_2$

Correct: c



The product (P) is



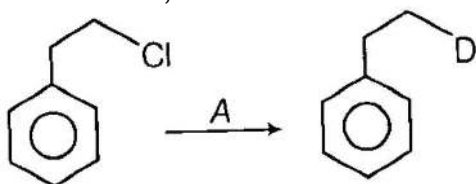
Correct: a

67. Ethers like ROR can be cleaved by concentrated HI but not by HCl because

- (a) I^- is a weaker nucleophile than Cl^-
- (b) I^- is stronger nucleophile than
- (c) I^- mechanism carried out in this reaction is rapidly in presence of HI.
- (d) None of the above

Correct: b

68. In the reaction,



How many electron donating groups are attached with the carbon atom of unsaturated part of the product 'B'?

- (a) Two
- (b) Three
- (c) Four
- (d) None of these

Correct: a

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

Correct: b

70. Which of the following hydrocarbons is the most reactive towards addition of H_2SO_4 ?

- (a) Ethene
- (b) Propylene
- (c) 3-methyl but-1-ene
- (d) 1-butene

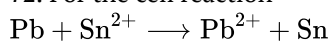
Correct: c

71. Choose the incorrect statement about noble gas?

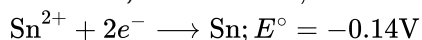
- (a) Boiling point increases with increasing atomic mass
- (b) Helium has least tendency to form compound
- (c) Noble gases have some value of electron affinity
- (d) Xenon has maximum number of compounds

Correct: c

72. For the cell reaction



Given that, $Pb \longrightarrow Pb^{2+}$, $E^\circ = 0.13V$



What would be the ratio of cation concentration for which $E = 0$?

- (a) 1/4
- (b) 1/2
- (c) 1/3
- (d) 1/1

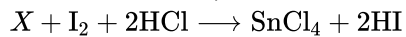
Correct: b

73. Which of the following oxide is most acidic?

- (a) As_2O_3
- (b) P_2O_5
- (c) Sb_2O_3
- (d) Bi_2O_3

Correct: b

74. In the reaction,



The correct option regarding X is/are

- (a) It is a strong reducing agent
- (b) It is an angular molecule
- (c) It is used as a reagent in test of Hg^{2+} radical
- (d) All of the above

Correct: d

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

- (a) $\text{Yb}^{3+} < \text{Pm}^{3+} < \text{Ce}^{3+} < \text{La}^{3+}$
- (b) $\text{Ce}^{3+} < \text{Yb}^{3+} < \text{Pm}^{3+} < \text{La}^{3+}$
- (c) $\text{Yb}^{3+} < \text{Pm}^{3+} < \text{La}^{3+} < \text{Ce}^{3+}$
- (d) $\text{Pm}^{3+} < \text{La}^{3+} < \text{Ce}^{3+} < \text{Yb}^{3+}$

Correct: a

76. Actinides exhibit larger number of oxidation state than that of corresponding lanthanides. The reason behind this aspect is

- (a) lesser energy difference between 5f and 6d-orbitals than between 4f and 5d-orbitals
- (b) larger atomic size of actinides than the lanthanides
- (c) more energy difference between 5f and 6d orbitals than between 4f and 5d-orbitals
- (d) greater reactive nature of the actinides than the lanthanides

Correct: a

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

- (a) 1.0MNaOH
- (b) 1.0M Na_2SO_4
- (c) 1.0M NH_4NO_3
- (d) 1.0MKNO₃

Correct: b

78. The melting point of solid substances is directly proportional to pressure acting on them. However, ice-melts at a temperature lower than its usual melting point, when the pressure increases. This is because

- (a) ice is not a true solid
- (b) the bonds break under pressure
- (c) ice is less denser than water
- (d) pressure generates heat

Correct: c

79. When the heat of reaction at constant pressure is -2.5×10^3 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

Correct: b

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

- (a) $[\text{Ni}(\text{H}_2\text{O})]^{2+}$
- (b) $\text{Ni}(\text{CO})_4$
- (c) $[\text{Ni}(\text{NH}_3)_4]^{2+}$
- (d) $[\text{Co}(\text{NH}_3)_6]^{2+}$

Correct: b

81. Work is being performed, when a weight lifter lifts a base ball off a weight rack. This is due to

- (a) magnetic attraction
- (b) gravity
- (c) electrostatic repulsion
- (d) mechanical force

