PHYSICS

BOOKS - NTA MOCK TESTS

NEET MOCK TEST 20

Physics

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1. The firld of view is maximum for

    A. plane mirror

B. concave mirror

C. convex mirror

D. cylindrical power

Answer: C

2. An electric dipole of length 2 cm is placed with its axis making an angle of $60°$ to a uniform electric field of $10^5 NC^{-1}$ if its experiences a torque is $8\sqrt{3}$Nm, calculate the

(i). Magnitude of the charge on the dipole and

(ii). potential energy of the dipole.

A. $-10J$

B. $-20J$

C. $-30J$

D. $-40J$

Answer: C

3. A proton and an electron are released from an infinite distance apart and they get attracted towars each other. Which of the following statement about their kinetic energy is true?

A. Kinetic energy of electron is more than that of proton

B. Kinetic energy of electron is less than that of proton

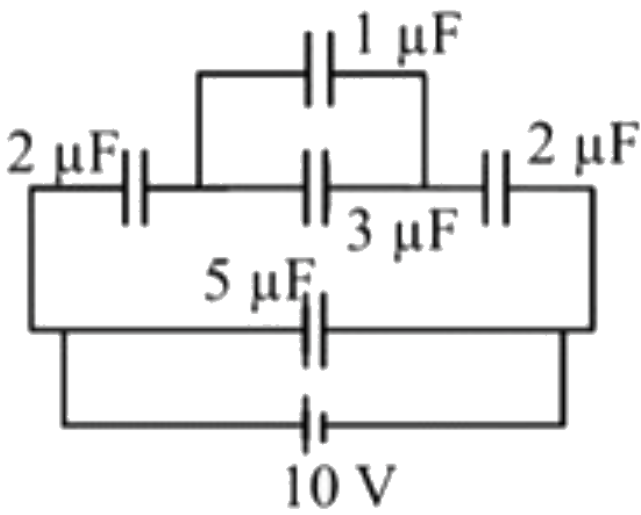C. Kinetic energy of electron = kinetic energy of proton

D. None of the above is true as it depends on the distance between the particles

Answer: A

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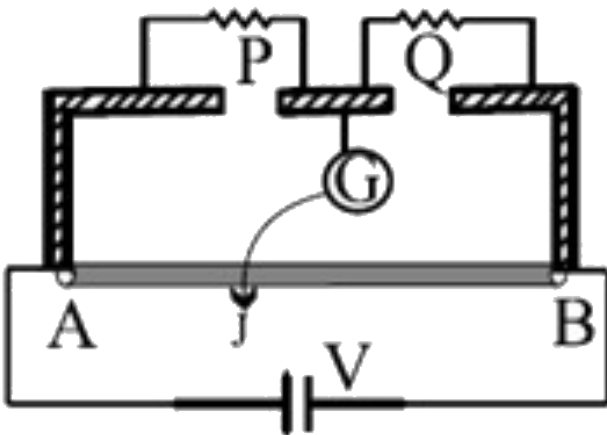4. The ratio of potential differences between $1\mu F$ and $5\mu F$ capacitors is

A. $1:2$

B. $3:1$

C. $1:5$

D. $10:1$

Answer: C

5. In a meter bridge circuit as shown in the figure, the bridge is balanced when $AJ = 20$ cm. On interchanging P and Q the balance length shifts by

A. zero

B. 80 cm

C. 40 cm

D. 60 cm

Answer: D

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6. The ratio of the resistances of a conductor

at a temperature of $15°C$ to its resistance at

a temperature of $37.5°C$ is $4:5$. The

temperature coefficient of resistance of the conductor is

A. $\dfrac{1}{25} \cdot {}^\circ C^{-1}$

B. $\dfrac{1}{50} \cdot {}^\circ C^{-1}$
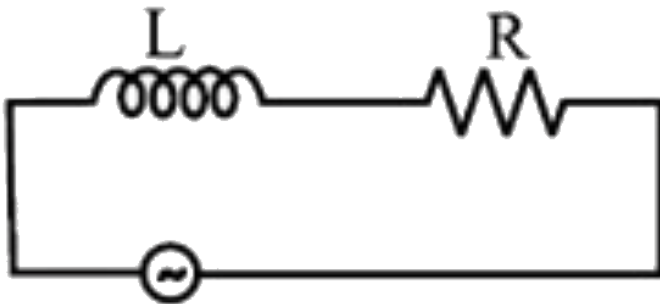
C. $\dfrac{1}{80} \cdot {}^\circ C^{-1}$

D. $\dfrac{1}{75} \cdot {}^\circ C^{-1}$

Answer: D

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7. When a material is inserted inside the inductor the current in the circuit increases, then the nature of the material is

