



ଆମ ଗ୍ରୀ ଆମ ବିକାଶ

ନବୀନ ଭବିଷ୍ୟତ ମୂଳନ କିରଣ

ଶ୍ରୀ PEETHA

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କେଉଁ ପ୍ରକାର ସହାୟତା

କେଉଁଠି

କିଏ ପାଇବ

କଣ ମିଳିବ



ଉପ ସାମ୍ପ୍ରଦୟ କେନ୍ଦ୍ରିଯାରୁ ଆଗ୍ରହ କରି
ଜିଲ୍ଲା ମୁଖ୍ୟ ଚିକିତ୍ସାଳୟ ପର୍ଯ୍ୟନ୍ତ



ରାଜ୍ୟ ସରକାରଙ୍କ ମେଡିକାଲ କଲେଜ /
ପଞ୍ଜୀକୃତ ଘରୋଇ ଚିକିତ୍ସାଳୟ /
ଜାତୀୟ ପ୍ରରତ କିମ୍ବା ଖ୍ୟାତ ସଂପଦ
ଚିକିତ୍ସାଳୟ

ସର୍ବସାଧାରଣକ ପାଇଁ
(କୌଣସି ପ୍ରମାଣପତ୍ରର ଆବଶ୍ୟକତା
ନାହିଁ)

ବିକେବେଣ୍ଟାର, ଆର୍ଦ୍ରସବିଭ୍ରାନ୍ତ ହିତାଧୂକାରୀ,
ବିପିଏଲ, ଏଥ୍ରାର ହିତାଧୂକାରୀ
ଗ୍ରାମାନ୍ଦଳରେ ବାର୍ଷିକ ୩୦,୦୦୦ ଟଙ୍କାରୁ କମ୍
ଏବଂ ସହରାନ୍ଦଳରେ ବାର୍ଷିକ ୩୦,୦୦୦ ଟଙ୍କାରୁ
କମ୍ ଉପାର୍ଜନ କରୁଥିବା ବ୍ୟକ୍ତି

ସମସ୍ତଙ୍କ ନିମନ୍ତେ ସମ୍ମୁଖ
ମାଗଣୀ ସାମ୍ପ୍ରଦୟ ସେବା

ପରିବାର ପାଇଁ ବାର୍ଷିକ ୫ ଲକ୍ଷ ଟଙ୍କା
ଓ ମହିଳା ସଦସ୍ୟଙ୍କ ଷେତ୍ରରେ
ବାର୍ଷିକ ୩ ଲକ୍ଷ ଟଙ୍କା ପର୍ଯ୍ୟନ୍ତ
ସାମ୍ପ୍ରଦୟ ସେବା ସହାୟତା

ଦେୟମୁକ୍ତ ନମ୍ବର
୧୫୪୩୬୯୯
ସକାଳ ଅଟା ରୁ ରାତି ଧରିବାରେ

ଚିକିତ୍ସା ସମ୍ବନ୍ଧୀୟ ସମସ୍ତ ତଥ୍ୟ ଏବଂ ପଞ୍ଜୀକୃତ ଘରୋଇ ଚିକିତ୍ସାଳୟଗୁଡ଼ିକର ତାଲିକା
ସାମ୍ପ୍ରଦୟ ଓ ପରିବାର କଲ୍ୟାଣ ଡ୍ରେବସାଇଟ୍ (www.health.odisha.gov.in),

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ସାମ୍ପ୍ରଦୟ ଓ ପରିବାର କଲ୍ୟାଣ ବିଭାଗ,
ଓଡ଼ିଶା ସରକାର

ବିଜ୍ଞୁ ସାମ୍ପ୍ରଦୟ କଲ୍ୟାଣ ଯୋଜନା | ସୁସ୍ଥ ଓଡ଼ିଶା, ସୁଖୀ ଓଡ଼ିଶା



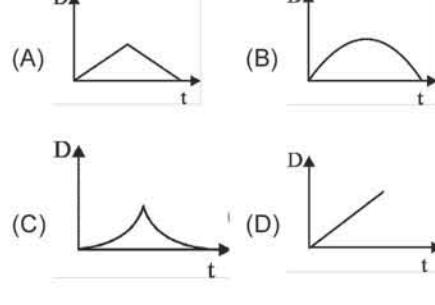
Mock Test Paper for Std X, XII CBSE Board, IIT - JEE Main & Advanced.



