KCET-2024 TEST PAPER WITH ANSWER KEY

(HELD ON THURSDAY 18TH APRIL 2024)

$$\boxed{\text{MATHEMATICS}}$$

1. Two finite sets have m and n elements respectively. The total number of subsets of the first set is 56 more than the total number of subsets of the second set. The values of m and n respectively are

   (A) 7, 6
   (B) 5, 1
   (C) 6, 3
   (D) 8, 7

   Ans. C

2. If $[x]^2 - 5[x] + 6 = 0$, where $[x]$ denotes the greatest integer function, then

   (A) $x \in [3, 4]$
   (B) $x \in [2, 4)$
   (C) $x \in [2, 3]$
   (D) $x \in (2, 3]$

   Ans. B

3. If in two circles, arcs of the same length subtend angles $30°$ and $78°$ at the centre, then the ratio of their radii is

   (A) $\dfrac{5}{13}$
   (B) $\dfrac{13}{5}$
   (C) $\dfrac{13}{4}$
   (D) $\dfrac{4}{13}$

   Ans. B

4. If $\triangle ABC$ is right angled at C, then the value of $\tan A + \tan B$ is

   (A) $a + b$
   (B) $\dfrac{a^2}{bc}$
   (C) $\dfrac{c^2}{ab}$
   (D) $\dfrac{b^2}{ac}$

   Ans. C

5. The real value of 'α' for which $\dfrac{1 - i\sin\alpha}{1 + 2i\sin\alpha}$ is purely real is

   (A) $(n+1)\dfrac{\pi}{2}, \ n \in N$
   (B) $(2n+1)\dfrac{\pi}{2}, \ n \in N$
   (C) $n\pi, \ n \in N$
   (D) $(2n-1)\dfrac{\pi}{2}, \ n \in N$

   Ans. C

6. The length of a rectangle is five times the breadth. If the minimum perimeter of the rectangle is 180 cm, then

   (A) Breadth ≤ 15 cm
   (B) Breadth ≥ 15 cm
   (C) Length ≤ 15 cm
   (D) Length $= 15$ cm

   Ans. B

7. The value of $^{49}C_3 + {}^{48}C_3 + {}^{47}C_3 + {}^{46}C_3 + {}^{45}C_3 + {}^{45}C_4$ is

(A) $^{50}C_4$

(B) $^{50}C_3$

(C) $^{50}C_2$

(D) $^{50}C_1$

Ans. A

8. In the expansion of $(1+x)^n$

$\dfrac{C_1}{C_0} + 2\dfrac{C_2}{C_1} + 3\dfrac{C_3}{2} + ... + n\dfrac{C_n}{C_{n-1}}$ is equal to

(A) $\dfrac{n(n+1)}{2}$

(B) $\dfrac{n}{2}$

(C) $\dfrac{n+1}{2}$

(D) $3n(n+1)$

Ans. A

9. If S_n stands for sum to n-terms of a G.P. with 'a' as the first term and 'r' as the common ratio then $S_n : S_{2n}$ is

(A) $r^n + 1$

(B) $\dfrac{1}{r^n + 1}$

(C) $r^n - 1$

(D) $\dfrac{1}{r^n - 1}$

Ans. B

10. If A.M. and G.M. of roots of a quadratic equation are 5 and 4 respectively, then the quadratic equation is

(A) $x^2 - 10x - 16 = 0$

(B) $x^2 + 10x + 16 = 0$

(C) $x^2 + 10x - 16 = 0$

(D) $x^2 - 10x + 16 = 0$

Ans. D

11. The angle between the line $x + y = 3$ and the line joining the points $(1, 1)$ and $(-3, 4)$ is

(A) $\tan^{-1}(7)$

(B) $\tan^{-1}\left(-\dfrac{1}{7}\right)$

(C) $\tan^{-1}\left(\dfrac{1}{7}\right)$

(D) $\tan^{-1}\left(\dfrac{2}{7}\right)$

Ans. C

12. The equation of parabola whose focus is $(6, 0)$ and directrix is $x = -6$ is

(A) $y^2 = 24x$

(B) $y^2 = -24x$

(C) $x^2 = 24y$

(D) $x^2 = -24y$

Ans. A

13. $\lim\limits_{x \to \frac{\pi}{4}} \dfrac{\sqrt{2}\cos x - 1}{\cot x - 1}$ is equal to

(A) 2

(B) $\sqrt{2}$

(C) $\dfrac{1}{2}$

(D) $\dfrac{1}{\sqrt{2}}$

Ans. C

14. The negation of the statement

"For every real number x ; $x^2 + 5$ is positive" is

(A) For every real number x ; $x^2 + 5$ is not positive

(B) For every real number x ; $x^2 + 5$ is negative

(C) There exists at least one real number x such that $x^2 + 5$ is not positive

(D) There exists at least one real number x such that $x^2 + 5$ is positive

Ans. C

15. Let a, b, c, d and e be the observations with mean m and standard deviation S. The standard deviation of the observations a + k, b + k, c + k, d + k and e + k is

(A) kS

(B) S + k

(C) $\dfrac{S}{k}$

(D) S

Ans. D

16. Let $f : R \to R$ be given $f(x) = \tan x$. Then $f^{-1}(1)$ is

(A) $\dfrac{\pi}{4}$

(B) $\left\{ n\pi + \dfrac{\pi}{4} : n \in Z \right\}$

(C) $\dfrac{\pi}{3}$

(D) $\left\{ n\pi + \dfrac{\pi}{3} : n \in Z \right\}$

Ans. A

17. Let $f : R \to R$ be defined by $f(x) = x^2 + 1$. Then the pre images of 17 and –3 respectively are

(A) $\phi, \{4, -4\}$

(B) $\{3, -3\}, \phi$

(C) $\{4, -4\}, \phi$

(D) $\{4, -4\}, \{2, -2\}$

Ans. C

18. Let $(g \circ f)(x) = \sin x$ and $(f \circ g)(x) = \left(\sin \sqrt{x} \right)^2$. Then

(A) $f(x) = \sin^2 x, g(x) = x$

(B) $f(x) = \sin \sqrt{x}, g(x) = \sqrt{x}$

(C) $f(x) = \sin^2 x, g(x) = \sqrt{x}$

(D) $f(x) = \sin \sqrt{x}, g(x) = x^2$

Ans. C

19. Let A = {2, 3, 4, 5, ... 16, 17, 18}. Let R be the relation on the set A of ordered pairs of positive integers defined by (a, b) R (c, d) if and only if ad = bc for all (a, b), (c, d) in A × A. Then the number of ordered pairs of the equivalence class of (3, 2) is

(A) 4   (B) 5

(C) 6   (D) 7

Ans. C

20. If $\cos^{-1} x + \cos^{-1} y + \cos^{-1} z = 3\pi,$ then $x(y+z) + y(z+x) + z(x+y)$ equals to

(A) 0   (B) 1

(C) 6   (D) 12

Ans. C

21. If $2\sin^{-1} x - 3\cos^{-1} x = 4, x \in [-1, 1]$ then $2\sin^{-1} x + 3\cos^{-1} x$ is equal to

(A) $\dfrac{4 - 6\pi}{5}$ (B) $\dfrac{6\pi - 4}{5}$

(C) $\dfrac{3\pi}{2}$ (D) 0

Ans. B

22. If A is a square matrix such that $A^2 = A$, then $(I + A)^3$ is equal to

(A) 7A − I   (B) 7A

(C) 7A + I   (D) I - 7A

Ans. C

23. If $A = \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$, then A^{10} is equal to

(A) $2^8\,A$ (B) $2^9\,A$

(C) $2^{10}\,A$ (D) $2^{11}\,A$

Ans. B

24. If $f(x) = \begin{vmatrix} x-3 & 2x^2 - 18 & 2x^3 - 81 \\ x-5 & 2x^2 - 50 & 4x^3 - 500 \\ 1 & 2 & 3 \end{vmatrix}$, then f(1). f(3) + f(3). f(5) + f(5). f(1) is

(A) -1   (B) 0

(C) 1   (D) 2

Ans. Bonus

25. If $P = \begin{bmatrix} 1 & \alpha & 3 \\ 1 & 3 & 3 \\ 2 & 4 & 4 \end{bmatrix}$ is the adjoint of a 3×3 matrix A and |A| = 4, then α is equal to

(A) 4   (B) 5

(C) 11   (D) 0

Ans. C

26. If $A = \begin{vmatrix} x & 1 \\ 1 & x \end{vmatrix}$ and $B = \begin{vmatrix} x & 1 & 1 \\ 1 & x & 1 \\ 1 & 1 & x \end{vmatrix}$, then $\dfrac{dB}{dx}$ is

(A) 3A

(B) −3B

(C) 3B + 1

(D) 1 − 3A

Ans. A

27. Let $f(x) = \begin{vmatrix} \cos x & x & 1 \\ 2\sin x & x & 2x \\ \sin x & x & x \end{vmatrix}$. Then $\lim\limits_{x \to 0} \dfrac{f(x)}{x^2} =$

(A) −1

(B) 0

(C) 3

(D) 2

Ans. B

28. Which one of the following observations is correct for the features of logarithm function to any base b > 1?

(A) The domain of the logarithm function is R, the set of real numbers.

