PHYSICS

BOOKS - CHHAYA PHYSICS (BENGALI ENGLISH)

QUESTION PAPERS OF NEET -2017

Question

1. A molecule of a substance has permanent dipole moment p . A mole of this substance is

polarised by applying a storg electrostatic field E . The direction of the field is suddenly changed of $60°$. If N is the avogadro's number the amount of work done by the field is

A. $2NpE$

B. $\dfrac{1}{2}NpE$

C. NpE

D. $\dfrac{3}{2}NpE$

Answer:

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2. If the angle of a prism is $60°$ and angle of minimum deviation is $40°$, then the angle of refraction will be

A. $4°$

B. $30°$

C. $20°$

D. $3°$

Answer:

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3. A student performs an experiment of measuring the thickness of a slab with a vernier calliper whose 50 divisions of the vernier scale are equal to 49 divisioions of the main scale . He noted that zero of the vernier scale is between 7.00 cm and 7.50 cm mark of the main scale and 23 rd division of the vernier scale exactly coincides with the main scale . The measured value of the thickness of the given using the calliper will be

A. $7.73 cm$

B. $7.23 cm$

C. $7.023 cm$

D. $7.073 cm$

Answer:

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4. IF the longest wavelength in the ultraviolet region of hydrogen spectrum is λ_0 then the shorest wavelength in its infrared region is

A. $\dfrac{46}{7}\lambda_0$

B. $\dfrac{20}{3}\lambda_0$

C. $\dfrac{36}{5}\lambda_0$

D. $\dfrac{27}{4}\lambda_0$

Answer:

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5. A circular coil of radius 10 cm , 150 cm turns and resistance 2Ω is placed with its plane , perpendicular to the horizontal component of

the earth's magnetic field . It is rotated about its vertical diameter through $180°$ in $0.25s$. The induced emf in the coil is (take $H_E = 3.0 \times 10^{-5}T$)

A. $6.6 \times 10^{-4}V$

B. $1.4 \times 10^{-2}V$

C. $2.6 \times 10^{-2}V$

D. $3.8 \times 10^{-3}V$

Answer:

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6. Two reasions for using sloft as the material for electromagnets .

    A. Low permeability and high retentivity

    B. high permeability and low retentivity

    C. low permeabiltity and low retentivity

    D. high permeability and high retentivity

Answer:

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7. A person has near point at 60 cm . The focal length of spectacles lenses to read at 22 cm having glasses separated 2 cm from the eyes is

A. $40cm$

B. $10cm$

C. $20cm$

D. $30cm$

Answer:

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8. Two sides of a semiconductor germanium crystal A and B are doped with arsenic and indium , respectively . They are connected to a battery as shown in figure . The correct graph between current and voltage for the arrangement is

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A.

B.

C.

D.

Answer:

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9. Due to Doppler effect , the shift in wavelength observed is 0.1Å , for a star producing a wavelength 6000 Å . The velocity of recission of the star will be

A. $20 Km. \, S^{-1}$

B. $2.5 km. \, S^{-1}$

C. $10 km. \, S^{-1}$

D. $5 km. \, S^{-1}$

Answer:

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10. A metal rod of 1 m length is dropped exact

vertically on to a hard metal floor . With an

oscilloscope . It is determined that the impact

produces a longitudinal wave of 1.2 kHz frequency . The speed of sound in the metal rod is

A. $600m/s$

B. $2400m/s$

C. $1800m/s$

D. $1200m/s$

Answer:

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11. The angular momentum of a right body of mass m about an axis is n times the linear momentum (p) of the body . Total kinetic energy of the right body is :

A. $\dfrac{n^2 p^2}{2}$

B. $\dfrac{p^2 \left(1 + n^2\right)}{2m}$

C. $\dfrac{tn^2 p^2}{2m}$

D. $n^2 p^2 \times 2m$

Answer:

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12. A parallel plate capacitor is to designed , using a diectric of dielectric constant 5, so as to have a dielectric strengh of $10^9 V. m^{-1}$. If the voltage rating of the capacitor is 12 kV ,the minimum area of each plate required to have a capacitance of 80 pF is

A. $10.5 \times 10^{-6} m^2$

B. $21.7 \times 10^{-6} m^2$

C. $25.0 \times 10^{-5} m^2$

D. $12.5 \times 10^{-5} m^2$

Answer:

13. A cyclist on a level road takes a sharp circular turn of radius $3m$ ($g = 10ms^{-2}$) . If the coefficient of static friction between the cycle tyres and the road is 0.2 , at which of the following speeds will the cyclist not skid while taking the turn ?

A. $14.4km. H^{-1}$

B. $7.2kkm. H^{-1}$

C. $9km. H^{-1}$

D. $10.8km. H^{-1}$

Answer:

14. The volume of 1 mole of an ideal gas with the adiabatic exponent γ is changed accoring to the relation $V = \dfrac{b}{T}$ where b= constant . The amount of heat absorbed by the gas in

the process if the temperature is increased by ΔT will be

A. $\left(\dfrac{1 - \gamma}{\gamma + 1}\right) R\Delta T$

B. $\dfrac{R}{\gamma - 1}\Delta T$

C. $\left(\dfrac{2 - \gamma}{\gamma - 1}\right) R\Delta T$

D. $\dfrac{R\Delta T}{\gamma - 1}$

Answer:

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15. Two coherent sources of intensity ratio α interfere The value of $\dfrac{I_{\max} - I_{\min}}{I_{\min} + I_{\min}}$ is

A. $2\sqrt{\dfrac{\alpha}{1+\alpha}}$

B. $\dfrac{2\sqrt{\alpha}}{1+\alpha}$

C. $\dfrac{1+\alpha}{2\sqrt{\alpha}}$

D. $\dfrac{1-\alpha}{1+\alpha}$

Answer:

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16. When the temperature of a gas is raised from $30°C$ to $90°C$, the percentage increase in the velocity of the molecules will be

A. 60 %

B. 10 %

C. 15 %

D. 30 %

Answer:

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17. A parallel beam of light of wavelength λ is incident normally on a single slit of width d. Diffraction bands are obtained on a screen placed at a distance D from the slit . The seond dark band from the central bright band will be at a distance given by

A. $\dfrac{2\lambda D}{d}$

B. $\lambda d D$

C. $\dfrac{\lambda D}{2d}$

D. $\dfrac{2\lambda d}{D}$

Answer:

18. A thin uniform rod of mass M and length L is rotaing about a peroendicular axis passing throgh its centre with a constant angular velcovity Omega . Two object each of mass $\dfrac{M}{3}$ are attached gently to the end of the rod . the rod will now roate with an angular an angular velocity of

A. $\dfrac{1}{3}\omega$

B. $\dfrac{1}{7}\omega$

C. $\dfrac{1}{6}\omega$

D. $\dfrac{1}{2}\omega$

Answer:

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19. Two open organ pipes of fundamental frequency n_1 and n_2 are joined in series . The

fundamental frequency of the new pipe so obtained will be

A. $(n_1 + n_2)$

B. $\dfrac{n_1 + n_2}{(2)}$

C. $\sqrt{n_1^2 + n_2^2}$

D. $\dfrac{n_1 n_2}{n_1 + n_2}$

Answer:

20. The density of a metal at normal perssures is $.\rho$. Its densitu when it is subjected to an exvess presseure p is ρ' . If B is bulk modulus of the metal , the ratio of $\dfrac{\rho'}{\rho}$ is

A. $1 + \dfrac{B}{p}$

B. $\dfrac{1}{a - \dfrac{p}{B}}$

C. $1 + \dfrac{p}{B}$

D. $\dfrac{1}{a + \dfrac{p}{B}}$

Answer:

21. If the mass of neutron is 1.7×10^{-27} Kg , then the de Broglie . Wavelength of neutron of energy 3 eV is $\left(h = 6.6 \times 10^{-34} J \cdot s \right)$

A. 1.4×10^{-11}m

B. 1.6×10^{-10}m

C. 1.65×10^{-11}m

D. 1.4×10^{-10}m

Answer:

22. Imagine earth to be a solild sphere of mass M and radius R. If the value of acceleration due to gravity at a depth d below earth's surface is same as its value at a height h above its surface and equal to $\frac{g}{4}$ (where g is the value of acceleration due to gravity on the surface of earth) , the ratio of $\frac{h}{d}$ will be

A. 1

B. $\frac{4}{3}$

C. $\dfrac{3}{2}$

D. $\dfrac{2}{3}$

Answer:

23. The energy liberated per nuclear fission is 200 MeV . If 10^{20} fissions occur per second the amount of power produced will be

A. $2 \times 10^{22} W$

B. $32 \times 10^8 W$

C. $16 \times 10^8 W$

D. $5 \times 10^{11} W$

Answer:

24. A ball of mass 1 Kg thrown vertically upwards and returns to the ground after 3 seconds . Another ball , thrown at $60°$ with vertical also stays in air for the same time

before it toches the ground . The ratio of the two heights are

A. $1:3$

B. $1:2$

C. $1:1$

D. $2:1$

Answer:

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25. A bady initially at rest , breaks up into two pieces of masses 2 M and 3M , after breaking up , has a kinetic energy

A. $\dfrac{2E}{5}$

B. $\dfrac{E}{2}$

C. $\dfrac{E}{5}$

D. $\dfrac{3E}{5}$

Answer:

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26. A light beam is incident on a denser medium whose refractive index is 1.414 at an angle of incidence $45°$ find the ratio of width of refracted beam in a medium to the width of the incident beam in air

    A. $\sqrt{3}:\sqrt{2}$

    B. $1:\sqrt{2}$

    C. $\sqrt{2}:1$

    D. $\sqrt{2}:\sqrt{3}$

Answer:

27. A body starts moving unidirectionally under the influence of a source power . Which one of the graph correctly shows the variation of displacement (s) with time (t) ?

A.

B.

C.

D.

Answer:

28. In ab experiment of photoelectric effect the stoping potential was measured to be V_1 and V_2 with incident light of wavelength λ and $\dfrac{\lambda}{2}$, respectively . The relation between V_1 and V_2 is

A. $V_2 > 2V_1$

B. $V_2 < V_1$

C. $V_1 < V_2 < 2V_1$

D. $V_2 = 2V_1$

Answer:

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29. A cell of emf E and internal resistance r is connected to a variable external resistor R . The graph which gives the terminal voltage of cell V with respect to R is

A.

B.

C.

D.

Answer:

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30. The angle between $\vec{A} - \vec{B}$ and $\vec{A} \times \vec{B}$ is $\left(\vec{A} \neq \vec{B} \right)$

A. $60\degree$

B. $90\degree$

C. $120\degree$

D. $45\degree$

Answer:

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31. A unifrom magntic field of 0.3 T is established along the positive Z- direction .A rectangular loop in XY - plane of sides 10 cm

and 5 cm carries a current of $I = 12A$ as shown . The torque on the loop is

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A. $+1. \times 10^{-2}\hat{i}N.m$

B. $-1.8 \times 10^{-2}\hat{j}N.m$

C. zero

D. $-1.8 \times 10^{-2}\hat{i}N.m$

Answer:

32. The rotational kinetic energy of a solid sphere of mass Kg and radius 0.2 m rolling down an inclined plane of height 7 m is

A. $42J$

B. $60J$

C. $36J$

D. $70J$

Answer: