

Physics -Set 3

1) An object 4 cm high is placed 40 cm in front of a concave mirror of focal length 20 cm. find the distance from the mirror, at which a screen be placed to obtain a sharp image.

- a) 40 cm
- b) -40cm
- c) 20cm
- d) -20cm

2) 1KWH is unit of

- a) Time
- b) Power
- c) **Energy**
- d) Stress

3) Find the focal length and nature of lens which should be placed in contact with a lens of focal length 10 cm so that the power of the combination becomes 5 dioptre.

- a) 20 cm concave
- b) -20cm concave
- c) 20cm convex
- d) -20 cm convex

4) Name the physical quantities whose dimensional formula is $M^1 L^2 T^{-2}$?

- a) Work
- b) momentum
- c) surface tension
- d) stress .

5) The vector perpendicular to is

- a) ,
- b) ,
- c) ,
- d)

6) Two bodies are projected at angles θ and $90 - \theta$ to the horizontal with the same speed. The ratio of their times of flight is

- a) 1: 1,
- b) $\tan\theta : 1$,
- c) $1: \tan \theta$,
- d) $\tan^2 \theta : 1$

7) A weight W rests on a rough horizontal plane of the angle of friction be θ , the least force that will move the body along the plane will be

- (a) $W \cos \theta$
- b) $W \tan \theta$,
- c) $W \cot \theta$,
- d) $W \sin \theta$

8) For adiabatic process of an ideal gas the relation between T & V is

- a) $TV = \text{constant}$,
- b) $TV^{\gamma-1} = \text{constant}$,
- c) $T^{\gamma-1} V = \text{constant}$,
- d) $T^{\gamma} V^{\gamma-1} = \text{constant}$.

9) When the distance between two charged particles is halved, the coulomb force between them becomes:

- a) One half,

- b) one fourth,
- c) double,
- d) four times.

10) The path difference between the two waves

$$Y_1 = a_1 \sin (wt - 2\pi x/\lambda) \text{ and}$$

$$Y_2 = a_2 \cos (wt - 2\pi x/\lambda + \theta) \text{ is}$$

- a) $\lambda\theta/2\pi$,
- b) $\lambda/2\pi(\theta + \pi/2)$
- c) $2\pi/\lambda (\theta - \pi/2)$
- d) $2\pi\theta/\lambda$

11) A diode as rectifier converts

- a) a.c. into d.c. ,
- b) d.c. into a.c.,
- c) Varying d.c. current into constant d.c. current,
- d) High voltage into low voltage and vice versa.

12) When two parallel wires carry currents in the same direction,

- (a) they attract each other
- (b) they repel each other
- (c) magnetic forces on two wires are perpendicular to each other
- (d) they do not experience any magnetic force.

13) An automobile travelling with a speed of 60 km/h, can brake to stop within a distance of 20 m. If the car is going twice as fast, i.e. 120 km/h, the stopping distance will be

- (a) 20 m
- (b) 40 m
- (c) 60 m
- (d) 80 m.

14) A marble block of mass 2 kg lying on ice when given a velocity of 6 m/s is stopped by friction in 10 s. Then the coefficient of friction is

- (a) 0.02
- (b) 0.03
- (c) 0.06
- (d) 0.01.

15) A uniform chain of length 2 m is kept on a table such that a length of 60 cm hangs freely from the edge of the table. The total mass of the chain is 4 kg. What is the work done in pulling the entire chain on the table?

- (a) 7.2 J
- (b) 3.6 J
- (c) 120 J
- (d) 1200 J.

16) The change in the value of g at a height h above the surface of the earth is the same as at a depth d below the surface of earth. When both d and h are much smaller than the radius of earth, then which of the following is correct?

- (a) $d = 2h$

- (b) $d = h$
- (c) $d = h/2$
- (d) $d = 3h/2$

17) A 20 cm long capillary tube is dipped in water. The water rises upto 8 cm. If the entire arrangement is put in a freely falling elevator, the length of water column in the capillary tube will be :

- (a) 8 cm
- (b) 10 cm
- (c) 4 cm
- (d) 20 cm

18) An α -particle of energy 5 MeV is scattered through 180° by a fixed uranium nucleus. The distance of the closest approach is of the order of

- (a) 1 \AA
- (b) 10^{10} cm
- (c) 10^{12} cm
- (d) 10^{15} cm

19) The work function of a substance is 4.0 eV. The longest wavelength of light that can cause photoelectron emission from this substance is approximately :

- (a) 540 nm
- (b) 400 nm
- (c) 310 nm
- (d) 220 nm

20) The magnetic field due to a current carrying circular loop of radius 3 cm at a point on the axis at a distance of 4 cm from the centre is 54 pT. What will be its value at the centre of the loop ?

- (a) $250 \mu\text{T}$
- (b) $150 \mu\text{T}$
- (c) $125 \mu\text{T}$
- (d) $75 \mu\text{T}$