(B) The range of the logarithm function is R^+, the set of all positive real numbers.

(C) The point (1, 0) is always on the graph of the logarithm function.

(D) The graph of the logarithm function is decreasing as we move from left to right.

Ans. C

29. The function $f(x) = |\cos x|$ is

(A) Everywhere continuous and differentiable

(B) Everywhere continuous but not differentiable at odd multiples of $\dfrac{\pi}{2}$

(C) Neither continuous nor differentiable at $(2n+1)\dfrac{\pi}{2}, n \in Z$

(D) Not differentiable everywhere

Ans. B

30. If $y = 2x^{3x}$, then $\dfrac{dy}{dx}$ at x = 1 is

(A) 2

(B) 6

(C) 3

(D) 1

Ans. B

31. Let the function satisfy the equation $f(x + y) = f(x)f(y)$ for all x, $y \in R$, where $f(0) \neq 0$. If $f(5) = 3$ and $f'(0) = 2$, then $f'(5)$ is

(A) 6

(B) 0

(C) 3

(D) − 6

Ans. Bonus (If we ignore inconsistency we will get A)

32. The value of C in (0, 2) satisfying the mean value theorem for the function $f(x) = x(x-1)^2$, $x \in [0, 2]$ is equal to

(A) $\dfrac{3}{4}$

(B) $\dfrac{4}{3}$

(C) $\dfrac{1}{3}$

(D) $\dfrac{2}{3}$

Ans. B

33. $\dfrac{d}{dx}\left[\cos^2\left(\cot^{-1}\sqrt{\dfrac{2+x}{2-x}} \right)\right]$ is

(A) $-\dfrac{3}{4}$

(B) $-\dfrac{1}{2}$

(C) $\dfrac{1}{2}$

(D) $\dfrac{1}{4}$

Ans. D

34. For the function $f(x) = x^3 - 6x^2 + 12x - 3$; $x = 2$ is

(A) A point of minium

(B) A point of inflexion

(C) Not a critical point

(D) A point of maximum

Ans. B

35. The function x^x; $x > 0$ is strictly increasing at

(A) $\forall x \in R$

(B) $x < \dfrac{1}{e}$

(C) $x > \dfrac{1}{e}$

(D) $x < 0$

Ans. C

36. The maximum volume of the right circular cone with slant height 6 units is

(A) $4\sqrt{3}\ \pi$ cubic units

(B) $16\sqrt{3}\ \pi$ cubic units

(C) $3\sqrt{3}\ \pi$ cubic units

(D) $6\sqrt{3}\ \pi$ cubic units

Ans. B

37. If $f(x) = x\ e^{x(1-x)}$ then f(x) is

(A) Increasing in R

(B) Decreasing in R

(C) Decreasing in $\left[-\dfrac{1}{2},\ 1 \right]$

(D) Increasing in $\left[-\dfrac{1}{2},\ 1 \right]$

Ans. D

38. $\int \dfrac{\sin x}{3 + 4\cos^2 x} dx =$

(A) $-\dfrac{1}{2\sqrt{3}} \tan^{-1}\left(\dfrac{2\cos x}{\sqrt{3}}\right) + C$

(B) $\dfrac{1}{\sqrt{3}} \tan^{-1}\left(\dfrac{\cos x}{3}\right) + C$

(C) $\dfrac{1}{2\sqrt{3}} \tan^{-1}\left(\dfrac{\cos x}{3}\right) + C$

(D) $-\dfrac{1}{\sqrt{3}} \tan^{-1}\left(\dfrac{2\cos x}{3}\right) + C$

Ans. A

39. $\int\limits_{-\pi}^{\pi}\left(1 - x^2\right)\sin x \cdot \cos^2 x \; dx =$

(A) $\pi - \dfrac{\pi^2}{3}$

(B) $2\pi - \pi^3$

(C) $\pi - \dfrac{\pi^3}{2}$

(D) 0

Ans. D

40. $\int \dfrac{1}{x\left[6\left(\log x\right)^2 + 7\log x + 2\right]} dx =$

(A) $\dfrac{1}{2} \log\left|\dfrac{2\log x + 1}{3\log x + 2}\right| + C$

(B) $\log\left|\dfrac{2\log x + 1}{3\log x + 2}\right| + C$

(C) $\log\left|\dfrac{3\log x + 2}{2\log x + 1}\right| + C$

(D) $\dfrac{1}{2} \log\left|\dfrac{3\log x + 2}{2\log x + 1}\right| + C$

Ans. B

41. $\int \dfrac{\sin \dfrac{5x}{2}'}{\sin \dfrac{x}{2}} dx =$

(A) $2x + \sin x + 2\sin 2x + C$

(B) $x + 2\sin x + 2\sin 2x + C$

(C) $x + 2\sin x + \sin 2x + C$

(D) $2x + \sin x + \sin 2x + C$

Ans. C

42. $\int\limits_{1}^{5}\left(|x - 3| + |1 - x|\right) dx =$

(A) 12

(B) $\dfrac{5}{6}$

(C) 21

(D) 10

Ans. A

43. $\lim_{n \to \infty} \left(\dfrac{n}{n^2 + 1^2} + \dfrac{n}{n^2 + 2^2} + \dfrac{n}{n^2 + 3^2} + \dots + \dfrac{1}{5n} \right) =$

(A) $\dfrac{\pi}{4}$

(B) $\tan^{-1} 3$

(C) $\tan^{-1} 2$

(D) $\dfrac{\pi}{2}$

Ans. C

44. The area of the region bounded by the line $y = 3x$ and the curve $y = x^2$ in sq. units is

(A) 10

(B) $\dfrac{9}{2}$

(C) 9

(D) 5

Ans. B

45. The area of the region bounded by the line $y = x$ and the curve $y = x^3$ is

(A) 0.2 sq. units

(B) 0.3 sq. units

(C) 0.4 sq. units

(D) 0.5 sq. units

Ans. D

46. The solution of $e^{\frac{dy}{dx}} = x + 1, y(0) = 3$ is

(A) $y - 2 = x \log x - x$

(B) $y - x - 3 = x \log x$

(C) $y - x - 3 = (x + 1) \log(x + 1)$

(D) $y + x - 3 = (x + 1) \log(x + 1)$

Ans. D

47. The family of curves whose x and y intercepts of a tangent at any point are respectively double the x and y coordinates of that point is

(A) $xy = C$

(B) $x^2 + y^2 = C$

(C) $x^2 - y^2 = C$

(D) $\dfrac{y}{x} = C$

Ans. A

48. The vectors $\overrightarrow{AB} = 3\hat{i} + 4\hat{k}$ and $\overrightarrow{AC} = 5\hat{i} - 2\hat{j} + 4\hat{k}$ are the sides of a $\triangle ABC$. The length of the median through A is

(A) $\sqrt{18}$

(B) $\sqrt{72}$

(C) $\sqrt{33}$

(D) $\sqrt{288}$

Ans. C

49. The volume of the parallelopiped whose co-terminous edges are $\hat{j} + \hat{k}, \hat{i} + \hat{k}$ and $\hat{i} + \hat{j}$ is

(A) 6 cu. units

(B) 2 cu. units

(C) 4 cu. units

(D) 3 cu. units

Ans. B

50. Let $\vec{a}$ and $\vec{b}$ be two unit vectors and θ is the angle between them. Then $\vec{a} + \vec{b}$ is a unit vector if

(A) $\theta = \dfrac{\pi}{4}$

(B) $\theta = \dfrac{\pi}{3}$

(C) $\theta = \dfrac{2\pi}{3}$

(D) $\theta = \dfrac{\pi}{2}$

Ans. C

51. If $\vec{a}, \vec{b}, \vec{c}$ are three non-coplanar vectors and p, q, r are vectors defined by

$$\vec{p} = \frac{\vec{a} \times \vec{c}}{\left[\vec{a}\,\vec{b}\,\vec{c}\right]}, \vec{q} = \frac{\vec{c} \times \vec{a}}{\left[\vec{a}\,\vec{b}\,\vec{c}\right]}, \vec{r} = \frac{\vec{a} \times \vec{b}}{\left[\vec{a}\,\vec{b}\,\vec{c}\right]} \text{ then}$$

