

MHT CET 2019 Biology Memory Based Question Paper PDF

- Q.1 When a certain photosensitive surface is illuminated with monochromatic light of frequency ' ν ', the stopping potential for photoelectric current is $V_0/3$. When the same surface is illuminated by monochromatic light of frequency ' $\nu/3$ ', the stopping potential is ' V_0 '. The threshold frequency for photoelectric emission is
1. $\frac{3\nu}{5}$
 2. $\frac{2\nu}{3}$
 3. $\frac{3\nu}{2}$
 4. $\frac{4\nu}{3}$
- Q.2 Which one of the following is NOT correct?
1. A real, inverted and same size image can be obtained by using concave mirror
 2. A real, inverted and same size image can be obtained by using convex mirror
 3. The size of the image formed by convex mirror is always smaller than size of the object
 4. A virtual, erect, magnified image can be obtained by using concave mirror.
- Q.3 A galvanometer of resistance $100\ \Omega$ is connected to a battery of 2 V with a resistance of $19000\ \Omega$ in series. The deflection obtained is 30 divisions. To reduce this deflection by 10 divisions the additional resistance required to be connected in series is
1. $1500\ \Omega$
 2. $500\ \Omega$
 3. $1000\ \Omega$
 4. $2000\ \Omega$
- Q.4 A transverse wave is travelling on a string with velocity ' V '. The extension in the string is ' x '. If the string is extended by 50%, then the speed of wave along the string will be nearly (Hooke's law is obeyed)
1. $1.22\ V$
 2. $\frac{V}{1.5}$
 3. $\frac{V}{1.22}$
 4. $1.5\ V$
- Q.5 Glass has refractive index $\frac{3}{2}$ and water has refractive index $\frac{4}{3}$. If the speed of light in glass is $2 \times 10^8\text{ m/s}$, then the speed of light in water will be
1. $1.6 \times 10^8\text{ m/s}$
 2. $2.25 \times 10^8\text{ m/s}$
 3. $1.8 \times 10^8\text{ m/s}$
 4. $2 \times 10^8\text{ m/s}$
- Q.6 If the errors involved in the measurements of a side and mass of a cube are 2% and 4% respectively, what is the maximum permissible error in the density of the material?

1. 1.8%
2. 2.4%
3. 3.6%
4. 10%

Q.7 A solid sphere is rolling down a frictionless surface with translational velocity ' V '. It climbs the inclined plane from 'A' to 'B' and then moves away from 'B' on the smooth horizontal surface. The value of ' V ' should be

1. $\sqrt{gh}$
2. $\geq \left[\frac{10gh}{7} \right]^{1/2}$
3. $> \sqrt{2gh}$
4. $\frac{10gh}{7}$

Q.8 A wall is hit elastically and normally by ' n ' balls per second. If ' m ' is the mass and ' u ' is velocity for each molecule, the force exerted by the balls on the wall is

1. $2mnu$
2. $\frac{mnu}{2}$
3. mnu
4. mnu^2

Q.9 If two non-zero vectors $\vec{P}$ and $\vec{Q}$ are perpendicular to each other then the magnitude of their vector product is ($\sin 90^\circ = \cos 0^\circ = 1$)

1. Q^2/P
2. PQ
3. $\sqrt{QP}$
4. P^2/Q

Q.10 If the telecast is to cover a range of 64 km, the height of TV tower should be (Radius of earth, $R = 6400$ Km)

1. 100 m
2. 140 m
3. 320 m
4. 280 m

Q.11 The excess of pressure inside a soap bubble is twice the excess of pressure inside another soap bubble. The volume of first bubble is ' n ' times the volume of second bubble. The value of ' n ' must be

1. 0.125
2. 0.25
3. 2
4. 0.5

Q.12 Acceleration due to gravity at height ' h ' above the surface of the earth is (R = Radius of the earth)

1. $\frac{gR^2}{(R-h)^2}$
2. $g \left(1 - \frac{h}{R}\right)$
3. $\frac{gR^2}{(R+h)^2}$
4. $\frac{gR}{(R+h)^2}$

Q.13 When an a.c. source is connected across a pure inductor of self inductance (L) then e.m.f. induced in it

1. leads the current by phase $(\frac{\pi}{2})^c$
2. lags behind the current by phase $(\pi)^c$
3. lags behind the current by phase $(\frac{\pi}{4})^c$
4. leads the current by phase $(\pi/4)^c$

Q.14 If angular momentum of a rotating body about a fixed axis is increased by 10%, its rotational kinetic energy will be increased by

1. 5%
2. 20%
3. 21%
4. 10%

Q.15 A point source is placed in air. The spherical wavefront has radius ' r_a ' after time ' t '. If the same point source is placed in the medium of refractive index ' μ ', the radius of spherical wavefront in the medium in same time ' t ' is

1. $\frac{r_a}{\mu}$
2. $\frac{r_a}{\mu^2}$
3. $\mu \cdot r_a$
4. $\mu^2 r_a$

Q.16 In a cyclotron the time required by positive ion to traverse semicircle does NOT depend upon

1. mass of the particle.
2. velocity of the particle.
3. strength of magnetic field.
4. charge of the particle.

Q.17 From the position of smaller angular displacement ' θ ', the bob of simple pendulum of length ' L ' is released then its linear displacement at time ' t ' is

1. $x = L\theta \cos 2\pi \sqrt{\frac{g}{L}} t$
2. $x = L\theta \cos \sqrt{\frac{g}{L}} t$

3. $x = \theta \sin 2\pi \sqrt{\frac{L}{g}} t$

4. $x = L\theta \sin \sqrt{\frac{g}{L}} t$

Q.18 The magnitude of the induced e.m.f. produced in the coil when a magnet is inserted into it does NOT depend upon the

1. speed of approach of the magnet.
2. magnetic moment of the magnet.
3. number of turns of the coil.
4. resistance of the coil.

Q.19 The mass and radius of earth is M_e and R_e respectively and that of moon is M_m and R_m respectively. The distance between the centre of earth and that of moon is ' D '. The minimum speed required for a body (mass ' m ') to project from a point midway between their centres to escape to infinity is

1. $\left(\frac{GD}{M_e}\right)^{1/2}$
2. $\sqrt{\frac{(M_e+M_m)}{D}}$
3. $2\sqrt{G(M_e+M_m)/D}$
4. $\frac{G(M_e+M_m)}{2D}$

Q.20 The rate of cooling of a body is $2^\circ\text{C}/\text{min}$ when the body is at 50°C above the temperature of surroundings. When the body is at 30°C above the temperature of surroundings, its rate of cooling will be

1. $0.6^\circ\text{C}/\text{min}$
2. $0.9^\circ\text{C}/\text{min}$
3. $1.2^\circ\text{C}/\text{min}$
4. $1.5^\circ\text{C}/\text{min}$

Q.21 A charge ' q ' is enclosed by a Gaussian spherical surface of radius ' R '. If, now, radius of the spherical surface is doubled the outward electric flux will

1. doubled
2. remain same
3. increase four times
4. reduce to half

Q.22 Identify the oxidising agent in the following redox reaction: $\text{Cl}_2 + 2\text{Br}^- \rightarrow 2\text{Cl}^- + \text{Br}_2$

1. Cl^-
2. Br^-
3. Br_2
4. Cl_2

Q.23 Which one of the following is a neutral oxide?

1. Al_2O_3
2. N_2O
3. Na_2O
4. SO_2

Q.24 Which among following gases is readily adsorbed by activated charcoal?

1. H_2
2. SO_2
3. N_2
4. O_2

Q.25 How are $[Co(NH_3)_5SO_4]NO_2$ and $[Co(NH_3)_5NO_2]SO_4$ related to each other?

1. Linkage isomers
2. Ionization isomers
3. Geometrical isomers
4. Coordination isomers

Q.26 Which of the following rate expression is true for alkaline hydrolysis of methyl bromide?

1. $\text{Rate} \propto [OH^-][CH_3Br]$
2. $\text{Rate} \propto [OH^-]$
3. $\text{Rate} \propto [CH_3Br]$
4. $\text{Rate} \propto [CH_3Br] + [OH^-]$

Q.27 Two moles of an ideal gas are expanded from volume of 15.5 litre to 20 litre against a constant external pressure of 1 atmosphere. The amount of work done is

1. -4.5 J
2. $2 \times 10^{-2} \text{ J}$
3. -455.8 J
4. 225 J

Q.28 PCl_5 exists, but NCl_5 does not, due to:

1. NCl_5 is unstable
2. larger size of nitrogen
3. inertness of nitrogen
4. non availability of vacant d-atomic orbitals

Q.29 Styrene and 1,3-butadiene on polymerisation forms:

1. Buna-N
2. Neoprene
3. Butyl rubber
4. Buna-S

Q.30 A codon is present in:

1. DNA
2. m-RNA
3. r-RNA
4. t-RNA

Q.31 Pollination through agency of bats is called:

1. Chiropterophily
2. Ornithophily
3. Malacophily
4. Hydrophily

Q.32 PEPCase fixes CO_2 in:

1. Calvin cycle
2. Bundle sheath cells of C_4 plants
3. The mesophyll cells of C_4 plants
4. High concentration of CO_2

Q.33 Opioids are obtained from _____ plant.

1. Hemp
2. Datura
3. Poppy
4. Coca

Q.34 Peristaltic movements are carried out by:

1. Cardiac muscles
2. Visceral muscles
3. Voluntary muscles
4. Dartos tunic muscles

Q.35 Which one of the following enzyme is used for polymerisation of DNA in PCR technique?

1. DNA Polymerase-II
2. RNA Polymerase
3. DNA Polymerase-I
4. Taq Polymerase