FOR ANSWERS VISIT : www.dharitri.com

SINGLE CORRECT ANSWER

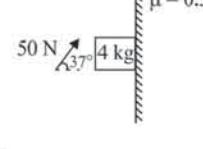
1. A particle is projected at 53° with +ve x-axis with initial velocity 20 m/s . At the same time a person starts moving with velocity of 12 m/s along +ve x-axis. Choose the correct plot of distance between particle and man with respect to time.



2. Two resistances are given as $R_1(10 \pm 0.1)\Omega$, $R_2(5 \pm 0.05)\Omega$. Find % error in their parallel combination.

- (A) 6% (B) 7%
(C) 3% (D) 1%

3. A block of mass 4 kg is being pressed against a wall as shown in figure. Coefficient of friction between wall and block is $\mu = 0.5$. Find the contact force on the given block.

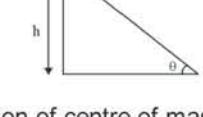


- (A) $20\sqrt{5} \text{ N}$ (B) $10\sqrt{17} \text{ N}$
(C) $10\sqrt{26} \text{ N}$ (D) $10\sqrt{29} \text{ N}$

4. A particle of mass m moving along x-axis with some velocity, strikes with another particle of mass $M = 5 \text{ m}$. at rest. After collision velocity of particle of mass M makes an angle of 30° with x-axis while particle of mass 'm' moves along y-axis. Fraction of energy lost during the collision is?

- (A) $1/2$ (B) $2/5$
(C) $3/5$ (D) $1/3$

5. A block of mass m is on a stationary wedge of mass M . Wedge can slide freely on horizontal surface. If the block starts moving then there are four statements. (Given : All the surfaces are smooth)



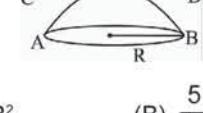
- I. Position of centre of mass will change.
II. Total energy of system is constant.
III. If block moves to the bottom of wedge the distance moved by wedge is $\frac{mh\tan\theta}{m+M}$

- IV. If block moves to the bottom of wedge, distance moved by wedge is $\frac{mh\cot\theta}{m+M}$

- Which option corresponding to the statements is correct:

- (A) I, II, IV (B) II, III
(C) II, III (D) I, II, III

6. Find moment of inertia of given hollow hemisphere about axis CD.



- (A) $\frac{2}{3}MR^2$ (B) $\frac{5}{12}MR^2$
(C) $\frac{2}{5}MR^2$ (D) $\frac{3}{20}MR^2$.

7. A satellite orbiting around earth with speed v_0 , and R as orbital radius. How much more energy would it take to escape earth's gravitational field?

- (A) $\frac{GMm}{4R}$ (B) $-\frac{GMm}{2R}$
(C) $\frac{GMm}{2R}$ (D) $-\frac{GMm}{4R}$

8. A metal wire has length of 1m and cross-sectional area $4.9 \times 10^{-7} \text{ m}^2$, is supporting a mass of 0.1 kg . Block is pulled downward and now performs SHM of angular frequency 140 rad/s . Find its Young's Modulus

- (A) $4 \times 10^9 \text{ N/m}^2$ (B) $2 \times 10^9 \text{ N/m}^2$
(C) $4 \times 10^8 \text{ N/m}^2$ (D) $6 \times 10^8 \text{ N/m}^2$

MOCK TEST PAPER # 1

IITJEE (Main) (PHYSICS)

Time : 1 hour

Maximum Marks: 120

MARKING INSTRUCTIONS

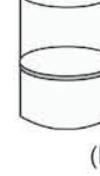
For each question you will be given 4 Marks if you have darkened only the bubble corresponding to the correct answer and zero mark if no bubble is darkened. In all other cases, minus one (-1) Marks (NEGATIVE MARKING) will be given.