$\left(\vec{a} + \vec{b}\right).\vec{p} + \left(\vec{b} + \vec{c}\right).\vec{q} + \left(\vec{c} + \vec{a}\right).\vec{r}$ is

(A) 0

(B) 1

(C) 2

(D) 3

Ans. D

52. If lines $\dfrac{x-1}{-3} = \dfrac{y-2}{2k} = \dfrac{z-3}{2}$ and $\dfrac{x-1}{3k} = \dfrac{y-5}{1} = \dfrac{z-6}{-5}$ are mutually perpendicular then k is equal to

(A) $-\dfrac{10}{7}$

(B) $-\dfrac{7}{10}$

(C) -10

(D) -7

Ans. A

53. The distance between the two planes $2x + 3y + 4z = 4$ and $4x + 6y + 8z = 12$ is

(A) 2 units

(B) 8 units

(C) $\dfrac{2}{\sqrt{29}}$ units

(D) 4 units

Ans. C

54. The sine of the angle between the straight line $\dfrac{x-2}{3} = \dfrac{y-3}{4} = \dfrac{4-z}{-5}$ are the plane $2x - 2y + z = 5$ is

(A) $\dfrac{1}{5\sqrt{2}}$

(B) $\dfrac{2}{5\sqrt{2}}$

(C) $\dfrac{3}{50}$

(D) $\dfrac{3}{\sqrt{50}}$

Ans. A

55. The equation $xy = 0$ in three-dimensional space represents

(A) A pair of straight lines

(B) A plane

(C) A pair of planes at right angles

(D) A pair of parallel planes

Ans. C

56. The plane containing the point $(3, 2, 0)$ and the line $\dfrac{x-3}{1} = \dfrac{y-6}{5} = \dfrac{z-4}{4}$ is

(A) $x - y + z = 1$　　　　　　　　　(B) $x + y + z = 5$

(C) $x + 2y - z = 1$　　　　　　　　(D) $2x - y + z = 5$

Ans. A

57. Corner points of the feasible region for an LPP are $(0, 2)$, $(3, 0)$, $(6, 0)$, $(6, 8)$ and $(0, 5)$. Let $z = 4x + 6y$ be the objective function. The minimum value of z occurs at

(A) Only $(0, 2)$

(B) Only $(3, 0)$

(C) The mid-point of the line segment joining the points $(0, 2)$ and $(3, 0)$

(D) Any point on the line segment joining the points $(0, 2)$ and $(3, 0)$

Ans. D

58. A die is thrown 10 times. The probability that an odd number will come up at least once is

(A) $\dfrac{11}{1024}$　　　　　　　　　(B) $\dfrac{1013}{1024}$

(C) $\dfrac{1023}{1024}$　　　　　　　　(D) $\dfrac{1}{1024}$

Ans. C

59. A random variable X has the following probability distribution:

X	0	1	2
$P(X)$	$\dfrac{25}{36}$	k	$\dfrac{1}{36}$

If the mean of the random variable X is $\dfrac{1}{3}$, then the variance is

(A) $\dfrac{1}{18}$　　　　　　　　　(B) $\dfrac{5}{18}$

(C) $\dfrac{7}{18}$　　　　　　　　(D) $\dfrac{11}{18}$

Ans. B

60. If a random variable X follows the binomial distribution with parameters $n = 5$, p and $P(X = 2) = 9P(X = 3)$, then p is equal to

(A) 10　　　　　　　　　(B) $\dfrac{1}{10}$

(C) 5　　　　　　　　　(D) $\dfrac{1}{5}$

Ans. B

KCET-2024 TEST PAPER WITH ANSWER KEY

(HELD ON FRIDAY 19TH APRIL 2024)

> **PHYSICS**

1. An induced current of 2 A flows through a coil. The resistance of the coil is $10\ \Omega$. What is the change in magnetic flux associated with the coil in 1 ms ?

   (A) 0.2×10^{-2} Wb

   (B) 2×10^{-2} Wb

   (C) 22×10^{-2} Wb

   (D) 0.22×10^{-2} Wb

Ans. B

2. A square loop of side length 'a' is moving away from an infinitely long current carrying conductor at a constant speed 'v' as shown. Let 'x' be the instantaneous distance between the long conductor and side AB. The mutual inductance (M) of the square loop - long conductor pair changes with time (t) according to which of the following graphs ?
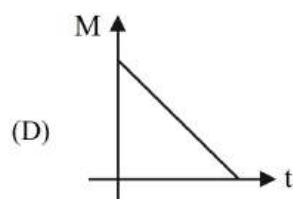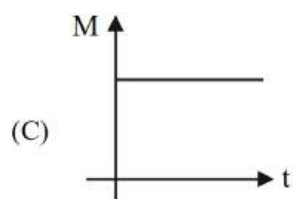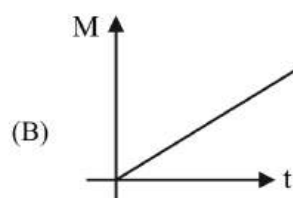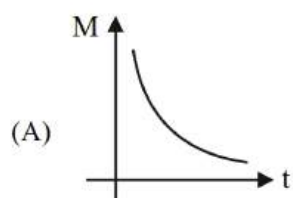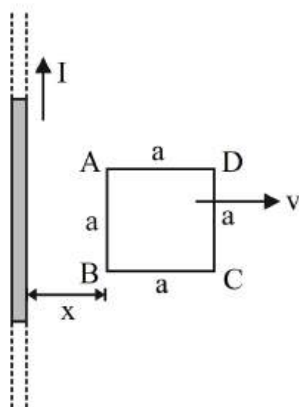
Ans. A

3. Which of the following combinations should be selected for better tuning of an LCR circuit used for communication ?

   (A) $R = 20\ \Omega,\ L = 1.5$ H, $C = 35\ \mu F$

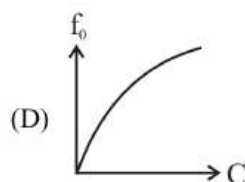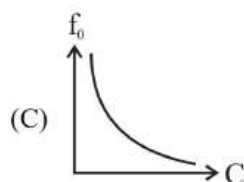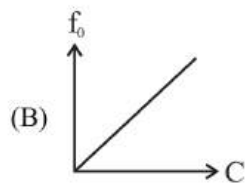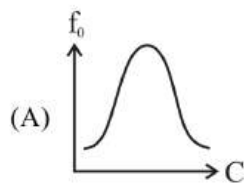   (B) $R = 25\ \Omega,\ L = 2.5$ H, $C = 45\ \mu F$

   (C) $R = 25\ \Omega,\ L = 1.5$ H, $C = 45\ \mu F$

   (D) $R = 15\ \Omega,\ L = 3.5$ H, $C = 30\ \mu F$
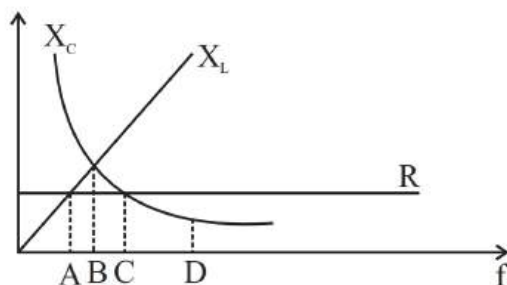
Ans. D

4. In an LCR series circuit, the value of only capacitance C is varied. The resulting variation of resonance frequency f_0 as a function of C can be represented as

(A)

(B)

(C)

(D)

Ans. C

5. The figure shows variation of R, X_L and X_C with frequency 'f' in a series LCR circuit. Then for what frequency point is the circuit capacitive ?

(A) B   (B) C
(C) A   (D) C

Ans. C

6. Electromagnetic waves are incident normally on a perfectly reflecting surface having surface area A. If I is the intensity of the incident electromagnetic radiation and c is the speed of light in vacuum, the force exerted by the electromagnetic wave on the reflecting surface is

(A) $\dfrac{2IA}{c}$ (B) $\dfrac{IA}{c}$

(C) $\dfrac{IA}{2c}$ (D) $\dfrac{I}{2Ac}$

Ans. A

7. The final image formed by an astronomical telescope is
(A) real, erect and diminished   (B) virtual, inverted and diminished
(C) real, inverted and magnified   (D) virtual, inverted and magnified

Ans. D

8. If the angle of minimum deviation is equal to angle of a prism for an equilateral prism, then the speed of light inside the prism is _____

(A) $3 \times 10^8 \text{ ms}^{-1}$

(B) $2\sqrt{3} \times 10^8 \text{ ms}^{-1}$

(C) $\sqrt{3} \times 10^8 \text{ ms}^{-1}$

(D) $\dfrac{\sqrt{3}}{2} \times 10^8 \text{ ms}^{-1}$

Ans. C

9. A luminous point object O is placed at a distance 2R from the spherical boundary separating two transparent media of refractive indices n_1 and n_2 as shown, where R is the radius of curvature of the spherical surface.

