2021-12-20

1.The dimensional formula $M^0L^2T^{-2}$ stands for

Torque

Angular Momentum

Latent Heat

Coefficient of Thermal Conductivity

2.In a discharge tube at 0.02 mm, there is a formation of

Faraday's Dark Space

Crookes Dark Space

Both space

None of these

3.When a body is moving on a surface, the force of friction is called

Static friction

Dynamic friction

Limiting friction

Rolling friction

4.When fluids are heated from the bottom, convection currents are produced because

Molecular motion of fluid becomes aligned

Molecular collisions take place within the fluid

Heated fluid becomes more dense than the cold fluid above it

Heated fluid becomes less dense than the cold fluid above it

5.Half-life of a substance is 10 years. In what time, it becomes $\frac{1}{4}th$ part of the initial amount

5 years

10 years

20 years

None of these

6.If a man increase his speed by 2 m/s , his K.E. is doubled, the original speed of the man is

$(1+2\sqrt{2})m/s$

$4m/s$

$(2+2\sqrt{2})m/s$

$(2+\sqrt{2})m/s$

7.A spherical drop of capacitance 1 μF is broken into eight drops of equal radius. Then, the capacitance of each small drop is ……

$\frac{1}{8}\mu F$

$8\mu F$

$\frac{1}{2}\mu F$

$\frac{1}{4}\mu F$

8.A ball of weight 0.1 kg coming with speed 30 m/s strikes with a bat and returns in opposite direction with speed 40 m/s, then the impulse is (Taking final velocity as positive)

$0.1\times(40)-0.1\times(20)$

$-0.1\times(40)-0.1\times(30)$

$0.1\times(40)-0.1\times(-30)$

$0.1\times(40)+0.1\times(-30)$

9.The peak value of an alternating e.m.f. E is given by $E=E_0\cos\omega t$ is 10 volts and its frequency is 50 Hz. At time $t=\frac{1}{600}sec$, the instantaneous e.m.f. is

$10V$

$5\sqrt{3}V$

$5V$

$1V$

10.Two spherical conductors B and C having equal radii and carrying equal charges in them repel each other with a force F when kept apart at some distance. A third spherical conductor having same radius as that of B but uncharged is brought in contact with B, then brought in contact with C and finally removed away from both. The new force of repulsion between B and C is

$F/4$

$F/8$

$3F/4$

$3F/8$

11.80 gm of water at 30°C are poured on a large block of ice at 0°C. The mass of ice that melts is

30 gm

80 gm

150 gm

160 gm

12.When a body is placed in surroundings at a constant temperature of 20°C and heated by a 10-W heater, its temperature remains constant at 40°C. If the temperature of the body is now raised from 20°C to 80°C in 5 min at a uniform rate, the total heat it will lose to the surroundings will be

3000 J

3600 J

4500 J

5400 J

13.In order that the function $f(x) = (x+1)^{1/x}$ is continuous at $x = 0$, $f(0)$ must be defined as

$f(0) = 0$

$f(0) = e$

$f(0) = 1/e$

$f(0) = 1$

14.The number of ways in which first, second and third prizes can be given to 5 competitors is:

10

60

15

125

15.For specifying a straight line how many geometrical parameters should be known?

1

2

3

4

16.The remainder when a polynomial $P(x)$ is divided by $x - 2$ is:

$P(2)$

0

1

$P(-2)$

17.If $\sin\theta = x$, then $\cos^{-1} x =$

θ

$-\theta$

$\pi/2 - \theta$

$\sqrt{1-\theta^2}$

18.The value of $\sin(\sin^{-1} 2\pi)$ is:

2π

$-\pi$

π

none of these

19. $\lim_{n\to\infty} \sum_{r=0}^{n} \frac{1}{2^r} =$

0

1

2

none of the above

20.If *A* is any set, then

$A \bigcup A' = \phi$

$A \bigcup A' = U$

$A \bigcap A' = U$

None of these

21.

$$\log_e \frac{4}{5} + \frac{1}{4} - \frac{1}{2}\left(\frac{1}{4}\right)^2 + \frac{1}{3}\left(\frac{1}{4}\right)^3 + ...$$

$2\log_e \frac{4}{5}$

$\log_e \frac{5}{4}$

1

0

22.The area bounded by the curve $y = \cos^{-1}(\cos x)$ and $y = \sin^{-1}(\sin x)$ and the *x*-axis (where $0 \leq x \leq \pi$)

π

$2\pi^2$

$\frac{\pi^2}{4}$

none of these

23.The curve represented by $x = 3(\cos t + \sin t); y = 4(\cos t - \sin t)$ is:

Ellipse

Parabola

Hyperbola

Circle

24.If $\sqrt{3}\cos\theta + \sin\theta = \sqrt{2}$,then the most general value of θ is

$n\pi + (-1)^n \frac{\pi}{4}$

$(-1)^n \frac{\pi}{4} - \frac{\pi}{3}$

$n\pi + \frac{\pi}{4} - \frac{\pi}{3}$

$n\pi + (-1)^n \frac{\pi}{4} - \frac{\pi}{3}$

25.The angle between the curves $y^2 = x$ and $x^2 - y^2 = 1$ at their point of intersection in the first quadrant is:

30°

0°

90°

none of these

26.

$$\lim_{x\to 1}\frac{x^3-1}{x^2+5x-6}=$$

0

3/7

1/2

-1/6

27.If $\tan^{-1}\frac{1-x}{1+x}=\frac{1}{2}\tan^{-1}x$, then $x=$

1

$\sqrt{3}$

$\frac{1}{\sqrt{3}}$

None of these

28.If

$$\lim_{x\to 0}kx\text{cosec}x=\lim_{x\to 0}x\text{cosec}kx$$

then, $k=$

1

-1

± 1

(±)2

29. The weight of 50% HCl required to react with 100 g of CaCO3 is

36.5g

73g

146g

100g

30.For the redox reaction

$$MnO_4^- + C_2O_4^{-2} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$$

the correct coefficients of the reactants for the balanced reaction are

$$MnO_4^-, C_2O_4^{2-}, H^+$$

2 5 16

16 5 2

5 16 2

2 16 5

31.Galvanization is the

Deposition of Zn on Fe

Deposition of Al on Fe

Deposition of Sn on Fe

Deposition of Cu on Fe

32.Hardness of water is conventionally expressed in terms of equivalent amount of

$MgCO_3$

Na_2CO_3

$CaCO_3$

Na_2CO_3

33.If dissociation for reaction $PCl_5 = PCl_3 + Cl_2$ is 20% at 1 atm. pressure. Calculate Kc

0.040

0.05

0.07

0.06

34.The gas obtained by treating ethyl alcohol with Sulphuric acid at about 160^oC, on passing through alkaline solution of $KMnO_4$ gives

Ethylene

Formic acid

Ethyl alcohol

Ethylene glycol

35.When $CuSO_4$ is reacted with $K_4[Fe(CN)_6$, the product formed is

$Cu_2Fe(CN)_6$

KCN

$Cu(CN)_3$

$Cu(CN)_2$

36.In the reaction $2Na_2S_2O_3 + I_2 \rightarrow Na_2S_4O_6 + 2NaI$, the equivalent weight of $Na_2S_2O_3$ (mol. wt. = *M*) is equal to

M

$M/2$

$M/3$

$M/4$

37.Not all birds _____.

flies

fly

have flown

are flying

38.vegetable

$/'vedtbl/$

$/'vedtebl/$

$/'vedtbl/$

$/'vedtebl/$

39.Mrs. Shrestha said that will be enough, and everyone agreed.

a simple sentence

a compound sentence

a complex sentence

a compound-complex sentence

40.spin: spun

broadcast: broadcasted

ox: oxen

rang: rung

broadcast: broadcast