9. In an adiabatic process, for ideal gas,

$R = \frac{2}{3}C_V$. The pressure of the gas is proportional to:

- (A) $T^{5/3}$ (B) $T^{5/2}$
(C) $T^{5/4}$ (D) $T^{5/6}$

10. A cylinder is divided into two parts with the help of frictionless piston having some mass. Initially both the parts have 1 mole of ideal gas in each at 300 K . Volume of upper part is 4 times that of lower part. At what final temperature volume ratio will be 2?



- (A) 600 K (B) 750 K
(C) 900 K (D) 400 K

11. During a process work done by the gas having $\gamma = 1.5$ is equal to double of increase in internal energy. Find the molar heat capacity for the gas (R = gas constant).

- (A) $3R$ (B) $6R$
(C) $9R$ (D) Zero

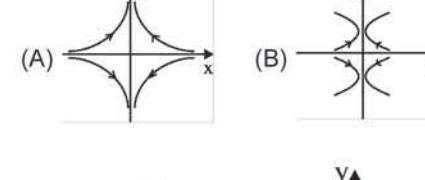
12. Two particles, performing SHM, have same frequency of oscillation and same amplitude. At $t = 0$ one of the particle is at its positive extreme (+A) and other one is at half of its amplitude in -x direction and both are approaching each other. At what time they will meet? (T = time period)

- (A) $T/3$ (B) $T/6$
(C) $T/12$ (D) $T/4$

13. Frequency of an ambulance siren appears $(4/5)$ th of initial frequency as it crosses a stationary observer. Find speed of ambulance. ($V_{sound} = 330 \text{ m/s}$)

- (A) 18.3 m/s (B) 20 m/s
(C) 36.6 m/s (D) 40 m/s

14. The potential field depends on x and y coordinates as $V = (x^2 - y^2)$. Corresponding electric field lines in x-y plane as shown in figure.



15. There is a uniformly charged insulating sphere of radius R and charge Q . There are three point A, B and C at a distance $R/3$, $R/2$ and $3R/2$ from the centre of sphere. Choose the correct

option. [V: Electric potential $k = \frac{1}{4\pi\epsilon_0}$]

$$(A) V_A - V_B = \frac{5}{12} \left(\frac{kQ}{R} \right)$$

$$(B) V_A - V_B = \frac{5}{36} \left(\frac{kQ}{R} \right)$$

$$(C) V_B - V_C = \frac{17}{48} \left(\frac{kQ}{R} \right)$$

$$(D) V_B - V_C = \frac{17}{36} \left(\frac{kQ}{R} \right)$$

16. A parallel plate capacitor without any dielectric has capacitance C_0 . A dielectric slab is made up to two dielectric slabs of dielectric constants K and $2K$ and is of same dimensions as that of capacitor plates and both the parts are of equal dimensions arranged serially as shown. If this dielectric slab is introduced (dielectric K enters first) in between the plates at constant speed, then variation of capacitance with time will be best represented by:

- (A) Total heat produced in resistor R_1 after opening the switch is $\frac{1}{2} \frac{L\epsilon^2}{R^2}$

- (B) Total heat produced in resistor R_1 after opening the switch is $\frac{1}{2} \frac{L\epsilon^2}{R^2} \left(\frac{R_1}{R_1 + R_2} \right)$

- (C) heat produced in resistor R_1 after opening the switch is $\frac{1}{2} \frac{R_2 L \epsilon^2}{R^2 (R_1 + R_2)}$

- (D) no heat will be produced in R_1

23. A lamp emits monochromatic green light uniformly in all the direction. The lamp is 3% efficient in converting electrical power to electromagnetic waves and consumes 100 W of power. The amplitude of electric field associated with radiation at a distance of 10 m from the lamp is :

