Sharath Gore

NEET mock test - 1 (PHYSICS) 2022-23

Time : 75 Min	Phy : Full Portion Paper	Marks : 200

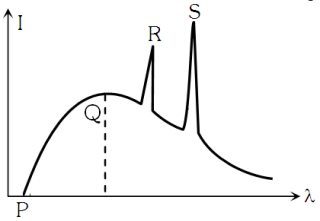
01) A body of mass 1 kg is thrown upwards with a velocity 20 m/s. It momentarily comes to rest after attaining a height of 18 m. How much energy is lost due to air friction? $\left(g = m/s^2\right)$ (2009)

A) 30 J
B) 40 J
C) 10 J
D) 20 J

02) A monkey is decending from the branch of a tree with constant acceleration. If the breaking strength of branch is 75% of the weight of the monkey, the minimum acceleration with which monkey can slide down without breaking the branch is (1993)

A) g
B) $\frac{3g}{4}$
C) $\frac{g}{4}$
D) $\frac{g}{2}$

03) If the potential difference in between the anode and cathode of the X-ray tube increases, then



A) the cut off wavelength at P would decrease.
B) the peaks at R and S would move to shorter wavelength.
C) the peaks at R and S would remain at the same wavelength.
D) both (1) and (3) are correct.

04) The temperature of an ideal gas at atmospheric pressure is 300 K and volume $1m^3$. If temperature and volume become double, then pressure will be

A) $4\times10^5\ N/m^2$
B) $2\times10^5\ N/m^2$
C) $10^5\ N/m^2$
D) $0.5\times10^5\ N/m^2$

05) A voltmeter has a range 0-V with a series resistance R. With a series resistance 2 R, the range is 0-V'. The correct relation between V and V' is

A) $V' < 2V$
B) $V' >> 2V$
C) $V' > 2V$
D) $V' = 2V$

06) The fundamental frequency of a closed pipe is 220 Hz. If $\frac{1}{4}$ of the pipe is filled with water, the frequency of the first overtone of the pipe now is

A) 1760 Hz
B) 880 Hz
C) 440 Hz
D) 220 Hz

07) An aeroplane is flying with a uniform speed of 100 m/s along a circular path of radius 100 m. the angular speed of the aeroplane will be

A) 4 rad/s
B) 3 rad/s
C) 2 rad/s
D) 1 rad/s

08) In Young's double slit experiment, 62 fringes are seen in visible region for sodium light of wavelength 5893 Å. If violet light of wavelength 4358 Å is used in place of sodium light, then number of fringes seen will be

A) 84
B) 74
C) 64
D) 54

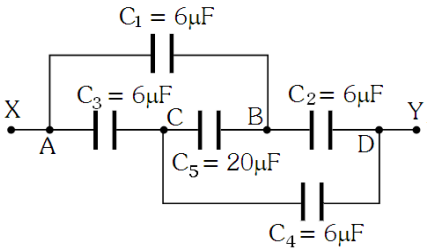
09) The S.I. unit of gravitational potential is

A) J
B) J -kg
C) $J\text{-}kg^{-1}$
D) $J\text{-}kg^{-2}$

10) The resistance of the series combination of two resistance is S. When they are joined in parallel, the total resistance is P. If S = n P, then the minimum possible value of n is

A) 1
B) 2
C) 3
D) 4

11) What is the effective capacitance between points x and y?



A) $6\,\mu F$
B) $12\,\mu F$
C) $18\,\mu F$
D) $24\,\mu F$

12) The speed of a homogeneous solid sphere after rolling down an inclined plane of vertical height h, form rest without sliding, is
A) $\sqrt{gh}$
B) $\sqrt{\frac{4}{3}gh}$
C) $\sqrt{\frac{6}{5}gh}$
D) $\sqrt{\frac{10}{7}gh}$

13) Resolving power of a microscope depends upon
A) focal length of objective.
B) frequency of light used.
C) wavelength of light used, inversely.
D) wavelength of light used, directly.

14) The unit vector parallel to the resultant of the vectors $\vec{A} = 4\hat{i} + 3\hat{j} + 6k$ and $\vec{B} = -\hat{i} + 3\hat{j} - 8k$ is
A) $\frac{1}{7}(3\hat{i} + 6\hat{j} - 2k)$
B) $\frac{1}{7}(3\hat{i} + 6\hat{j} + 2k)$
C) $\frac{1}{49}(3\hat{i} - 6\hat{j} + 2k)$
D) $\frac{1}{49}(3\hat{i} + 6\hat{j} - 2k)$

15) For a series LCR circuit, the power loss at resonance is (2002)
A) $\frac{V^2}{\left[\omega L - \frac{1}{\omega C}\right]}$
B) $I^2L\omega$
C) I^2R
D) $\frac{V^2}{C\omega}$

16) A parallel plate capacitor with plate area A and separation between the plates d, is charged by a constant current I. Consider a plane surface of area A/2 parallel to the plates and drawn between the plates. Estimate the displacement current through this area.
A) $\frac{I}{8}$
B) $\frac{I}{4}$
C) $\frac{I}{2}$
D) I