Correct: b

82. Magnetic moment of $[\text{Ti}(\text{H}_2\text{O})_6]^{4+}$, $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$ and $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$ can be represented as X, Y and Z. They are in order of

- (a) X

Time Choose the correct equation from the following which best suited to the above graph

- (a) $[A_t] = [A]_0 - Kt$
- (b) $[A_t] = [A]_0 + Kt$
- (c) $[A_t] = [A_0] e^{-kt}$
- (d) $[A_t] = Kt^2 + [A_0]$

Correct: c

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

- (a) 3
- (b) 5
- (c) 6
- (d) 4

Correct: c

89. Lauryl alcohol on treatment with H_2SO_4 followed by neutralisation forms a product which is

- (a) cationic detergent
- (b) anionic detergent
- (c) neutral detergent
- (d) antidepressant

Correct: b

90. When an iron object is plated with tin, tin does not act as sacrificial anode in protecting against corrosion, because.

- (a) tin is more reactive than iron
- (b) tin is less reactive than iron
- (c) reactivity of tin and iron is same
- (d) tin is oxidising agent while iron is not so

Correct: b

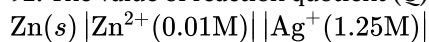
91. Which of the following pair of compounds will have three sp^2 hybrid orbitals?

- (a) SO_2 , CH_4
- (b) SO_3 , C_2H_4

- (c) BF_3, SF_4
(d) $\text{I}_3^-, \text{SF}_4$

Correct: b

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



$\text{Ag}(s)$

- (a) 156
(b) 125
(c) 1.25×10^{-2}
(d) 6.4×10^{-3}

Correct: d

93. Choose the correct statement from the following

- (a) The greater positive value of E_{OP}° indicates greater reactivity of metal
(b) F^- is strong oxidant while Cu^{2+} is weak reductant
(c) The metals placed above Mg in the electrochemical series do not decompose water at ordinary temperature
(d) Oxides of Hg do not decompose on heating

Correct: d

94. 100 mL of a solution contains 2 g of acetic acid and 3g of sodium acetate providing $K_a = 1.8 \times 10^{-5}$ then choose the correct option.

- (a) This solution is basic in nature
(b) This solution is acidic in nature
(c) This solution is amphoteric in nature
(d) This solution is neutral in nature

Correct: a

95. 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) $\Delta H < 0$

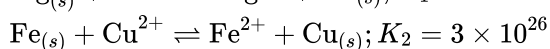
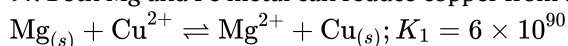
Correct: d

96. On the basis of Langmuir adsorption isotherm the amount of gas adsorbed at very high pressure.

- (a) Reaches a constant limiting value
(b) Goes on increasing with pressure
(c) Goes on decreasing with pressure
(d) First increasing and then decreasing with pressure

Correct: a

97. Both Mg and Fe metal can reduce copper from a solution having Cu^{2+} ion, according to equilibria.



Choose the correct option regarding above equilibrium

- (a) Mg removes more Cu^{2+} from solution
(b) Fe removes more Cu^{2+} from solution
(c) Both will equally remove Cu^{2+} from solution
(d) Both metals cannot remove Cu^{2+} from solution

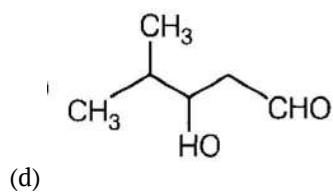
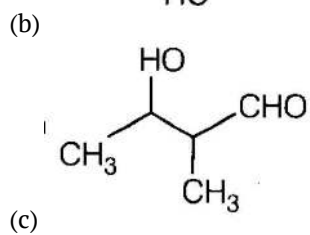
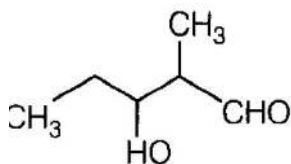
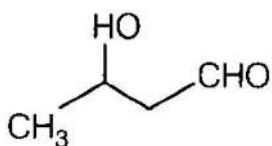
Correct: d

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

- (a) LiAlH_3
- (b) $\text{Zn} - \text{Hg}$ with HCl
- (c) glycol with KOH
- (d) H_2 with Pt as catalyst

Correct: b

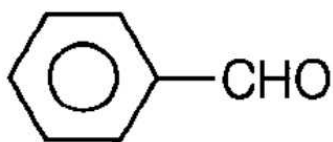
99. Which of the following is crossed aldol product in the reaction?