If $n_1 = \dfrac{4}{3}$, $n_2 = \dfrac{3}{2}$ and R = 10 cm, the image is obtained at a distance from P equal to
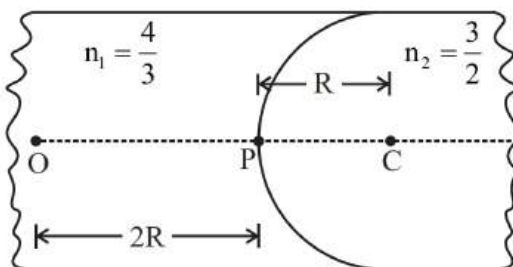
(A) 30 cm in the rarer medium

(B) 30 cm in the denser medium

(C) 18 cm in the rarer medium

(D) 18 cm in the denser medium

Ans. A

10. An equiconvex lens of radius of curvature 14 cm is made up of two different materials. Left half and right half of vertical portion is made up of material of refractive index 1.5 and 1.2 respectively as shown in the figure. If a point object is placed at a distance of 40 cm, calculate the image distance.
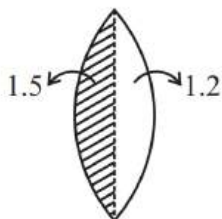
(A) 25 cm

(B) 50 cm

(C) 35 cm

(D) 40 cm

Ans. D

11. A galaxy is moving away from the Earth so that a spectral line at 600 nm is observed at 601 nm. Then the speed of the galaxy with respect to the Earth is

(A) 500 km s^{-1}

(B) 50 km s^{-1}

(C) 200 km s^{-1}

(D) 20 km s^{-1}

Ans. A

12. Three polaroid sheets are co-axially placed as indicated in the diagram. Pass axes of the polaroids 2 and 3 make 30° and 90° with pass axis of polaroid sheet 1. If I_0 is the intensity of the incident unpolarised light entering sheet 1, the intensity of the emergent light through sheet 3 is
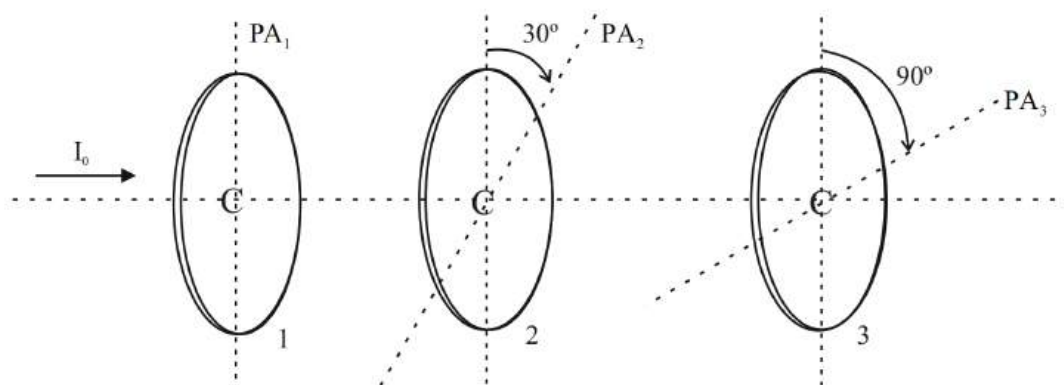
(A) Zero

(B) $\dfrac{3I_0}{32}$

(C) $\dfrac{3I_0}{8}$

(D) $\dfrac{3I_0}{16}$

Ans. B

13. In Young's double slit experiment, an electron beam is used to produce interference fringes of width β_1. Now the electron beam is replaced by a beam of protons with the same experimental set-up and same speed. The fringe width obtained is β_2. The correct relation between β_1 and β_2 is

(A) $\beta_1 = \beta_2$

(B) No fringes are formed

(C) $\beta_1 < \beta_2$

(D) $\beta_1 > \beta_2$

Ans. D

14. Light of energy E falls normally on a metal of work function $\dfrac{E}{3}$. The kinetic energies (K) of the photo electrons are

(A) $K = \dfrac{2E}{3}$

(B) $K = \dfrac{E}{3}$

(C) $0 \le K \le \dfrac{2E}{3}$

(D) $0 \le K \le \dfrac{E}{3}$

Ans. C

15. The photoelectric work function for photo metal is 2.4 eV. Among the four wavelengths, the wavelength of light for which photo-emission does not take place is

(A) 200 nm

(B) 300 nm

(C) 700 nm

(D) 400 nm

Ans. C

16. In alpha particle scattering experiment, if v is the initial velocity of the particle, then the distance of closest approach is d. If the velocity is doubled, then the distance of closest approach becomes

(A) 4d   (B) 2d

(C) $\dfrac{d}{2}$ (D) $\dfrac{d}{4}$

Ans. D

17. The ratio of area of first excited state to ground state of orbit of hydrogen atom is

(A) 1 : 16   (B) 1 : 4
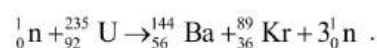
(C) 4 : 1   (D) 16 : 1

Ans. C

18. The ratio of volume of Al^{27} nucleus to its surface area is (Given $R_0 = 1.2 \times 10^{-15}$ m)

(A) 2.1×10^{-15} m   (B) 1.3×10^{-15} m

(C) 0.22×10^{-15} m   (D) 1.2×10^{-15} m

Ans. D

19. Consider the nuclear fission reaction

$${}^{1}_{0}n + {}^{235}_{92}U \rightarrow {}^{144}_{56}Ba + {}^{89}_{36}Kr + 3{}^{1}_{0}n \ .$$

Assuming all the kinetic energy is carried away by the fast neutrons only and total binding energies of ${}^{235}_{92}U$, ${}^{144}_{56}Ba$ and ${}^{89}_{36}Kr$ to be 1800 MeV, 1200 MeV and 780 MeV respectively, the average kinetic energy carried by each fast neutron is (in MeV)

(A) 200   (B) 180

(C) 67   (D) 60

Ans. D

20. The natural logarithm of the activity R of a radioactive sample varies with time t as shown. At t = 0, there are N_0 undecayed nuclei. Then N_0 is equal to [Take $e^2 = 7.5$]
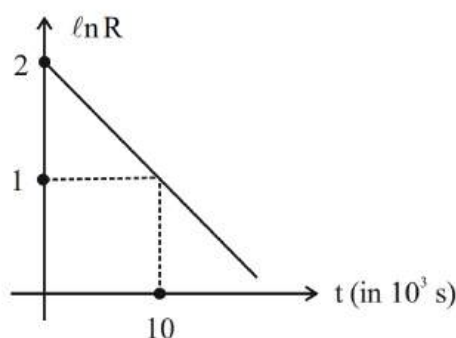
(A) 7,500   (B) 3,500

(C) 75,000   (D) 1,50,000

Ans. C

21. Depletion region in an unbiased semiconductor diode is a region consisting of

(A) Both free electrons and holes   (B) Neither free electrons nor holes
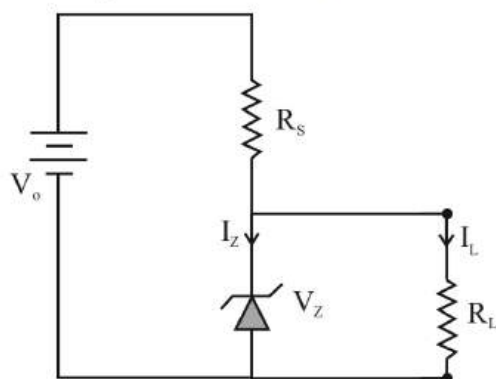
(C) Only free electrons   (D) Only holes

Ans. B

22. The upper level of valence band and lower level of conduction band overlap in the case of

    (A) Silicon   (B) Copper

    (C) Carbon   (D) Germanium

Ans. B

23. In the diagram shown, the Zener diode has a reverse breakdown voltage of V_Z. The current through the load resistance R_L is I_L. The current through the Zener diode is

    (A) $\dfrac{V_o - V_Z}{R_S}$ (B) $\dfrac{V_o - V_Z}{R_L}$

    (C) $\dfrac{V_Z}{R_L}$ (D) $\left(\dfrac{V_o - V_Z}{R_S}\right) - I_L$

Ans. D

24. A p-n junction diode is connected to a battery of emf 5·7 V in series with a resistance $5\ k\Omega$ such that it is forward biased. If the barrier potential of the diode is 0·7 V, neglecting the diode resistance, the current in the circuit is

