



PHYSICS

BOOKS - SAI PHYSICS (TELUGU ENGLISH)

MOCK TEST 1

Physics

1. The dimensions of a/b in the equation

$$p = \frac{a - t^2}{bx} \text{ where } P \text{ is pressure, } x \text{ is distance}$$

ant 't' is time are,

A. M^2LT^{-3}

B. LT^{-3}

C. ML^3T^{-2}

D. MT^{-2}

Answer: D



Watch Video Solution

2. A particle is projected from the ground with an initial speed of u at an angle of projection θ . The average velocity of the particle reaches highest point of trajectory is

A. $\frac{V}{2} \sqrt{1 + 2 \cos^2 \theta}$

B. $\frac{V}{2} \sqrt{1 + 2 \sin^2 \theta}$

C. $\frac{V}{2} \sqrt{1 + 3 \cos^2 \theta}$

D. $V \cos \theta$

Answer: C



Watch Video Solution

3. A thin brass sheet at $10^\circ C$ and a thin steel sheet at $20^\circ C$ have the same surface area. The common temperature at which both would have the same area is (coefficient of linear expansion for brass and steel are respectively $19 \times 10^{-6}/^\circ C$ and $11 \times 10^{-6}/^\circ C$).

A. $3.75^\circ C$

B. $-2.75^\circ C$

C. $2.75^{\circ}C$

D. $-3.75^{\circ}C$

Answer: D



Watch Video Solution

4. Assertion (A): If polar ice cap melts, duration of the day increases.

Reason (R) : Moment of inertia increases and angular velocity decreases.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true and R is not the correct explanation of A

C. A is true and R is false

D. A is false and R is true

Answer: A



Watch Video Solution

5. The time period of a satellite of earth is 5 hours . If the separation between earth and the satellite is increased to 4 times the previous value , the new time period will become

A. 10 hours

B. 40 hours

C. 60 hours

D. 80 hours

Answer: B



Watch Video Solution

6. A block of mass 'm' is pulled by a constant power 'p' placed on a rough horizontal plane . The coefficient of friction between the block and the surface is μ . Maximum velocity of the block will be

A. $\frac{\mu P}{mg}$

B. $\frac{\mu mg}{P}$

C. μmgP

D. $\frac{P}{\mu mg}$

Answer: D



Watch Video Solution

7. A uniform thin bar of mass m and length $12L$ is bent to make a regular hexagon. Its moment of inertia about an axis passing through the centre of mass and perpendicular to the plane of hexagon is

A. $10mL^2$

B. $6mL^2$

C. $20mL^2$

D. $30mL^2$

Answer: C



Watch Video Solution

8. A body is projected with a velocity of $10m / s$ at 45° to the horizontal . The velocity of the projectile when it moves at 30° to the horizontal is

A. $\sqrt{\frac{50}{3}} m / s$

B. $\sqrt{\frac{100}{3}} m / s$

C. $\sqrt{\frac{200}{3}} m / s$

D. $\sqrt{\frac{400}{3}} m / s$

Answer: C



Watch Video Solution

9. One end of uniform glass capillary tube of radius $r = 0.05$ cm is immersed vertically in water to a depth $h = 2$ cm . The excess

pressure in N/m^2 required to blow an air bubble out the tube (surface tension of water $=7 \times 10^{-2} N/m$, density of water $= 10^3 k \frac{g}{m^3}$ and $g = 10 m/s^2$).

A. 0.0048×10^5

B. 0.0066×10^5

C. 1.0048×10^5

D. 1.0066×10^5

Answer: A



Watch Video Solution

10. An organ pipe P_1 , closed at one end and containing a gas of density ρ_1 is vibrating in its first harmonic. Another organ pipe P_2 , open at both ends and containing a gas of density ρ_2 is vibrating in its third harmonic. Both the pipes are in resonance with a given tuning fork. If the compressibility of gases is equal in both pipes, the ratio of the lengths of P_1 and P_2 (assume the given gases to be monoatomic)

A. $\frac{1}{3}$

B. 3

C. $\frac{1}{6} \sqrt{\frac{\rho_1}{\rho_2}}$

D. $\frac{1}{6} \sqrt{\frac{\rho_2}{\rho_1}}$

Answer: D



Watch Video Solution

11. A sonometer wire has a length of 114 cm , between two fixed ends. Where should two bridges be placed so to divide the wire into

three segments (in cm) whose fundamental frequencies are in the ratio 1 : 3 : 4?