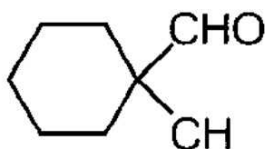
Correct: c

100. Cannizzaro reaction is not shown by

(a)



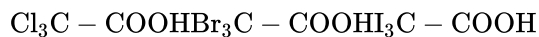
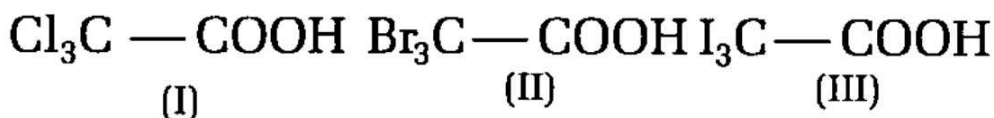
(b)



- (c) CH_3CHO
- (d) HCHO

Correct: c

101. Consider the following compounds.

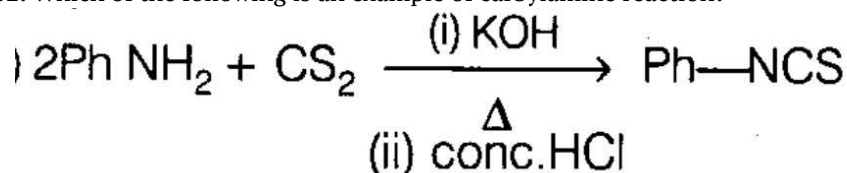


The decreasing order of decarboxylation is

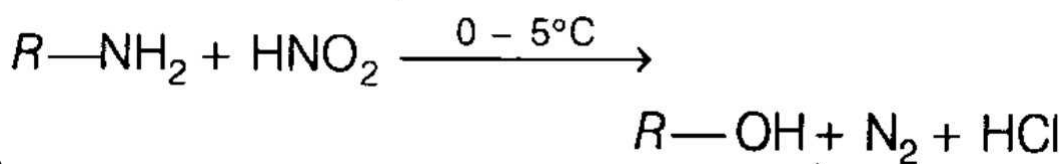
- (a) I > III > II
- (b) III > II > I
- (c) III > I > II
- (d) II > I > III

Correct: a

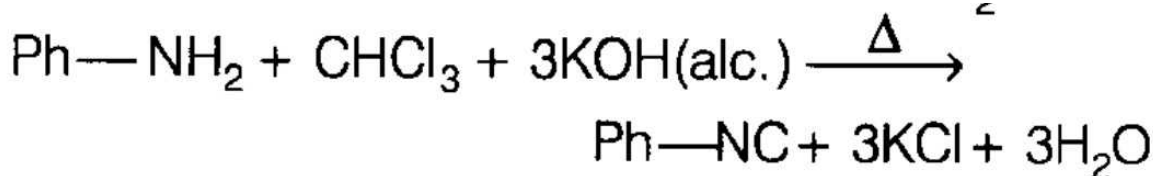
102. Which of the following is an example of carbylamine reaction?



(a)

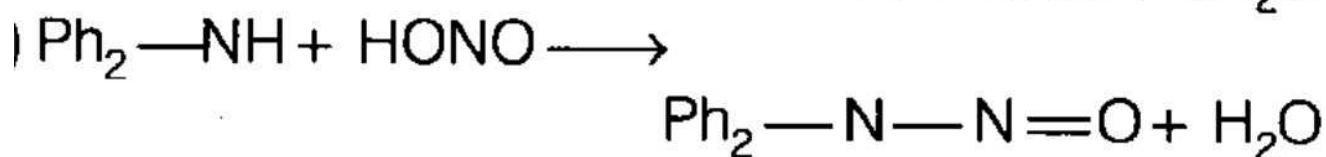


(b)



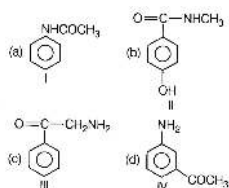
(c)

(d)



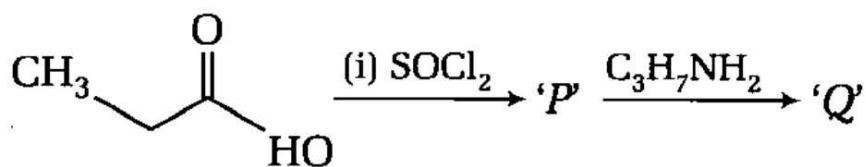
Correct: c

103. The correct order of basic strength of the following are



- (a) I > II > III > IV
- (b) IV > II > III > I
- (c) III > IV > III > I
- (d) III > II > IV > I

Correct: d



104.