17) The S. I. unit of electric flux is
A) Joule per coulomb
B) Volt x metre
C) Newton per coulomb
D) Weber

18) For nitrogen, $C_P - C_V = x$ and for argon $C_P - C_V = y$. Find the relation between x and y.
A) $x = y$
B) $y = 7x$
C) $x = 7y$
D) $x = (1/2)y$

19) 8000 identical water drops are combined to form a big drop. Then the ratio of the final surface energy to the initial surface energy of all the drops together is
A) 1 : 25
B) 1 : 20
C) 1 : 15
D) 1 : 10

20) Polar molecular are the molecules (2021)
A) having a permanent electric dipole moment.
B) having zero dipole moment.
C) acquire a dipole moment only in the presence of electric field due to displacement of charges.
D) acquire a dipole moment only when magnetic field is absent.

21) Unit mass of a liquid with volume V_1 is completely changed into a gas of volume V_2 at a constant external pressure P and temperature T. If the latent heat of evaporation for the given mass is L, then the increase in the internal energy of the system is
A) Zero
B) L
C) $P(V_2 - V_1)$
D) $L - P(V_2 - V_1)$

22) The depletion layer in silicon diode is 1 μm wide and the knee potential is 0.6 V, then the electric field in the depletion layer will be
A) 6×10^5 V/m
B) 6×10^4 V/m
C) 0.6 Vm^{-1}
D) Zero

23) A 2 m long rod of radius 1 cm which is fixed from one end is given a twist of 0.8 radians. The shear strain developed will be

A) 0.016
B) 0.008
C) 0.004
D) 0.002

24) If a magnet is hanged with its magnetic axis then it stops in
A) angle of dip.
B) magnetic meridian.
C) geometric meridian.
D) none of these.

25) G.P. Thomson experimentally confirmed the existence of matter waves by which of the following phenomena?
A) Diffraction
B) Refraction
C) Scattering
D) Polarization

26) If $t_{1/2}$ is the half life of a substance, then $t_{3/4}$ is the time in which substance
A) remains $\frac{1}{2}$.
B) decays $\frac{1}{2}$.
C) remains $\frac{3}{4}$th .
D) decays $\frac{3}{4}$th .

27) If an ammeter is to be used in place of a voltmeter, then we must connect with the ammeter a
A) low resistance in series.
B) high resistance in series.
C) low resistance in parallel.
D) high resistance in parallel.

28) If the earth suddenly shrinks (without changing mass) to half of its present radius, the acceleration due to gravity will be
A) 4g
B) 2g
C) g/4
D) g/2

29) A 0.5 kg ball moving with a speed of 12 m/s strikes a hard wall at an angle of 30^o with the wall. It is reflected with the same speed at the same angle. If the ball is in contact with the wall for 0.25 seconds, the average force acting on the wall is (2006)
A) 96 N
B) 48 N
C) 24 N
D) 12 N

30) If two waves having amplitudes 2 A and A and same frequency and velocity, propagate in the same direction in the same phase, the resulting amplitude will be
A) A
B) 3 A
C) $\sqrt{2}$A
D) $\sqrt{5}$A

31) A body of mass 5 kg explodes at rest into three fragments with masses in the ratio 1 : 1 : 3. The fragments with equal masses fly in mutually perpendicular directions with speeds of 21 m/s. The velocity of the heaviest fragment will be
A) 7.0 m/s
B) 9.89 m/s
C) 11.5 m/s
D) 14.0 m/s

32) A given system undergoes a change in which the work done by the system equals the decrease in its internal energy. The system must have undergone an
A) isobaric change.
B) isothermal change.
C) adiabatic change.
D) isochoric change.

33) A charged particle with charge q entres a region of constant, uniform and mutually orthogonal fields $\vec{E}$ and $\vec{B}$ with a velocity to both $\vec{E}$ and $\vec{B}$, and comes out without any change in magnitude or direction of $\vec{v}$. Then find the correct relation.
A) $\vec{v} = \vec{B} \times \vec{E} / E^2$
B) $\vec{v} = \vec{E} \times \vec{B} / B^2$
C) $\vec{v} = \vec{E} \times \vec{B} / E^2$
D) $\vec{v} = \vec{B} \times \vec{E} / B^2$

34) Why the dam of water reservoir is thick at the bottom?
A) Pressure of water increases with depth.
B) Temperature of water increases with depth.
C) Quantity of water increases with depth.
D) Density of water increases with depth.