A. $l_1, l_2, l_3 = 18, 24, 72$

B. $l_1, l_2, l_3 = 24, 18, 72$

C. $l_1, l_2, l_3 = 72, 18, 24$

D. $l_1, l_2, l_3 = 72, 24, 18$

Answer: D



Watch Video Solution

12. For a certain organ pipe three successive resonance frequencies are observed at 425 Hz , 595 Hz and 765 Hz respectively . If the speed of sound in air is $340\text{m} / \text{s}$, then the length of pipe is ,

A. 2 m

B. 0.4m

C. 1 m

D. 0.2m

Answer: C



Watch Video Solution

13. What is the deviation angle when light incident at an angle 45° on equilateral prism of refractive index $\sqrt{2}$.

A. 150°

B. 45°

C. 30°

D. 90°

Answer: C



Watch Video Solution

14. When the temperature is increased

(i) Viscosity of the gas increases

(ii) Viscosity of the gas decreases

(iii) Viscosity of the liquid decreases

(iv) viscosity of the liquid increases

A. a and c are true

B. b and c are true

C. b and d are true

D. a and d are true

Answer: A



Watch Video Solution

15. An electric field is acting vertically upwards . A particle of mass 1 mg and charge $-1\mu\text{C}$ is projected with a velocity $20\text{m} / \text{s}$ at an angle 45° with the horizontal . Its horizontal range is 10 m , then the intensity of electric field is $(g = 10\text{m} / \text{s}^2)$

A. $10N/C$

B. $20N/C$

C. $30N/C$

D. $40N/C$

Answer: C



Watch Video Solution

16. Identify the correct order of the following particles when arranged in the increasing order of K.E. when moved momentum is

constant in the same electric field .

(i) Tritium

(ii) Deuteron

(iii) Proton

(iv) Electron

A. ii,i,iii,iv

B. ii , iii , iv , i

C. i , ii , iii , iv

D. iii , iv , ii, i

Answer: C



17. A bar magnet of moment M is bent as an arc . Its magnetic moment

A. Increases

B. Decreases

C. Does not change

D. May increase or decrease

Answer: B



18. In Young's double slit experiment how many maximas can be obtained on a screen including central maxima on both sides of central fringe $\lambda = 3000\text{\AA}$ and slit separation $d = 9000\text{\AA}$.

A. 12

B. 18

C. 7

D. 4

Answer: C



Watch Video Solution

19. Consider the following statements A and B and identify the correct choice in the given answers .

(A) Suceptibility of paramagnetic material does not depend upon temperature

(B) Ferromagnetism is explained by domain theory

A. A and B correct

B. A and B wrong

C. A is correct but B is wrong

D. A is wrong but B is correct

Answer: D



Watch Video Solution

20. The cold junction of a thermocouple is $0^{\circ}C$. The ratio of thermo emf is at temperature s (of hot junction) $50^{\circ}C$ and

$100^{\circ}C$ respectively 8 : 15 . The neutral temperature of thermocouple is

$$(e = at + bt^2)$$

A. $425^{\circ}C$

B. $225^{\circ}C$

C. $350^{\circ}C$

D. $850^{\circ}C$

Answer: A



Watch Video Solution

21. A 6 V cell with 1 ohm internal resistance and 10 V cell with 2 ohm internal resistance and 10 ohm external resistance are connected in parallel . The current in ampere through 10 V cells is

A. 1.56.

B. 0.8

C. 2.7

D. 4

Answer: A



22. The time constant of an inductance coil is 5×10^{-3} sec. When a 90 ohm resistance is joined in series , the time constant becomes 0.5×10^{-3} sec. The inductance and resistance of the coil are ,

A. $50mH, 20\Omega$

B. $50mH, 10\Omega$

C. $20mH, 50\Omega$

D. $10mH, 50\Omega$

Answer: B



Watch Video Solution

23. The threshold wavelength for certain metal is λ_0 . When a light of wavelength $(\lambda_0) / (2)$ is incident on it , the maximum velocity of photoelectrons is $10^6 m / s$. If the wavelength of the incident radiation is reduced to $(\lambda_0 / (5))$, then the maximum velocity of the photoelectrons in m / s will be ,

A. 2.5×10^6

B. 5×10^6

C. 4×10^6

D. 2×10^6

Answer: D



Watch Video Solution

24. Ratio of magnetic field at the centre of a current carrying coil of radius R and at a distance of $3R$ on its axis from the centre is ,

A. $10\sqrt{10}$

B. $20\sqrt{10}$

C. $2\sqrt{10}$

D. $\sqrt{10}$

Answer: A



Watch Video Solution

25. A electron and a positron pair is produced by a gamma ray of 3.4 MeV . The kinetic energy imparted to each of the charged particle is

A. 1.19MeV

B. 1.05MeV

C. 2.1MeV

D. Zero

Answer: A



View Text Solution

26. For an n-p-n transistor $\beta = 50$, the value of α is

A. 0.6

B. 0.8

C. 0.7

D. 0.96

Answer: D



Watch Video Solution

27. The absorption coefficient of a material is $(3)/(4)$. The ratio of maximum to minimum

current during its determination by stationary wave method is

A. 8

B. 4

C. 3

D. 2

Answer: C



View Text Solution