    (A) 1.14 mA   (B) 1 mA

    (C) 1 A   (D) 1.14 A

Ans. B

25. Dimensional formula for activity of a radioactive substance is

    (A) $M^0 L^1 T^{-1}$ (B) $M^0 L^{-1} T^0$

    (C) $M^0 L^0 T^{-1}$ (D) $M^{-1} L^0 T^0$

Ans. C

26. An athlete runs along a circular track of diameter 80 m. The distance travelled and the magnitude of displacement of the athlete when he covers $\dfrac{3}{4}^{th}$ of the circle is (in m)

    (A) $60\pi, 40\sqrt{2}$ (B) $40\pi, 60\sqrt{2}$

   (C) $120\pi, 80\sqrt{2}$ (D) $80\pi, 120\sqrt{2}$

Ans. A

27. Among the given pair of vectors, the resultant of two vectors can never be 3 units. The vectors are

(A) 1 unit and 2 units

(B) 2 units and 5 units

(C) 3 units and 6 units

(D) 4 units and 8 units

Ans. D

28. A block of certain mass is placed on a rough inclined plane. The angle between the plane and the horizontal is 30°. The coefficients of static and kinetic frictions between the block and the inclined plane are 0.6 and 0.5 respectively. Then the magnitude of the acceleration of the block is [Take $g = 10$ ms^{-2}]
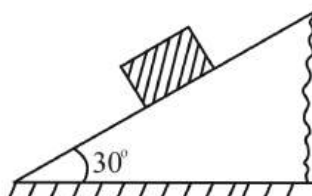
(A) 2 ms^{-2}

(B) zero

(C) 0.196 ms^{-2}

(D) 0.67 ms^{-2}

Ans. B

29. A particle of mass 500 g is at rest. It is free to move along a straight line. The power delivered to the particle varies with time according to the following graph :
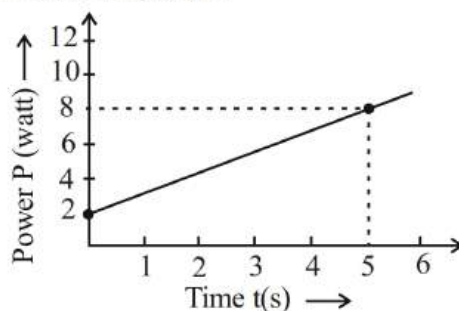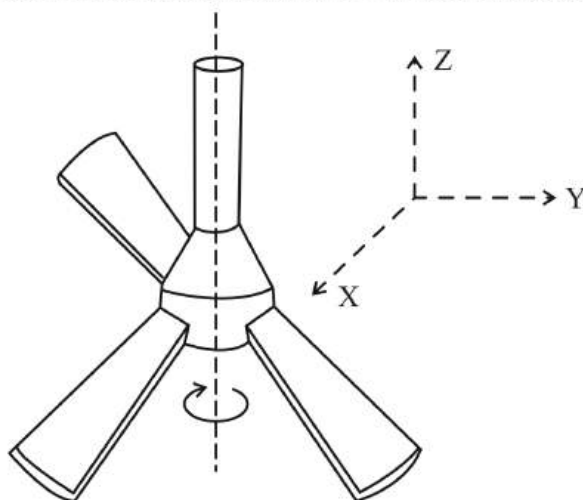

The momentum of the particle at t = 5 s is

(A) $2\sqrt{2}$Ns

(B) $5\sqrt{2}$Ns

(C) 5 Ns

(D) 5.5 Ns

Ans. C

30. A ceiling fan is rotating around a fixed axle as shown. The direction of angular velocity along.
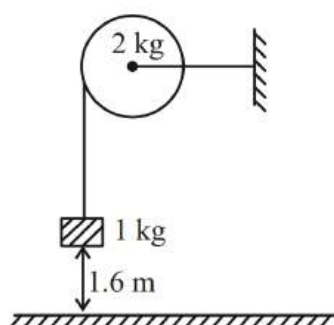
(A) $+\hat{j}$

(B) $-\hat{j}$

(C) $+\hat{k}$

(D) $-\hat{k}$

Ans. D

31. A body of mass 1 kg is suspended by a weightless string which passes over a frictionless pulley of mass 2 kg as shown in the figure. The mass is released from a height of 1.6 m from the ground. With what velocity does it strike the ground ?

(A) 16 ms^{-1}

(B) 8 ms^{-1}

(C) $4\sqrt{2} \text{ ms}^{-1}$

(D) 4 ms^{-1}

Ans. D

32. What is the value of acceleration due to gravity at a height equal to half the radius of the Earth, from its surface ?

(A) 4.4 ms^{-2}

(B) 6.5 ms^{-2}

(C) Zero

(D) 9.8 ms^{-2}

Ans. A

33. A thick metal wire of density ρ and length 'L' is hung from a rigid support. The increase in length of the wire due to its own weight is (Y = Young's modulus of the material of the wire)

(A) $\dfrac{\rho g L}{Y}$

(B) $\dfrac{1}{2} \dfrac{\rho g L^2}{Y}$

(C) $\dfrac{\rho g L^2}{Y}$

(D) $\dfrac{1}{4Y} \rho g L^2$

Ans. B

34. Water flows through a horizontal pipe of varying cross-section at a rate of $0.314 \text{ m}^3\text{s}^{-1}$. The velocity of water at a point where the radius of the pipe is 10 cm is

(A) 0.1 ms^{-1}

(B) 1 ms^{-1}

(C) 10 ms^{-1}

(D) 100 ms^{-1}

Ans. C

35. A solid cube of mass m at a temperature θ_0 is heated at a constant rate. It becomes liquid at temperature θ_1 and vapour at temperature θ_2. Let s_1 and s_2 be specific heats in its solid and liquid states respectively. If L_f and L_v are latent heats of fusion and vaporisation respectively, then the minimum heat energy supplied to the cube until it vaporises is

(A) $ms_1(\theta_1 - \theta_0) + ms_2(\theta_2 - \theta_1)$

(B) $mL_f + ms_2(\theta_2 - \theta_1) + mL_v$

(C) $ms_1(\theta_1 - \theta_0) + mL_f + ms_2(\theta_2 - \theta_1) + mL_v$

(D) $ms_1(\theta_1 - \theta_0) + mL_f + ms_2(\theta_2 - \theta_0) + mL_v$

Ans. C

36. One mole of an ideal monoatomic gas is taken round the cyclic process MNOM. The work done by the gas is
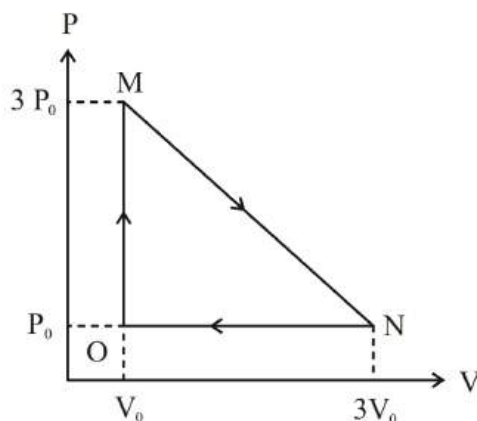
(A) $4.5 P_0 V_0$

(B) $4 P_0 V_0$

(C) $9 P_0 V_0$

(D) $2 P_0 V_0$

Ans. D

37. The ratio of molar specific heats of oxygen is

(A) 1.4

(B) 1.67

(C) 1.33

(D) 1.28

Ans. A

38. For a particle executing simple harmonic motion (SHM), at its mean position

(A) Velocity is zero and acceleration is maximum

(B) Velocity is maximum and acceleration is zero

(C) Both velocity and acceleration are maximum

(D) Both velocity and acceleration are zero

Ans. B

39. A motor-cyclist moving towards a huge cliff with a speed of 18 kmh^{-1}, blows a horn of source frequency 325 Hz. If the speed of the sound in air is 330 ms^{-1}, the number of beats heard by him is

(A) 5

(B) 4

(C) 10

(D) 7

Ans. C

40. A body has a charge of $-3.2\,\mu C$. The number of excess electrons it has is

(A) 5.12×10^{25}

(B) 5×10^{12}

(C) 2×10^{13}

(D) 5.12×10^{13}

Ans. C

41. A point of charge A of +10 μC and another point charge B of +20 μC are kept 1 m apart in free space. The electrostatic force on A due to B is $\vec{F_1}$ and the electrostatic force on B due to A is $\vec{F_2}$. Then

