Physics Set-1

1. Arrange the following in the order of their increasing wavelength :
    X-rays,infra-red rays, radiowaves, gamma rays and microwaves.
        (a)Gamma rays, X-rays, infra-red rays, microwaves, radiowaves
        (b)Gamma rays, infra-red rays, X-rays microwaves, radiowaves
        ©Gamma rays, infra-red rays, microwaves, X-rays radiowaves
        (d)Gamma rays, X-rays, microwaves, infra-red rays, radiowaves

2. Name the physical quantities whose dimensional formula is $M^1 L^0 T^{-2}$?

        a)Force
        b)surface tension .
        c) Momentum
        d)Energy

3. Which of the following is not a physical quantity ?

        a) kelvin
        b) candela
        c) henry
        d) all the above

4. A liquid does not wet the surface of a solid if the angle of contact is
        a) zero,
        b) $<90^0$,
        c) $>90^0$,
        d) at any negative value.

5. Two electric lamps of 40 watt each are connected in parallel. The power consumed by the combination is
        a) 20w,
        b) 80w,
        c) 40w,
        d) 160w

6. The refractive index of air with respect to glass is 2/3. The refractive index of diamond with respect to air is 12/5. Then R.I. of glass with respect to diamond will be
        a) 5/8,
        b) 8/9,
        c) 5/18,
        d) 18/5
7. The focal length of a lens of power 2.5 diopters is
        a) 5cm,
        b) 1.25cm,
        c) 40 cm,
        d) 25cm

8. What is the ratio of P.E. and K.E. of a body in SHM at a point when the displacement is 1/3 of its amplitude.
        a) 8:1,

b) 1:2√2,
c) 1:9,
d) 1:8

9. Change in velocity of sound due to 1^0C rise of temperature is :
    a) 60.8m/s,
    b) 608cm/s,
    c) 608m/s,
    d) 6.08m/s

10. A setting Sun appears to be at an altitude higher than it really is. This is because of
    a) absorption of light
    b) reflection of light
    c) refraction of light
    d) dispersion of light.

11) A particle of mass 10 g is kept on the surface of a uniform sphere of mass 100 kg and radius 10 cm. Find the work to be done against the gravitational force between them to take the particle far away from the sphere.

(you may take $G = 6.67 \times 10^{-11}$ Nm^2/kg^2)

    (a) 6.67×10^{-9} J
    (b) 6.67×10^{-10} J
    (c) 13.34×10^{-10} J
    (d) 3.33×10^{-10} J

12)Two identical particles move towards each other with velocity $2v$ and v respectively. The velocity of centre of mass is

    (a)v
    (b)$v/3$
    © $v/2$
    (d)zero.

13)In a potentiometer experiment the balancing with a cell is at length 240 cm. On shunting the cell with a resistance of 2 ohm, the balancing length becomes 120 cm. The internal resistance of the cell is :
    (a) 1 ohm
    (b) 0.5 ohm
    (c) 4 ohm
    (d) 2 ohm

14)The displacement of a particle varies according to the relation x = 4 (cos πt + sinπt). The amplitude of the particle is
    (a) -4
    (b) 4
    (c) $4\sqrt{2}$
    (d) 8

15)A radioactive sample at any instant has its disintegration rate 5000 disintegrations per minute. After 5 minutes,the rate is 1250 disintegrations per minute. Then, the decay constant (per minute) is :

(a) 0.4 *In 2*
(b) 0.2 *In 2*
(c) 0.1 *In 2*
(d) 0.8 *In 2*

16) If 13.6 eV energy is required to ionize the hydrogen atom, then the energy required to remove an electron from $n = 2$ is

(a) 10.2 eV
(b) 0 eV
(c) 3.4 eV
(d) 6.8 eV

17)Sodium and copper have work functions 2.3 eV and 4.5 eV respectively. Then the ratio of the wavelengths is nearest to

(a) 1:2
(b) 4:1
(c) 2 : 1
(d) 1 : 4

18)Two spheres of the same material have radii 1 m and 4 m and temperatures 4000 K and 2000 K respectively. The ratio of the energy radiated per second by the first sphere to that by the second is

(a) I : 1
(b) 16 : 1
(c) 4 : 1
(d) 1 : 9

19) If a charge q is placed at the centre of the line joining two equal charges Q such that the system is in equilibrium then the value of q is

(a) Q/2
(b) -Q/2
(c) Q/4
(d) -Q/4

20)The energy band gap is maximum in

(a) metals
(b) superconductors
(c) insulators
(d) semiconductors

Answers

1.a

2.b

3.d

4.c

5.b

6.a

7.c

8.d

9.b

10.c

11.b

12.c

13.d

14.c

15.a

16.c

17.c

18.a

19.d

20.c