A. ferromagnetic

B. paramagnetic

C. diamagnetic

D. all of the above

Answer: C

8. A flux of $10^{-3}Wb$ passes through a strip having an area $A = 0.02m^2$. The plane of the strip is at an angle of $60°$ to be direction of a uniform field B. The value of B is

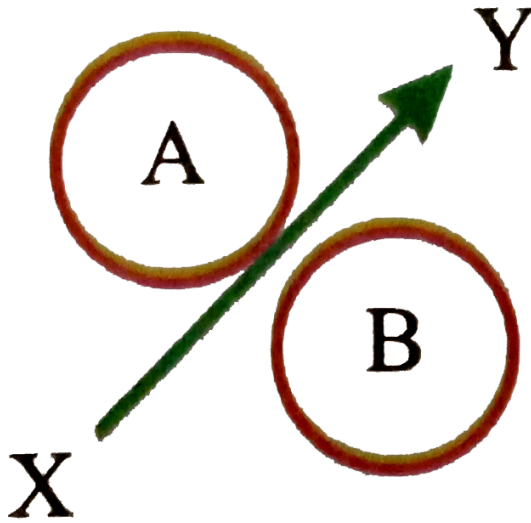A. 0.1 T

B. 0.058 T

C. 4.0 mT

D. none of the above.

Answer: B

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9. Consider the situation shown in the figure. If the current I in the long straight conducting wire XY is increased at a steady rate then the

induced $e.\,m.\,f.$'s in loop A and B will be

A. clockwise in A, anticlockwise in B

B. anticlockwise in A, clockwise in B

C. clockwise in both A and B

D. anticlockwise in both A and B

Answer: A

10. Magnetic susceptibility of a diamagnetic substances

    A. decreases with temperature

    B. is not affected by temperature

    C. increases with temperature

D. first increases, then decreases with

temperature

Answer: B

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11. De Broglie wavelength of 0.05 eV thermal

neutron is

A. 1.3Å

B. 2Å

C. 5.4Å

D. 8Å

Answer: A

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12. The maximum velocity of electrons emitted from a metal surface is v when the frequecny of light falling on it is f. The maximum velocity when the frequency becomes 4f is

A. 2v

B. $> 2v$

C. $< 2v$

D. between 2v and 4v

Answer: B

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13. Choose the WROMG statement.

A. The nuclear force becomes weak if the nucleus contains too many protons compared to the number of neutrons

B. The nuclear force becomes weak if the nucleus contains too many neutrons compared to the number of protons

C. Nuclei with atomic number greater than 82 show a tendency to disintegrate

D. The nuclear force becomes very strong if the nucleus contains a large number of

nucleons

Answer: D

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14. Number of nuclei of a radioactive substance are 1000 and 900 at times $t = 0$ and time $t = 2s$. Then, number of nuclei at time $t = 4s$ will be

A. 800

B. 810

C. 790

D. 700

Answer: B

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15. Which of the following has maximum specific heat?

A. Water

B. Alcohol

C. Glycerine

D. Oil

Answer: A

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16. When p calories of heat is given to a body, it absorbs q calories, then the absorbtion power of body will be :-

A. $\dfrac{p}{q}$

B. $\dfrac{q}{p}$

C. $\dfrac{p^2}{q^2}$

D. $\dfrac{p^2}{p^2}$

Answer: B

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17. One likes to sit under sunshine in winter

seasons, because

A. we get heat from the sun by conduction

B. we get heat from the sun by convection

C. we get heat from the sun by radiation

D. none of the above

Answer: C

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18. A piece of glass is heated to a high temperature and then allowed to cool. If it

cracks, a probable reason for this is the following property of glass

A. low thermal conductivity of glass

B. high thermal conductivity of glass

C. high specific heat of glass

D. high melting point ot glass

Answer: A

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19. The velocity of kerosene oil in a horizontal pipe is $5m/s$. If $g = 10m/s^2$ then the velocity head of oil wlill be

A. 1.25 m

B. 12.5 m

C. 0.125 m

D. 125 m

Answer: A

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20. A force of 100 dynes acts on mass of 5 gm for 10 sec . The velocity produced is

A. $2cms^{-1}$

B. $20cms^{-1}$

C. $200cms^{-1}$

D. $2000cms^{-1}$

Answer: C

21. if temperature of an object is $140^\circ F$, then its temperature in centigrade is

    A. $105^\circ C$

    B. $32^\circ C$

    C. $140^\circ C$

    D. $60^\circ C$

Answer: D

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22. If specific heat of a substance is infinite, it means

    A. heat is given out

    B. heat is taken in

    C. no change in temperature takes place whether heat is taken in or given out

    D. all of the above

Answer: C

23. A tuning fork sounded together with a tuning fork of frequency 256 emits two beats. On loading the tuning fork of frequency 256, the number of beats heard are 1 per second. The frequency of tuning fork is