- (A) 1.34 V/m (B) 2.68 V/m
(C) 5.36 V/m (D) 9.37 V/m

24. The maximum value of index of refraction of a material of a prism which allows the passage of light through it when the refracting angle of the prism is A is:

$$(A) \sqrt{1 + \sin\left(\frac{A}{2}\right)} \quad (B) \sqrt{1 + \cos\left(\frac{A}{2}\right)}$$

$$(C) \sqrt{1 + \tan^2\left(\frac{A}{2}\right)} \quad (D) \sqrt{1 + \cot^2\left(\frac{A}{2}\right)}$$

25. The wavefront of light beam is given by the equation $3x + y + 2z = C$ where C is a constant. The angle made by the direction of light with x-axis is:

$$(A) \cos^{-1}\left(\frac{3}{\sqrt{14}}\right) \quad (B) \sin^{-1}\left(\frac{3}{\sqrt{14}}\right)$$

$$(C) \cos^{-1}\left(\frac{1}{2}\right) \quad (D) \tan^{-1}\left(\frac{3}{\sqrt{14}}\right)$$

26. The length of compound microscope is 14 cm . The magnifying power for relaxed eye is 25 . If the focal length of eye lens is 5 cm then the object distance for objective lens will be:

- (A) 1.5 cm (B) 1.8 cm
(C) 2.1 cm (D) 2.4 cm

27. Check the correctness of the following statements about Bohr model of hydrogen atom:

- I. The acceleration of the electron in $n = 2$ orbit is more than in $n = 1$ orbit.
II. The angular momentum of the electron in $n = 2$ orbit is more than in $n = 1$ orbit.
III. The KE of the electron in $n = 2$ orbit is less than in $n = 1$ orbit.
(A) all the statements are correct
(B) only (i) and (ii) are correct
(C) only (ii) and (iii) are correct
(D) only (iii) and (i) are correct

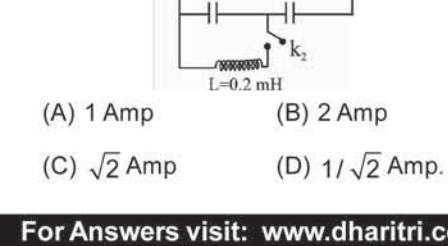
28. Which of the following statement is correct ?

- (A) With increase in wavelength of light, stopping potential becomes more negative
(B) Wave nature of electron can be explained by Davisson and Germer experiment
(C) If frequency of light gets doubled, KE_{max} of photoelectrons also gets doubled
(D) The change in intensity of light affects stopping potential in photoelectric effect experiment

29. The modulation index of FM carrier having a carrier swing of 200 KHz and a modulation signal 10 KHz is:

- (A) 5 (B) 10
(C) 15 (D) 25

30. A circuit containing capacitors C_1 and C_2 as shown in figure is in steady state with key k_1 closed. At the instant $t = 0$, k_1 is opened and k_2 is closed then the maximum current in the circuit will be:



- (A) 1 Amp (B) 2 Amp
(C) $\sqrt{2} \text{ Amp}$ (D) $1/\sqrt{2} \text{ Amp}$

For Answers visit: www.dharitri.com

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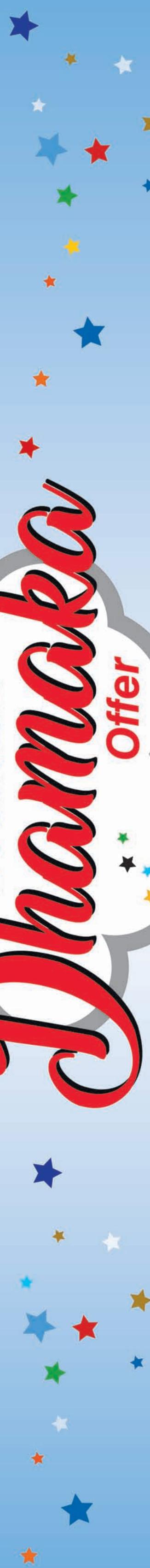
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