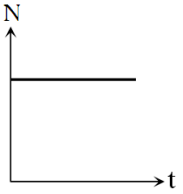
35) A hydrogen atom (ionization potential 13.6eV) makes a transition from third excited state to first excited state. The energy of the photon emitted in the process is
A) 12.75 eV
B) 12.09 eV
C) 2.55 eV
D) 1.89 eV

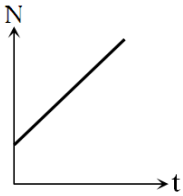
36) The magnitude of the earth's magnetic field at a place is B_0 and the angle of dip is δ. A horizontal conductor of length l lying along the magnetic north-south moves eastwards with a velocity v. The e.m.f. induced across the conductor is
A) $B_0 l v$
B) $B_0 l v \cos\delta$

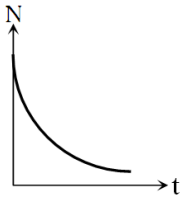
C) $B_0 l v \sin\delta$
D) Zero

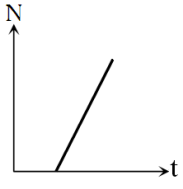
37) A lift is moving downwards with an acceleration equal to acceleration due to gravity. A body of mass M kept on the floor of the lift is pulled horizontally. If the coefficient of friction is μ, then the frictional resistance offered by the body is
A) μMg
B) $2\mu Mg$
C) Zero
D) Mg

38) The graph between the instantaneous concentration (N) of a radioactive element and time (t) is

A) 

B) 

C) 

D) 

39) The length of the two rods made up of the same metal as well as having the same area of cross-section are 0.6 m and 0.8 m respectively. The temperature between the ends of first rod is 90^oC and 60^oC and that for the other rod is 150 and 110^oC. For which rod the rate of conduction will be greater?
A) Second
B) First
C) Same for both
D) None of the above

40) In Young's double slit experiment, first slit has width four times the width of the second slit. Find the ratio of the maximum intensity to the minimum intensity in the interference fringe system.
A) 4 : 1
B) 2 : 1
C) 9 : 1
D) 8 : 1

41) A simple harmonic oscillator has a period of 0.01 s and an amplitude of 0.2 m. The magnitude of the velocity in m s^{-1} at the centre of oscillation is
A) 100π
B) 40π
C) 100
D) 20π

42) A student measured the diameter of a wire using a screw gauge with least count 0.001 cm and listed the measurements. Give the correct measurement.
A) 5.3 cm
B) 5.320 cm
C) 5.32 cm
D) 5.3200 cm

43) A scientist says that the efficiency of his heat engine which work at source temperature 127^oC and sink temperature 27^oC is 26%, then (2001)
A) it is impossible
B) it is possible but less probable
C) it is quite probable
D) data are incomplete

44) A pendulum clock keeps correct time at 0°C. Its mean coefficient of linear expansions is $\alpha/^\circ C$, then the loss in seconds per day by the clock if the temperature rises by t° C is
A) $\dfrac{\frac{1}{2}\alpha t \times 86400}{1+\frac{\alpha t}{2}}$
B) $\dfrac{\frac{1}{2}\alpha t \times 86400}{\left(1-\frac{\alpha t}{2}\right)^2}$
C) $\frac{1}{2}\alpha t \times 86400$
D) $\dfrac{\frac{1}{2}\alpha t \times 864000}{1-\frac{\alpha t}{2}}$

45) From the top of a tower two stones, whose masses are in the ratio 1 : 2 are thrown one straight up with an initial speed u and the second straight down with the same speed u. Then, neglecting air resistance
A) lighter stone hits the ground with a higher speed.
B) heavier stone hits the ground with a higher speed.
C) both will have the same speed when they hit the ground.
D) speed can't be determined with the given data.

46) A parallel plate capacitor has capacitance C. If it is equally filled with parallel layers of materials of

dielectric constants K_1 and K_2 its capacity becomes C_1. The ratio of C_1 to C is

A) $\frac{2K_1K_2}{K_1+K_2}$

B) $\frac{K_1+K_2}{K_1K_2}$

C) $\frac{K_1K_2}{K_1-K_2}$

D) $K_1 + K_2$

47) In P-type semiconductor, the majority and minority charge carriers are respectively
A) holes and electrons.
B) electrons and holes.
C) electrons and protons.
D) protons and electrons.

48) A research satellite of mass 200 kg circles the earth in an orbit of average radius 3R/2, where R is the radius of the earth. Assuming the gravitational pull on a mass of 1 kg on the earth's surface to be 10 N, the pull on the satellite will be
A) 892 N
B) 890 N
C) 889 N
D) 880 N

49) If $\vec{F}$ is the force acting on a particle having position vector $\vec{r}$ and $\vec{\tau}$ be the torque of this force about the origin, then

(2009)

A) $\vec{r}\cdot\vec{\tau}>0$ and $\vec{F}\cdot\vec{\tau}<0$

B) $\vec{r}\cdot\vec{\tau}=0$ and $\vec{F}\cdot\vec{\tau}=0$

C) $\vec{r}\cdot\vec{\tau}=0$ and $\vec{F}\cdot\vec{t}\neq0$

D) $\vec{r}\cdot\vec{\tau}\neq0$ and $\vec{F}\cdot\vec{\tau}=0$

50) Light is an electromagnetic wave. Its speed in vacuum is given by the expression

A) $\frac{1}{\sqrt{\mu_o\varepsilon_o}}$

B) $\sqrt{\frac{\varepsilon_o}{\mu_o}}$

C) $\sqrt{\frac{\mu_o}{\varepsilon_o}}$

D) $\sqrt{\mu_o\varepsilon_o}$