A. 257

B. 258

C. 256

D. 254

Answer: D

24. If the phase difference between the two wave is 2π during superposition, then the resultant amplitude is

A. maximum

B. minimum

C. maximum or minimum

D. none of the above

Answer: A

25. When a sound wave of frequency 300 Hz passes through a medium the maximum displacement of a particle of the medium is 0.1 cm . The maximum velocity of the particle is equal to

A. $60\pi cms^{-1}$

B. $30\pi cms^{-1}$

C. $30 cms^{-1}$

D. $60 cms^{-1}$

Answer: A

26. A particle excuting $S.H.M.$ of amplitude $4cm$ and $T = 4$ sec .The time take by it to move position extreme position to half the amplitude is

A. 1s

B. $\dfrac{1}{3}s$

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

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

Answer: C

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27. The thermal conductivity of a material in

CGS system is 0.4. In steady state, the rate of

flow of heat 10 cal/sec-cm, then the thermal gradient will be

A. $10°\,Ccm^{-1}$

B. $12°\,Ccm^{-1}$

C. $25°\,Ccm^{-1}$

D. $20°\,Ccm^{-1}$

Answer: C

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28. If 150 J of heat is added to a system and the work done by the system is 110 j. then change in internal energy wil be

A. 260 J

B. 150 J

C. 110 J

D. 40 J

Answer: D

29. The volume of a gas at $20°C$ is 200 ml. If the temperature is reduced to $-20°C$ at constant pressure, its volume will be :-

  A. 172.6 ml

  B. 17.26 ml

  C. 192.7 ml

  D. 19.27 ml

Answer: A

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30. The apparent coefficient of expansion of liquid, when heated in a copper vessel is C and when heated in a silver vessel is S. If A is the linear coefficient of expansion of Copper, linear expansion coefficient of silver is

A. $\dfrac{C + S - 3A}{3}$

B. $\dfrac{C + 3A - S}{3}$

C. $\dfrac{S + 3A - C}{3}$

D. $\dfrac{C + S + 3A}{3}$

Answer: B

31. In the glass capillary tube, the shape of the surface of the liquid depends upon

A. only on the cohesive force of liquid molecules

B. only on the abhesive force between the molecules of glass and liquid

C. only on relative cohesive and adhesive force between the atoms

D. neither on cohesive nor on adhesive force

Answer: C

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32. A beam of metal supported at the two edges is loaded at the centre. The depression at the centre is proportional to

A. Y^2

B. Y

C. $\dfrac{1}{Y}$

D. $\dfrac{1}{Y^2}$

Answer: C

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33. If the earth stops rotating, the value of ' g '

at the equator will

A. increase

B. remain same

C. decrease

D. none of the above

Answer: A

34. A force $\vec{F} = \left(5\hat{i} + 3\hat{j}\right)N$ is applied over a particle which displaces it from its original position to the point $\vec{s} = S\left(2\hat{i} - 1\hat{j}\right)m$. The work done on the particle is

A. $-7J$

B. $+13J$

C. $+7J$

D. $+11J$

Answer: C

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35. On account of the earth rotating about its axis

A. the linear velocity of objects at equator

  is greater than at other places

B. the angular velocity of objects at

  equator is more than that of objects at

  poles

C. the linear velocity of objects at all places

  at the earth is equal, but angular

  velocity is different

D. at all places the angular velocity and

  linear velocity are uniform

Answer: A

36. A particle A suffers an oblique elastic collision particle B that is at rest initially. If their masses with a are the same, then after the collision

    A. they will move in opposite directions

    B. A continues to move in the original direction while B remains at rest

C. they will move in mutually perpendicular

directions

D. A comes to rest and B starts moving in

the direction of the original motion of A

Answer: C

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37. A circular disc A of radius r is made from an

iron plate of thickness t and another circular

disc B of radius 4r is made from an iron plate

of thickness $t/4$. The relation between the moments of inertia I_A and I_B is (about an axis passing through centre and perpendicular to the disc)

A. $I_A > I_B$

B. $I_A = I_B$

C. $I_A < I_B$

D. depends on the actual values of t and r.

Answer: C

38. If one sphere collides head - on with another sphere of the same mass at rest inelastically. The ratio of their speeds $\left(\dfrac{v_2}{v_1}\right)$ after collision shall be

A. $\dfrac{(1-e)}{(1+e)}$
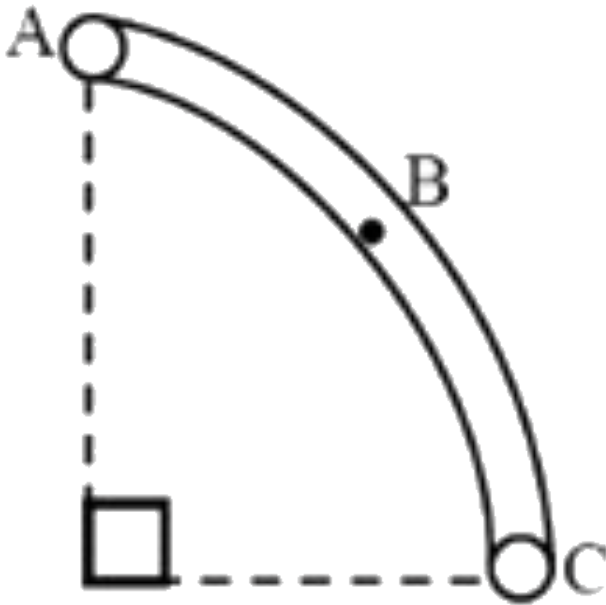
B. $\dfrac{2e}{(1+e)}$

C. $\dfrac{(1+e)}{(1-e)}$

D. e

Answer: C

39. The tube AC forms a quarter circule in a vertical plane. The ball B has an area of cross - section slightly smaller than that of the tube and can move without friction through it. B is

placed at A and displaced slightly. It will

A. always be in contact with the inner wall

of the tube

B. always be in contact with the outer wall

of the tube

C. initially be in contact with the inner wall

and later with the outer wall

D. initially be in contact with the outer wall

and later with the inner wall

Answer: C

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40. Two substance of same size are made of

same material but one is hollow and the other

is solid. They are heated to same temperature, then

A. both will expand equally

B. hollow sphere will expand more

C. solid sphere will expand more

D. the relative expansion of solid and hollow sphere depends on the material of sphere

Answer: A

41. A TV tower has a height of 100 m. How much population is covered by the TV broadcast if the average population density around this tower is $1000km^{-2}$? Given, radius of the earth $= 6.37 \times 10^6$ m.

A. 2×10^6

B. 4×10^6

C. 3×10^8

D. 9×10^4

Answer: B

42. A horizontal wid is blowing with a velocity v towards north-east. A man starts running towards north with acceleration a. The after which man will feel the wind blowing towards east is

A. $\dfrac{v}{a}$

B. $\dfrac{\sqrt{2}v}{a}$

C. $\dfrac{v}{\sqrt{2}a}$

D. $\dfrac{2v}{a}$

Answer: C

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43. At time t second, a particle of mass 3 kg has position vector r metre, where $r = 3t\hat{i} - 4\cos t\hat{j}$. Find the impulse of the force during the time interval $0 \le t \le \dfrac{\pi}{2}$

A. $12\hat{j}Ns$

B. $9\hat{j}Ns$

C. $4\hat{j}Ns$

D. $14\hat{j}Ns$

Answer: A

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44. IF an electron enters into a space between

the plates of a parallel plate capacitor at an an

angle α with the plates an leaves at an angle

β to the plates find the ratio of its kinetic energy while entering the capacitor of that while leaving.

A. $\left(\dfrac{\sin \beta}{\sin \alpha} \right)^2$

B. $\left(\dfrac{\cos \beta}{\cos \alpha} \right)^2$
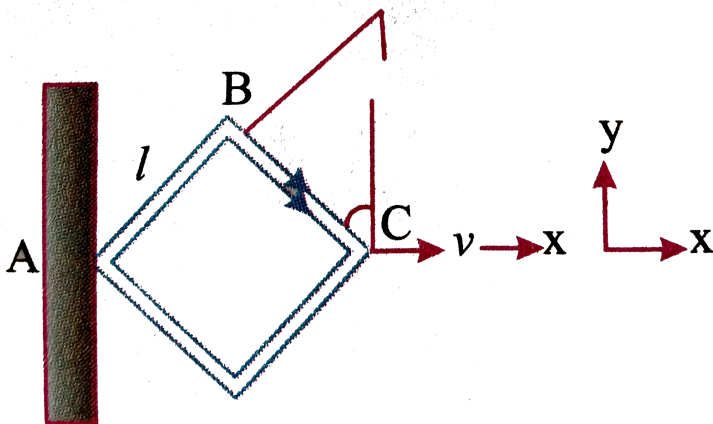
C. $\left(\dfrac{\cos \alpha}{\cos \beta} \right)^2$

D. $\left(\dfrac{\sin \alpha}{\sin \beta} \right)^2$

Answer: B

45. Four rods of side length l have been hinged to form a rhombus. Vertex A is fixed to a rigid support, vertex C is being moved along the x-axis with constant velocity V as shown in figure. The rate at which vertex B is nearing the x-axis at the moment the rhombus is in the form of a squarem is

B

l

A

C $v \rightarrow$ x

y

x

A. $\dfrac{v}{4}$

B. $\dfrac{v}{3}$

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

D. $\dfrac{v}{\sqrt{2}}$

Answer: C

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