
2021-12-27

1. Electric field at a point varies as r^0 for

An electric dipole

A point charge

A plane infinite sheet of charge

A line charge of infinite length

2. Particles having positive charges occasionally come with high velocity from the sky towards the earth. On account of the magnetic field of earth, they would be deflected towards the

North

South

East

West

3. The layers of atmosphere are heated through

Convection

Conduction

Radiation

(b) and (c) both

4. A body is moving with uniform acceleration describes 40 m in the first 5 sec and 65 m in next 5 sec. Its initial velocity will be

2.5 m/s

4 m/s

5.5 m/s

11 m/s

5. An ac source is rated at 220V, 50 Hz. The time taken for voltage to change from its peak value to zero is

50 sec

0.02 sec

5 sec

5×10^{-3} sec

6. A long wire carries a steady current. It is bent into a circle of one turn and the magnetic field at the centre of the coil is B . It is then bent into a circular loop of n turns. The magnetic field at the centre of the coil will be

nB

n^2B

$2nB$

$2n^2B$

7. Two forces, F_1 and F_2 are acting on a body. One force is double that of the other force and the resultant is equal to the greater force. Then the angle between the two forces is

$\cos^{-1}(1/2)$

$\cos^{-1}(-1/2)$

$\cos^{-1}(1/4)$

$\cos^{-1}(-1/4)$

8. The wavelength of light in two liquids x and y is 3500\AA and 7000\AA , then the critical angle of x relative to y will be

60°

45°

30°

15°

9. 50 gm of ice at 0°C is mixed with 50 gm of water at 80°C , final temperature of mixture will be

0°C

4°C

10°C

12°C

10. A resistance of 20 ohms is connected to a source of an alternating potential $V = 220 \sin(100\pi t)$. The time taken by the current to change from its peak value to r.m.s value is

0.2 sec

0.25 sec

$25 \times 10^{-3} \text{ sec}$

$2.5 \times 10^{-3} \text{ sec}$

11. Three infinitely long charge sheets are placed as shown in figure. The electric field at point P is

$\frac{2\sigma\hat{k}}{\epsilon_0}$

$-\frac{2\sigma\hat{k}}{\epsilon_0}$

$\frac{4\sigma\hat{k}}{\epsilon_0}$

$-\frac{4\sigma\hat{k}}{\epsilon_0}$

12. The relation between time and displacement for two particles is given by $y_1 = 0.06 \sin 2\pi (0.04t + \phi_1)$, $y_2 = 0.03 \sin 2\pi (1.04t + \phi_2)$. The ratio of the intensity of the waves produced by the vibrations of the two particles will be

2 : 1

1 : 2

4 : 1

1 : 4

13. What is the value of a if $3\hat{i} - a\hat{k}$ and $5\hat{i} + 5\hat{k}$ are linearly dependent?

-3

3

0

6

14. The function $f(x) = x + \cos x$ is

Always increasing

Always decreasing

Increasing for certain range of x

None of these

15. In a train five seats are vacant, then how many ways can three passengers sit

20

30

10

60

16.The equation of tangent to ellipse $\frac{x^2}{9} + \frac{y^2}{16} = 1$ at point $P(9, 16)$ is:

$x + y = 1$

$x + y = 25$

$x + y = 5$

none of these

17.The work done in moving an object along the vector $3i+2j-5k$, if the applied force is $\vec{F} = 2i-j-k$, is

7

8

9

10

18.The sum of three numbers in AP is 9, and their product is 15. The numbers are:

1, 3, 5

2, 4, 6

1, 5, 9

none of the above

19.The equation of a plane which cuts equal intercepts of unit length on the axes, is :

$x + y + z = 0$

$x + y + z = 1$

$x + y - z = 1$

$\frac{x}{a} + \frac{y}{a} + \frac{z}{a} = 1$

20.The distance of the point $(2, 3, -5)$ from the plane $x + 2y - 2z = 9$ is:

4

3

2

1

21. $1 + i^2 + i^4 + i^6 + \dots + i^{2n}$ is

positive

negative

zero

depends on n

22. The equation of parabola whose vertex and focus are $(0, 4)$ and $(0, 2)$ respectively, is

$$y^2 - 8x = 32$$

$$y^2 + 8x = 32$$

$$x^2 + 8y = 32$$

$$x^2 - 8y = 32$$

23. Which of the following functions is inverse of itself

$$f(x) = \frac{1-x}{1+x}$$

$$f(x) = 5^{\log x}$$

$$f(x) = 2^{x(x-1)}$$

none of these

24.

$$\lim_{\alpha \rightarrow \beta} \left[\frac{\sin^2 \alpha - \sin^2 \beta}{\alpha^2 - \beta^2} \right] =$$

0

1

$$\frac{\sin \beta}{\beta}$$

$$\frac{\sin 2\beta}{2\beta}$$

25. If $a + b + c = 0$, then which relation is correct

$$a = b = c = 0$$

$$a \cdot b = b \cdot c = c \cdot a$$

$$a \times b = b \times c = c \times a$$

None of these

26.If direction cosines of two lines are proportional to (2, 3, -6) and (3, -4, 5), then the acute angle between them is :

$$\cos^{-1} \left(\frac{49}{36} \right)$$

$$\cos^{-1} \left(\frac{18\sqrt{2}}{35} \right)$$

$$96^\circ$$

$$\cos^{-1} \left(\frac{18}{35} \right)$$

27.If $(x, y, z) \neq (0, 0, 0)$ and $(i + j + 3k)x + (3i - 3j + k)y + (-4i + 5j)z = \lambda(xi + yj + zk)$, then the value of λ will be

$$2, 0$$

$$0, -2$$

$$1, 0$$

$$0, -1$$

28.The first term of a G.P. is 7, the last term is 448 and sum of all terms is 889, then the common ratio is :

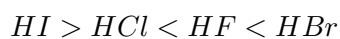
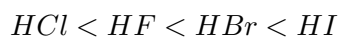
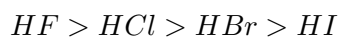
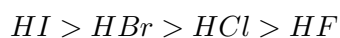
$$5$$

$$4$$

$$3$$

$$2$$

29.The correct order of the thermal stability of hydrogen halides (H-X) is



30.In KI solution, I_2 readily dissolves and forms





31. Steel contains

Fe + C + Mn

Fe + C + Al

Fe + Mn

Fe + Mn + Cr

32. The O.N. of Co in $K[Co(CO)_4]$ is

+1

(-)1

+3

0

For preparing a buffer solution of $pH 6$ by mixing sodium acetate and acetic acid, the ratio of the concentration of salt and acid should be ($K_a = 10^{-5}$)

1 : 10

10 : 1

100 : 1

1 : 100

34. The total number of isomers formed by C_5H_{10} is

2

3

4

5

35. The wavelength of the radiation emitted, when in a hydrogen atom electron falls from infinity to stationary state 1, would be (Rydberg constant = $1.097 \times 10^7 m^{-1}$)

406 nm

192 nm

91 nm

$9.1 \times 10^{-8} \text{ nm}$

36.The concentration of F^- — ion in saturated solution of BaF_2 is (K_{SP} of $BaF_2 = 5 \times 10^{-10}$)

$5 \times 10^{-4} M$

$1 \times 10^{-4} M$

$5 \times 10^{-3} M$

$1 \times 10^{-3} M$

37.The initial sound of the word 'eight' is

/a/

/e/

//

/e/

38.If you ask, I help.

would

would have

will

am

39.She is ____ taller of the two

a

an

the

none

40.She _____ the meeting by 3 O' clock tomorrow.

will have attended

was attending

has attended

will be attending