(A) $\vec{F_1} = -2\vec{F_2}$

(B) $\vec{F_1} = -\vec{F_2}$

(C) $2\vec{F_1} = -\vec{F_2}$

(D) $\vec{F_1} = \vec{F_2}$

Ans. B

42. A uniform electric field $E = 3 \times 10^5 \, NC^{-1}$ is acting along the positive Y-axis. The electric flux through a rectangle of area $10\,cm \times 30\,cm$ whose plane is parallel to the Z-X plane is

(A) 12×10^3 Vm

(B) 9×10^3 Vm

(C) 15×10^3 Vm

(D) 18×10^3 Vm

Ans. B

43. The total electric flux through a closed spherical surface of radius 'r' enclosing an electric dipole of dipole moment 2aq is (Given ε_0 = permittivity of free space)

(A) Zero

(B) $\dfrac{q}{\varepsilon_0}$

(C) $\dfrac{2q}{\varepsilon_0}$

(D) $\dfrac{8\pi r^2 q}{\varepsilon_0}$

Ans. A

44. Under electrostatic condition of a charged conductor, which among the following statements is true?

(A) The electric field on the surface of a charged conductor is $\dfrac{\sigma}{2\varepsilon_0}$, where σ is the surface charge density

(B) The electric potential inside a charged conductor is always zero

(C) Any excess charge resides on the surface of the conductor

(D) The net electric field is tangential to the surface of the conductor

Ans. C

45. A cube of side 1 cm contains 100 molecules each having an induced dipole moment of $0.2 \times 10^{-6} \, C - m$ in an external electric field of $4\,NC^{-1}$. The electric susceptibility of the material is _____ $C^2 N^{-1} m^{-2}$.

(A) 50

(B) 5

(C) 0.5

(D) 0.05

Ans. Bonus / or best among option according to unit B.

46. A capacitor of capacitance $5\,\mu F$ is charged by a battery of emf 10 V. At an instant of time, the potential difference across the capacitor is 4 V and the time rate of change of potential difference across the capacitor is $0.6\,Vs^{-1}$. Then the time rate at which energy is stored in the capacitor at that instant is

(A) $12\,\mu W$

(B) $3\,\mu W$

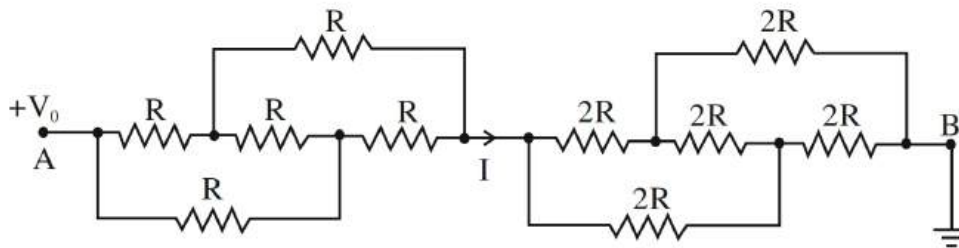(C) Zero

(D) $30\,\mu W$

Ans. A

47. $\vec{E}$ is the electric field inside a conductor whose material has conductivity σ and resistivity ρ. The current density inside the conductor is $\vec{j}$. The correct form of Ohm's law is

(A) $\vec{E} = \sigma \vec{j}$

(B) $\vec{j} = \rho \vec{E}$

(C) $\vec{E} = \rho \vec{j}$

(D) $\vec{E} \cdot \vec{j} = \rho$

Ans. C

48. In the circuit shown, the end A is at potential V_0 and end B is grounded. The electric current I indicated in the circuit is

(A) $\dfrac{V_0}{R}$

(B) $\dfrac{2V_0}{R}$

(C) $\dfrac{3V_0}{R}$

(D) $\dfrac{V_0}{3R}$

Ans. D

49. The electric current flowing through a given conductor varies with time as shown in the graph below. The number of free electrons which flow through a given cross-section of the conductor in the time interval $0 \leq t \leq 20 \, s$ is
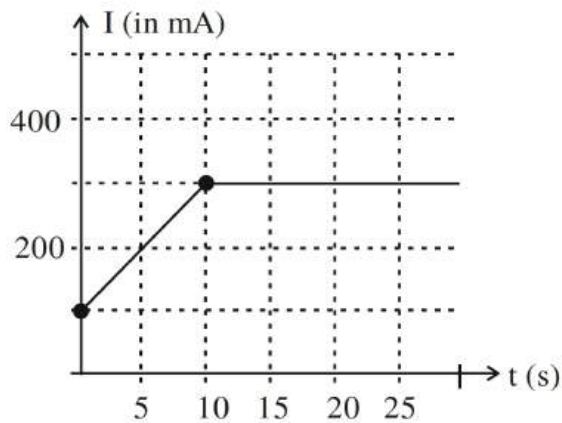
(A) 3.125×10^{19}

(B) 1.6×10^{19}

(C) 6.25×10^{18}

(D) 1.625×10^{18}

Ans. A

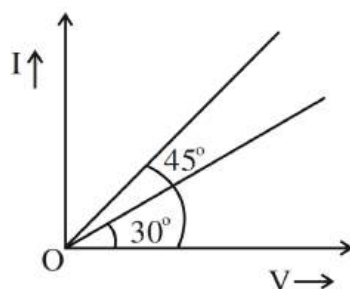**50.** The I – V graph for a conductor at two different temperatures 100°C and 400°C is as shown in the figure. The temperature coefficient of resistance of the conductor is about (in per degree Celsius)

(A) 3×10^{-3}

(B) 6×10^{-3}

(C) 9×10^{-3}

(D) 12×10^{-3}

Ans. A

**51.** An electric bulb of 60 W, 120 V is to be connected to 220 V source. What resistance should be connected in series with the bulb, so that the bulb glows properly ?

(A) 50Ω

(B) 100Ω

(C) 200Ω

(D) 288Ω

Ans. C

52. In an experiment to determine the temperature coefficient of resistance of a conductor, a coil of wire X is immersed in a liquid. It is heated by an external agent. A meter bridge set up is used to determine resistance of the coil X at different temperatures. The balancing points measured at temperatures $t_1 = 0°C$ and $t_2 = 100°C$ are 50 cm and 60 cm respectively. If the standard resistance taken out is S = 4 Q. in both trials, the temperature coefficient of the coil is

(A) $0.05^0 C^{-1}$

(B) $0.02^0 C^{-1}$

(C) $0.005^0 C^{-1}$
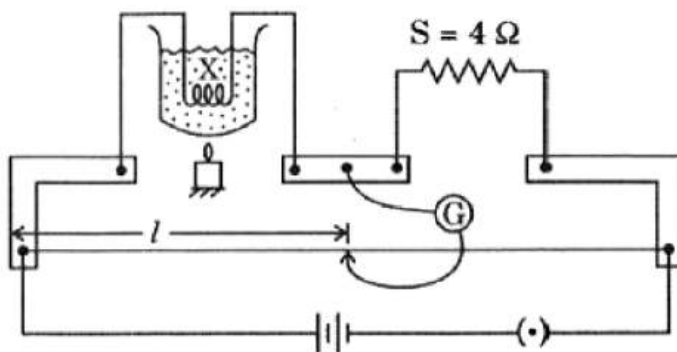
(D) $2.0^0 C^{-1}$

Ans. C

53. A moving electron produces

(A) only electric field

(B) both electric and magnetic field

(C) only magnetic field

(D) neither electric nor magnetic field

Ans. B

54. A coil having 9 turns carrying a current produces magnetic field B_1 at the centre. Now the coil is rewounded into 3 turns carrying same current. Then the magnetic field at the centre $B_2 = $ _____

(A) $\dfrac{B_1}{9}$

(B) $9B_1$

(C) $3B_1$

(D) $\dfrac{B_1}{3}$

Ans. A

55. A particle of specific charge $\dfrac{q}{m} = \pi C\,kg^{-1}$ is projected from the origin towards positive x-axis with the velocity $10\ ms^{-1}$ in a uniform magnetic field $\vec{B} = -2\hat{k}T$. The velocity $\vec{v}$ particle after time $t = \dfrac{1}{12}$ s will be (in ms^{-1})

(A) $5\left(\hat{i} + \hat{j}\right)$

(B) $5\left(\hat{i} + \sqrt{3}\hat{j}\right)$

(C) $5\left(\sqrt{3}\hat{i} - \hat{j}\right)$

(D) $5\left(\sqrt{3}\hat{i} + \hat{j}\right)$

Ans. D

56. The magnetic field at the centre of a circular coil of radius R carrying current I is 64 times the magnetic field at a distance x on its axis from the centre of the coil. Then the value of x is

(A) $\dfrac{R}{4}\sqrt{15}$

(B) $R\sqrt{3}$

(C) $\dfrac{R}{4}$

(D) $R\sqrt{15}$

Ans. D

57. Magnetic hysterisis is exhibited by _____ magnetic materials.
(A) only para
(B) only dia
(C) only ferro
(D) both para and ferro

Ans. C

58. Magnetic susceptibility of Mg at 300 K is 1.2×10^{-5}. What is its susceptibility at 200 K ?
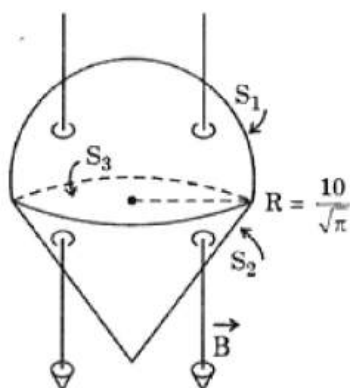
(A) 18×10^{-5}

(B) 180×10^{-5}

(C) 1.8×10^{-5}

(D) 0.18×10^{-5}

Ans. C

59. A uniform magnetic field of strength B = 2 mT exists vertically downwards. These magnetic field lines pass through a closed surface as shown in the figure. The closed surface consists of a hemisphere S_1 a right circular cone S_2 and a circular surface S_3. The magnetic flux through S_1 and S_2 are respectively

(A) $\phi_{S_1} = -20\mu Wb, \phi_{S_2} = +20\mu Wb$

(B) $\phi_{S_1} = +20\mu Wb, \phi_{S_2} = -20\mu Wb$

(C) $\phi_{S_1} = -40\mu Wb, \phi_{S_2} = +40\mu Wb$

(D) $\phi_{S_1} = +40\mu Wb, \phi_{S_2} = -40\mu Wb$

Ans. Bonus / Radius unit is not given

60. In the figure, a conducting ring of certain resistance is falling towards a current carrying straight long conductor. The ring and conductor are in the same plane. Then the
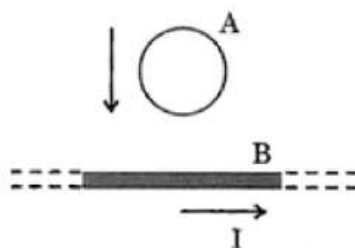
(A) Induced electric current is zero

(B) Induced electric current is anticlockwise

(C) Induced electric current is clockwise

(D) Ring will come to rest

Ans. C

KCET-2024 TEST PAPER WITH ANSWER KEY

(HELD ON FRIDAY 19TH APRIL 2024)

CHEMISTRY

1. Select the correct statement :
   (A) Roasting involves heating the ore in the absence of air
   (B) Calcination involves heating the ore above its melting point
   (C) Smelting involves heating the ore with suitable reducing agent and flux below its melting point
   (D) Calcination of calcium carbonate is endothermic

   Ans. D

2. NO_2 gas is :
   (A) Colourless, neutral   (B) Colourless, acidic
   (C) Brown, acidic   (D) Brown, neutral

   Ans. C

3. Identify the *incorrect* statement from the following :
   (A) Oxides of nitrogen in the atmosphere can cause depletion of the ozone layer
   (B) Ozone absorbs the intense ultraviolet radiation of Sun
   (C) Depletion of ozone layer is because of its chemical reactions with chlorofluoro alkanes
   (D) Ozone absorbs infrared radiation

   Ans. D

4. Gold sol in *not* a :
   (A) Macromolecular colloid   (B) Lyophobic colloid
   (C) Multimolecular colloid   (D) Negatively charged colloid

   Ans. A

5. The *incorrect* statement about Hall-Heroult process is :
   (A) Carbon anode is oxidised to CO and CO_2
   (B) Na_3AlF_6 helps to decrease the melting point of the electrolyte
   (C) CaF_2 helps to increase the conductivity of the electrolyte
   (D) Oxidation state of oxygen changes in the overall cell reaction

   Ans. D

6. Propanone and Propanal are :
   (A) Position isomers   (B) Functional isomers
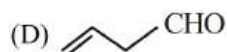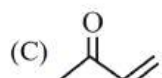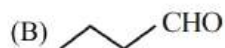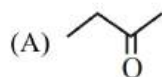   (C) Chain isomers   (D) Geometrical isomers

   Ans. B

7. Sodium enthanoate on heating with soda lime give 'X'. Electrolysis of aqueous solution of sodium ethanoate gives 'Y', 'X' and 'Y' respectively are :
   (A) Methane and Ethane   (B) Methane and Methane
   (C) Ethane and Methane   (D) Ethane and Ethane

   Ans. A

8. But-1-yne on reaction with dil. H_2SO_4 in presence of Hg^{2+} ions at 333 K gives :

(A)

(B) CHO

(C)

(D) CHO

Ans. A

9. Biologically active adrenaline and ephedrine used to increase blood pressure contain :

(A) Primary amino group

(B) Secondary amino group

(C) Tertiary amino group

(D) Quaternary ammonium salt

Ans. B

10. In the reaction

Aniline $\xrightarrow[\text{dil. HCl}]{\text{NaNO}_2}$ P $\xrightarrow[\text{NaOH}]{\text{Phenol}}$ Q,
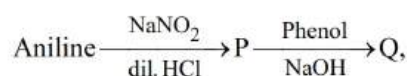
'Q' is :

(A) $C_6H_5N_2Cl$

(B) ortho-hydroxyazobenzene

(C) para-hydroxyazobenzene

(D) meta-hydroxyazobenzene

Ans. C

11. The female sex hormone which is responsible for the development of secondary female characteristics and participates in the control of menstrual cycle is:

(A) Testosterone

(B) Estradiol

(C) Insulin

(D) Thyroxine

Ans. B

12. The type of linkage present between nucleotides is :

(A) Phosphoester linkage

(B) Phosphodiester linkage

(C) Amide linkage

(D) Glycosidic linkage

Ans. B

13. $\alpha - D - (+) -$ glucose and $\beta - D - (+) -$ glucose are :

(A) Enantiomers

(B) Conformers

(C) Epimers

(D) Anomers

Ans. D

14. Which of the following set of polymers are used as fibre?

(i) Teflon (ii) Starch (iii) Terylene (iv) Orlon

(A) (i) and (ii)

(B) (ii) and (iii)

(C) (iii) and (iv)

(D) (i) and (iv)

Ans. C

15. The biodegradable polymer obtained by polymerisation of Glycine and Aminocaproic acid is :

(A) Nylon 6

(B) PHBV

(C) Nylon 2 - Nylon 6

(D) Nylon 6, 10

Ans. C

16. The compound

is :

(A) Sucralose   (B) Aspartame

(C) Saccharin   (D) Alitame

Ans. Bonus

17. Which one of the following is a cationic detergent ?

(A) Cetyltrimethylammonium bromide   (B) Sodium dodecylbenzene sulphonate

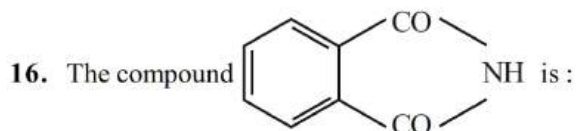(C) Dodecylbenzene sulphonic acid   (D) Dodecylbenzene

Ans. A

18. In the following scheme of reaction,

C_2H_5Cl
- $\xrightarrow{X} C_2H_5F$
- $\xrightarrow{Y} CH_2=CH_2$
- $\xrightarrow{Z} C_4H_{10}$
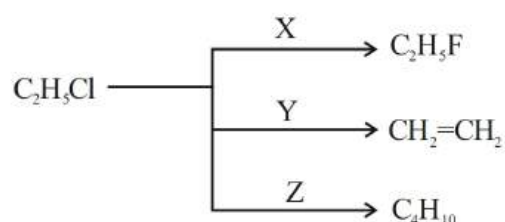
X, Y and Z respectively are :

(A) AgF, alcoholic KOH and benzene

(B) HF, aqueous KOH and Na in dry ether

(C) Hg_2F_2, alcoholic KOH and Na in dry ether

(D) CoF_2, aqueous KOH and benzene

Ans. C

19. 8.8 g of monohydric alcohol added to ethyl magnesium iodide in ether liberates 2240 cm³ of ethane at STP. This monohydric alcohol when oxidised using pyridinium-chlorochromate, forms a carbonyl compound that answers silver mirror test (Tollens' test). The monohydric alcohol is :

(A) butan-2-ol   (B) 2, 2-dimethyl propan-1-ol

(C) pentan-2-ol   (D) 2, 2-dimethyl ethan-1-ol

Ans. B

20. When a tertiary alcohol 'A' $(C_4H_{10}O)$ reacts with 20% H_3PO_4 at 358 K, it gives a compound 'B' (C_4H_8) as a major product. The IUPAC name of the compound 'B' is :