Product Q' is

- (a) an amide
- (b) an amine
- (c) nitro compound
- (d) nitrile compound

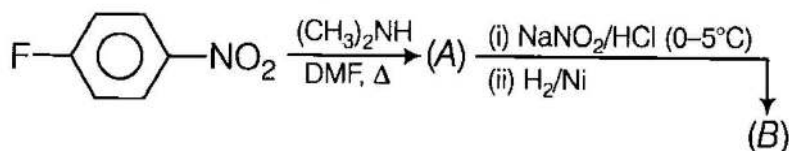
Correct: a

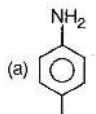
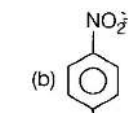
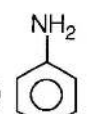
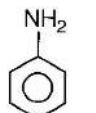
105. Which of the following statements is incorrect?

- (a) Polypropylene is a thermoplastic polymer
- (b) Melamine-formaldehyde is a thermosetting polymer
- (c) Mixture of styrene and methyl methacrylate can form ionic addition polymer
- (d) Low-density polythene is a poor conductor of electricity

Correct: c

106. In the reaction,



- (a) 
- (b) 
- (c) 
- (d) 

Correct: a

107. The magnitude of screening effect depends upon the number of

- (a) inner electrons
- (b) outer electrons

- (c) bond order
- (d) Both (a) and (b)

Correct: a

108. Highest energy will be absorbed to eject out the electron in the configuration.

- (a) $1s^2 2s^2 2p^1$
- (b) $1s^2 2s^2 2p^3$
- (c) $1s^2 2s^2 2p^2$
- (d) $1s^2 2s^2 2p^4$

Correct: b

109. 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) Diamminedinitroplatinum (II)

Correct: b

110. Duma's method involves the determination of nitrogen content in the organic compound in the form of

- (a) NH_3
- (b) N_2
- (c) NaCN
- (d) $(\text{NH}_4)_2\text{SO}_4$

Correct: b

111. On hydrolysis of starch, we finally get

- (a) glucose
- (b) fructose
- (c) Both (a) and (b)
- (d) sucrose

Correct: a

112. At radioactive equilibrium, the ratio between two atoms of radioactive elements A and B is $3.1 \times 10^9 : 1$. If the half-life period of A is 2×10^{10} yrs, then the half-life of B is

- (a) 9.54 yrs
- (b) 2.14 yrs
- (c) 3.29 yrs
- (d) 6.45 yrs

Correct: d

113. Which of the following region is coldest?

- (a) Stratosphere
- (b) Troposphere
- (c) Mesosphere
- (d) Thermosphere

Correct: c

114. Limestone is added in the extraction of lead from galena why?

- (a) It prevents the formation of PbSO_4
- (b) It remove the impurity of silica as fusible slag
- (c) It converts lead silicate to lead oxide
- (d) All of the above

Correct: d

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

- (a) 1.26×10^{15} s
- (b) 2.52×10^{14} s
- (c) 2.52×10^{28} s
- (d) Infinite

Correct: d

116. Anhydrous mixture of KF and HF contain which types of ions?

- (a) K^+, H^+, F^-
- (b) $\{KF^+, (HF^-)\}$
- (c) KH^+, F^-
- (d) K^+, HF_2^-

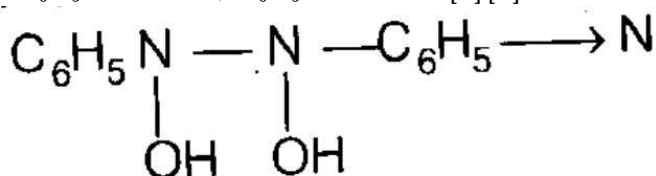
Correct: d

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

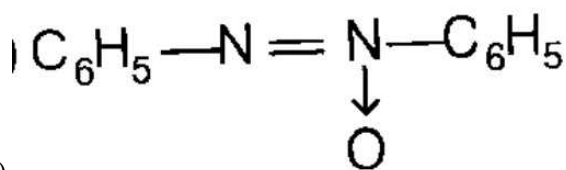
- (a) $CH_3COOC_2H_5$
- (b) $C_2H_5 - COO - C_2H_5$
- (c) CH_3CHO
- (d) CH_3CH_2OH

Correct: a

118. $C_6H_5 - NHOH + C_6H_5 - NO \xrightarrow{NaOH} [X]$ [X] formed in the above reaction is



- (a)
- (b) $(C_6H_5)_2NOH$



- (c)
- (d) $\begin{array}{c} C_6H_5 - NH - N - C_6H_5 \\ | \\ OH \end{array}$

Correct: c

119. 11.2 L of gas at STP weight 14g. The gas would be

- (a) H_2
- (b) CO
- (c) B_2H_6
- (d) All of these

Correct: d

120. The volume of water to be added to 100 cm of 0.5 NH₂SO₄ to get decinormal concentration is

- (a) 100cm³
- (b) 450cm³
- (c) 500cm³
- (d) 400cm³

Correct: d

Biology

121. 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

Correct: a

122. Consider following statements and Choose correct ones from given options.

- I. Shark do not have any bone in its body.
- II. Water snake and salamander belongs to same class and have largest RBC.
- III. Silver fish is a true fish while cuttle and star fishes are molluscs and echinoderms respectively.
- IV. Ornithorhynchus is a connecting link between reptiles and mammals.

- (a) I, II and IV
- (b) I and IV
- (c) I, II and III
- (d) III and IV

Correct: b

123. 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

Correct: b

124. The largest muscle in the human is

- (a) biceps
- (b) gluteus maximus
- (c) stapedius
- (d) masseter

Correct: c

125. A plant is provided with ideal conditions for photosynthesis and supplied with isotope ¹⁴C O₂. When the products of the process are analysed 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

Correct: d

126. The chromosome of cell duplicates during the

- (a) S – phase of cell cycle
- (b) G_1 phase of cell cycle
- (c) G_2 –phase of cell cycle
- (d) prophase of cell division .

Correct: a

127. Adenosine triphosphate was discovered by

- (a) Jack Lipman
- (b) A Bloor
- (c) Karl Lohmann
- (d) Emil Fisher

Correct: c

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

- (a) 1 ATP and 2NADPH₂
- (b) 2 ATP and 2NADPH₂
- (c) 3 ATP and 2NADH₂
- (d) 2 ATP and 1NADPH₂

Correct: c

129. Schneiderian and tympanic membranes respectively belongs to

- (a) ear and nose
- (b) ear and eye
- (c) ear and ear
- (d) nose and ear

Correct: d

130. Due to alcohol abuse brain related disease Korsakoff's syndrome occurs. Which nutrient is responsible for this syndrome?

- (a) Vitamin-B2
- (b) Fat
- (c) Protein
- (d) Vitamin-B,

Correct: d

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

Correct: b

132. Which one of the following is a recognition site for restriction enzyme Bam HI?

- (a) $5' - GAATTC - 3'$ / $3' - CTTAAG - 5'$
- (b) $5' - GGATCC - 3'$ / $3' - CCATGG - 5'$
- (c) $5' - GGATCC - 3'$ / $3' - CCTAGG - 5'$

(d) $5' - \text{GAATTC} - 3'$ $5' - \text{GTAAC} - 3'$

Correct: c

133. Match the storage products listed under column I with the organism given under column II,

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

Codes

A B C D

(a) 3 4 1 5

(b) 4 3 5 2

(c) 5 4 1 3

(d) 2 1 4 3

Correct: c

134. Match the following Columns.

Column (Disease) A. Cretinism B. Cushing's syndrome C. Diabetes insipidus D. Eunuchoidism

Column II (Related Hormone) 1. Glucocorticoid 2. Testosterone 3. Thyroid 4. ADH

(a) 3 4 1 2

(b) 2 3 4 1

(c) 3 4 1 2

(d) 3 1 4 2

Correct: d

135. Which one of the following pair is not correctly matched?

(a) Almond - Drupe

(b) Brinjal - Berry

(c) Guava - Pepo

(d) Loquat - Pome

Correct: c

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

(a) bacterial blight

(b) yellow mosaic virus

(c) black rot

(d) leaf curl

Correct: b

137. During chloride shift or Hamburger phenomenon, when the whole blood is saturated with CO_2 following changes occurs. Which one of them is not correct?

(a) Bicarbonate content of plasma and corpuscles increase

(b) Chloride content of plasma diminished and that of the cell is increased

(c) Total base of blood remain unchanged

(d) Water content and volume of corpuscles decrease

Correct: d

138. Which one of the following elements is activator for both ribulose biphosphate, carboxylase oxygenase and phosphoenol pyruvate carboxylase in photosynthetic carbon fixation?

(a) Mg^{2+}

(b) Zn^{2+}

- (c) Mn^{2+}
- (d) Cl^- and K^+

Correct: a

139. Common phase in aerobic and anaerobic respiration is

- (a) Krebs' cycle
- (b) glycolysis
- (c) glycogenolysis
- (d) ETS

Correct: b

140. 'Treponema pallidum' pathogen is a cause of

- (a) leprosy
- (b) plague
- (c) syphilis
- (d) pertussis

Correct: c

141. Minisatellites or VNTR's are used in

- (a) DNA fingerprinting
- (b) Polymerase Chain Reaction, (PCR)
- (c) gene therapy
- (d) gene mapping

Correct: a

142. Bacteriophage $\phi \times 174$ is different from other bacteriophage due to the presence of

- (a) single-stranded DNA
- (b) single-stranded RNA
- (c) double-stranded DNA
- (d) None of the above

Correct: a

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

- (a) Tailing
- (b) Splicing
- (c) Termination
- (d) Capping

Correct: d

144. In which one of the family formation of endosperm doesn't take place?

- (a) Orchidaceae
- (b) Cactaceae
- (c) Ranunculaceae
- (d) Malvaceae

Correct: a

145. In cardiac cycle maximum time is taken by

- (a) atria systole
- (b) atria diastole
- (c) ventricle systole
- (d) ventricle diastole

Correct: b

146. A horse and a donkey can breed to produce mule which is an infertile animal. The infertility is because horse and donkey belong to different

- (a) class
- (b) order
- (c) species
- (d) genus

Correct: c

147. 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

Correct: c

148. Compare the statement I and II and choose the correct option.

Statement I

In the flowering plants due to higher accumulation of auxins dormancy of lateral buds occurs.

Statement II

In Maryland Mammoth (a tobacco variety) flowering occurred at different time at different latitude due to gibberellin concentration,

- (a) Statement I is true, but II is false
- (b) Statement I is false, but II is true
- (c) Both statements are true
- (d) Both statements are false

Correct: a

149. Which one of the given pollination technique/adaptation is different than others?

- (a) Herkogamy
- (b) Geitonogamy
- (c) Dichogamy
- (d) Heterostyly

Correct: b

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

- (a) NO_2^-
- (b) ammonia
- (c) NO_3^-
- (d) glutamate

Correct: b

151. A point mutation where guanine is replaced by cytosine is also called

- (a) frameshift mutation
- (b) transition mutation
- (c) translocation mutation
- (d) transversion mutation

Correct: d

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

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

- (b) Vitamin-B₆ Loss of appetite
- (c) Vitamin-B₁, Beri-beri
- (d) Vitamin-B₂ Pellagra

Correct: d

153. Match the following Columns.

Column I (Cell organelle)

- A. Ribosome
- B. Nucleolus
- C. Glyoxysome
- D. Peroxisome

Column II (Discovered by)

- 1. Fontana
- 2. Tolbert and Yamazaki
- 3. Palade
- 4. Beevers

- (a) 1 4 2 3
- (b) 3 4 1 2
- (c) 1 3 2 4
- (d) 3 1 4 2

Correct: d

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

- (a) Zeatin
- (b) Ethylene
- (c) ABA
- (d) IAA

Correct: c

155. Which one of the following human ancestors is known as tool maker?

- (a) Homo erectus
- (b) Java man
- (c) Homo habilis
- (d) Heidelberg man

Correct: c

156. Which one of the following is a matching pair of vector and the disease?

- (a) Culex – Filariasis
- (b) Housefly – Leprosy
- (c) Aedes aegypti – Chickenpox
- (d) Sandfly - Cholera

Correct: a

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

- (a) Adenohypophysis is under direct 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 chemicals produced by the body in trace amount that act as inter-cellular messenger are known as hormones
- (d) Releasing and inhibitory hormones are produced by the pituitary gland

Correct: c

158. Which one of the following is not correct pair of type of cancer and origin place?

- (a) Benign tumour - Non-cancerous tumour
- (b) Carcinomas - Cancer of epithelial tissues
- (c) Lymphomas - Haematopoietic cells tumour
- (d) Sarcomas - Cancer of glands (secretory tissues)

Correct: d

159. In animals normally which organism has maximum number of chromosomes?

- (a) Butterfly
- (b) Elephant
- (c) Hermit crab
- (d) Chimpanzee

Correct: d

160. 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

Correct: b

161. Snapdragon flower is an exception of Mendel's laws. It is a good example of

- (a) law of dominance
- (b) complementary gene
- (c) codominance
- (d) incomplete dominance

Correct: d

162. 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

Correct: d

163. The term 'prebiotic soup' for organic water containing mixture of simple organic compounds was given by

- (a) Richter
- (b) Haldane
- (c) Arrhenius
- (d) Miller

Correct: b

164. Number of Barr body which will found in case of Turner's syndrome will be

- (a) 1
- (b) 2
- (c) 0
- (d) Can't be determine by given data

Correct: c

165. Match the following columns

Column I	Column II
A. <i>Opuntia</i>	1. Stern thorns
B. <i>Asparagus</i>	2. Phylloclades
C. <i>Citrus</i>	3. Cladodes

Codes

A B C

- (a) 1 2 3
- (b) 2 3 1
- (c) 3 2 1
- (d) 2 1 3

Correct: a

166. The Sub-units of 80S ribosome will be

- (a) 40S, 40S
- (b) 60S, 40S
- (c) 60S, 20S
- (d) 55S, 25S

Correct: b

167. Sliding filament theory can be best explained as

- (a) when myofilaments slide past each other actin filaments shorten while myosin filament do not shorten
- (b) actin myosin filaments shorten and slide past each other
- (c) actin and myosin filaments do not shorten, but rather slide past each other
- (d) when myofilament slide past each other myosin filament shorten while actin filament do not shorten

Correct: b

168. Vegetative propagation in Bryophyllum takes place through

- (a) bulbil
- (b) corms
- (c) leaf buds
- (d) eyes

Correct: c

169. 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

Correct: b

170. Diphtheria is caused by

- (a) poison released by living bacterial cell into the host
- (b) poison released from dead bacterial cell into the host
- (c) poison released by virus into the host
- (d) excessive immune response by the body of host

Correct: a

171. Which one of the following microbes is the source for vitamin-C?

- (a) Pseudomonas sp.
- (b) Acetobacter sp.
- (c) Aspergillus sp.
- (d) Chlorella

Correct: b

172. Post mitotic gap phase is characterised 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

Correct: c

173. Match the following Columns.

Column (Pollination technique)

- A. Cheiropterophily
- B. Anemophily
- C. Myrmecophily
- D. Malacophily

Column II (Pollinator)

- 1. Ant
- 2. Bat
- 3. Snail
- 4. Wind
- (a) 3 2 1 4
- (b) 2 4 1 3
- (c) 4 3 2 1
- (d) 1 3 2 4

Correct: b

174. Roquefort cheese is ripened by using a

- (a) type of yeast
- (b) fungus
- (c) bacterium
- (d) cyanobacteria

Correct: b

175. During the transmission of nerve impulse through a nerve fibre, the potential on the starts at inner side of the plasma membrane has which type of electric charge?

- (a) First negative then positive and again back to negative
- (b) First positive then negative and continue to be negative
- (c) First negative then positive and continue to be positive
- (d) First positive then negative and again back to positive

Correct: a

176. 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

Correct: a

177. In case of pregnancy the heartbeat of embryo

- (a) 4th week
- (b) 7th week
- (c) 6th week
- (d) 5th week

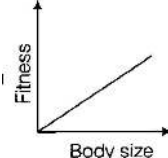
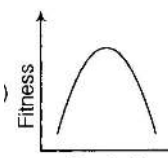
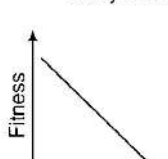
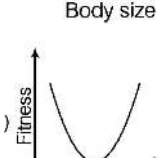
Correct: d

178. PPLO are smallest cell in the living world. The extend form of PPLO is

- (a) Pseudo Pneumonia Length Orge
- (b) Pseudo Plank Leg Organelle positive
- (c) Pneumonia Plank Like Organism
- (d) Pleuro Pneumonia Like Organism

Correct: d

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

- (a) 
- (b) 
- (c) 
- (d) 

Correct: d

180. Which one of the following is not a flower?

- (a) Shoe-flower
- (b) Sunflower
- (c) Larkspur
- (d) Water lily

Correct: b

English

181. Fill up the blanks in the passage given below with the most appropriate word from the options given for each blank. The ... (1) ... age is the age of machines. From the ... (2) ... the industrial Revolution began in Europe. Man's life has been

changing ...(3)... many ways. At first the change was ...(4)... Now machines have become ...(5)... of our daily lives.

- (a) modern
- (b) new
- (c) civilised
- (d) present

Correct: a

182. Choose the word which best expresses the meaning of the underlined word in the sentence

Decay is an immutable factor of human life.

- (a) important
- (b) unique
- (c) unchangeable
- (d) awful

Correct: c

183. Fill up the blanks in the passage given below with the most appropriate word from the options given for each blank.

The ...(1)... age is the age of machines. From the ...(2)... the industrial Revolution began in Europe. Man's life has been changing ...(3)... many ways. At first the change was ...(4)... Now machines have become ...(5)... of our daily lives.

- (a) into
- (b) to
- (c) in
- (d) with

Correct: c

184. Choose the word which best expresses the meaning of the underlined word in the sentence

His conjecture was better than mine.

- (a) guess
- (b) fact
- (c) surprise
- (d) doubt

Correct: a

185. Fill up the blanks in the passage given below with the most appropriate word from the options given for each blank.

The ...(1)... age is the age of machines. From the ...(2)... the industrial Revolution began in Europe. Man's life has been changing ...(3)... many ways. At first the change was ...(4)... Now machines have become ...(5)... of our daily lives.

- (a) component
- (b) part
- (c) necessity
- (d) support

Correct: a

186. Fill in the blank.

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

- (a) elegantly
- (b) tons
- (c) volumes
- (d) much

Correct: c

187. DISPARITY

- (a) Distaste
- (b) Dissimilarity

- (c) Criticism
- (d) Distinction

Correct: b

188. Choose the word which is closest to the opposite in meaning of the following sentence.
Hydra is biologically believed to be immortal.

- (a) undying
- (b) perishable
- (c) ancient
- (d) eternal

Correct: b

189. Find the missing number/letter from the given alternatives.

4117, 5138, 6159, 71710, ?

- (a) 71382
- (b) 76599
- (c) 81911
- (d) 81798

Correct: c

190. 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

Correct: d

191. In each of the following questions, select the missing number from the given alternatives.

? , 9 , 33 , 17

- (a) 60
- (b) 39
- (c) 55
- (d) 65

Correct: d

192. 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

Correct: d

193. Which one set of letters when sequentially placed at the gaps in given letter series shall complete it?

m _ st _ u _ t _ _ st

- (a) ummmu
- (b) umsmu
- (c) muumm
- (d) ttssuu

Correct: b

194. A and B are standing at a distance of 20 km from each other on a straight East-West road. A and B start walking

simultaneously Eastwards and Westwards respectively and both cover a distance of 5 km. Then, A turns to his left and walks 10 km. B turns to his right and walks 10 km at the same speed. What will be the distance between them?

- (a) 10 km
- (b) 30 km
- (c) 20 km
- (d) 25 km

Correct: a

195. Neeraj starts walking towards South. After walking 15 m, he turns towards North. After walking 20 m, he turns 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

Correct: b

196. Find the word which cannot be formed from the letters used in the given word.

GERMINATION

- (a) ORNAMENT
- (b) TERMINAL
- (c) IGNITE
- (d) GERMAN

Correct: b

197. 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

Correct: a

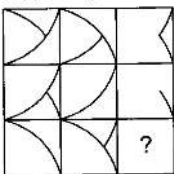
198. This is barbarous act

- (a) bad
- (b) good
- (c) civilised
- (d) exemplary

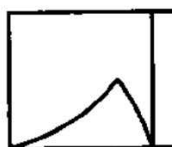
Correct: c

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

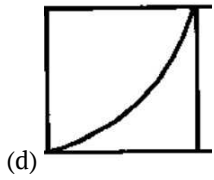
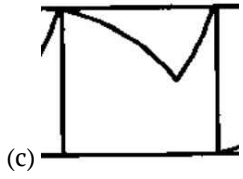
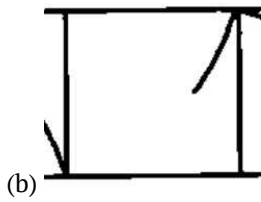
Problem Figure



Answer Figures



(a)



Correct: c

200. 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

Correct: d