(A) But-1-ene   (B) But-2-ene

(C) Cyclobutane   (D) 2-Methylpropene

Ans. D

21. PCC is :

(A) $K_2Cr_2O_7 +$ Pyridine

(B) $CrO_3 + CHCl_3$

(C) $CrO_3 + H_2SO_4$

(D) A complex of chromium trioxide with pyridine + HCl

Ans. D

22. On treating 100 mL of 0.1 M aqueous solution of the complex $CrCl_3 \cdot 6H_2O$ with excess of $AgNO_3$, 2.86 g of AgCl was obtained. The complex is :

(A) $\left[Cr(H_2O)_3 Cl_3 \right].3H_2O$

(B) $\left[Cr(H_2O)_4 Cl_2 \right]Cl.2H_2O$

(C) $\left[Cr(H_2O)_5 Cl \right]Cl_2.H_2O$

(D) $\left[Cr(H_2O)_6 Cl_3 \right]$

Ans. C

23. The complex compounds $\left[Co(NH_3)_5 SO_4 \right]Br$ and $\left[Co(NH_3)_5 Br \right]SO_4$ are :

(A) Coordination isomers

(B) Geometrical isomers

(C) Optical isomers

(D) Ionisation isomer

Ans. D

24. Which of the following statements are true about $\left[CoF_6 \right]^{3-}$ ion?

I. The complex has octahedral geometry.

II. Coordination number of Co is 3 and oxidation state is + 6.

III. The complex is sp^3d^2 hybridised.

IV. It is a high spin complex.

(A) I, II and IV

(B) I, III and IV

(C) II and IV

(D) II, III and IV

Ans. B

25. A haloalkane undergoes S_N2 or S_N1 reaction depending on :

(A) Solvent used in the reaction

(B) Low temperature

(C) The type of halogen atom

(D) Stability of the haloalkane

Ans. A

26. 2-Methyl propane can be prepared by Wurtz reaction. The haloalkanes taken along with metallic sodium and dry ether are :

(A) chloromethane and 2-chloropropane

(B) chloroethane and chloromethane

(C) chloroethane and 1-chloropropane

(D) chloromethane and 1-chloropropane

Ans. A

27. In the analysis of III group basic radicals of salts, the purpose of adding $NH_4Cl_{(s)}$ to NH_4OH is :

(A) To increase the concentration of OH^- ions.

(B) To precipitate the radicals of group IV and V.

(C) To suppress the dissociation of NH_4OH.

(D) To introduce Cl^- ions.

Ans. C

28. Solubility product of CaC_2O_4 at a given temperature in pure water is $4 \times 10^{-9} \left(mol\ L^{-1} \right)^2$. Solubility of CaC_2O_4 at the same temperature is :

(A) 6.3×10^{-5} mol L^{-1}

(B) 2×10^{-5} mol L^{-1}

(C) 2×10^{-4} mol L^{-1}

(D) 6.3×10^{-4} mol L^{-1}

Ans. A

29. In the reaction between moist SO_2 and acidified permanganate solution :

(A) SO_2 is oxidised to SO_4^{2-}
MnO_4^- is reduced to Mn^{2+}

(B) SO_2 is reduced to S
MnO_4^- is oxidised to MnO_4

(C) SO_2 is oxidised to SO_3^{2-}
MnO_4^- is reduced to MnO_2

(D) SO_2 is reduced to H_2S
MnO_4^- is oxidised to MnO_4

Ans. A

30. Which one of the following properties is generally not applicable to ionic hydrides ?

(A) Non-volatile
(B) Non-conducting in solid state
(C) Crystalline
(D) Volatile

Ans. D

31. Which one of the following nitrate will decompose to give NO_2 on heating ?

(A) $NaNO_3$
(B) KNO_3

(C) $RbNO_3$
(D) $LiNO_3$

Ans. D

32. Which of the following halides cannot be hydrolysed ?

(A) CCl_4
(B) $SiCl_4$

(C) $GeCl_4$
(D) $SnCl_4$

Ans. A

33. 0.48 g of an. organic compound on complete combustion produced 0.22 g of CO_2. The percentage of C in the given organic compound is :

(A) 25
(B) 50
(C) 12.5
(D) 87.5

Ans. C

34. In the given sequence of reactions, identify 'P', 'Q', 'R' and 'S' respectively.

$$CH_2 = CH_2 \xrightarrow{P} \underset{\underset{Br}{|} \underset{Br}{|}}{CH_2 - CH_2} \xrightarrow{Q} CH_2 = CH - Br \xrightarrow{R} CH \equiv CH \xrightarrow{S} C_6H_6$$
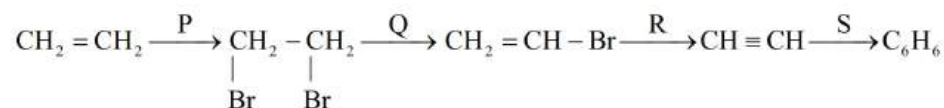
(A) Br_2, Alc. KOH, NaOH, Al_2O_3
(B) HBr, Alc, KOH, CaC_2, $KMnO_4$

(C) HBr, Alc. KOH, $NaNH_2$, Red hot iron tube
(D) Br_2, Alc. KOH, $NaNH_2$, Red hot iron tube

Ans. D

35. The first chlorinated organic insecticide prepared is :

(A) Gammexane
(B) Chloroform
(C) $COCl_2$
(D) DDT

Ans. D

36. Which of the following crystals has the unit cell such that $a = b \neq c$ and $\alpha = \beta = 90°$, $\gamma = 120°$?

(A) Zinc blende
(B) Graphite
(C) Cinnabar
(D) Potassium dichromate

Ans. B

37. MnO exhibits :

   (A) Ferrimagnetism
   (B) Antiferromagnetism
   (C) Ferromagnetism
   (D) Paramagnetism

Ans. B

38. The number of atoms in 4.5 g of a face-centred cubic crystal with edge length 300 pm is :

   (Given density = 10 g cm^{-3} and $N_A = 6.022 \times 10^{23}$).

   (A) 6.6×10^{20}
   (B) 6.6×10^{23}
   (C) 6.6×10^{19}
   (D) 6.6×10^{22}

Ans. D

39. Vapour pressure of a solution containing 18 g of glucose and 178.2 g of water at 100°C is :

   (Vapour pressure of pure water at 100°C = 760 torr)

   (A) 76.0 torr
   (B) 752.4 torr
   (C) 7.6 torr
   (D) 3207.6 torr

Ans. B

40. A mixture of phenol and aniline shows negative deviation from Raoult's law. This is due to the formation of:

   (A) Polar covalent bond
   (B) Non-polar covalent bond
   (C) Intermolecular Hydrogen bond
   (D) Intramolecular Hydrogen bond

Ans. C

41. Which one of the following pairs will show positive deviation from Raoult's Law?

   (A) Water - HCl
   (B) Benzene - Methanol
   (C) Water - HNO_3
   (D) Acetone - Chloroform

Ans. B

42. How many Coulombs are required to oxidise 0.1 mole of H_2O to oxygen?

   (A) 1.93×10^5 C
   (B) 1.93×10^4 C
   (C) 3.86×10^4 C
   (D) 9.65×10^3 C

Ans. B

43. A current of 3 A is passed through a molten calcium salt for 1 hr 47 min 13 sec. The mass of calcium deposited is : (Molar mass of $Ca = 40 \, g \, mol^{-1}$)

   (A) 6.0 g
   (B) 2.0 g
   (C) 8.0 g
   (D) 4.0 g

Ans. D

44. The value of 'A' in the equation $\lambda_m = \lambda_m^\circ - A\sqrt{C}$ is same for the pair :

   (A) NaCl and $CaCl_2$
   (B) $CaCl_2$ and $MgSO_4$
   (C) NaCl and KBr
   (D) $MgCl_2$ and NaCl

Ans. C

45. For the reaction, $A \rightleftharpoons B, E_a = 50\,kJ\,mol^{-1}$ and $\Delta H = -20\,kJ\,mol^{-1}$. When a catalyst is added, E_a decreases by $10\,kJ\,mol^{-1}$. What is the E_a for the backward reaction in the presence of catalyst?

(A) $60\,kJ\,mol^{-1}$ (B) $40\,kJ\,mol^{-1}$

(C) $70\,kJ\,mol^{-1}$ (D) $20\,kJ\,mol^{-1}$

Ans. A

46. For the reaction $PCl_5 \rightarrow PCl_3 + Cl_2$, rate and rate constant are $1.02 \times 10^{-4}\,mol\,L^{-1}\,s^{-1}$ and $3.4 \times 10^{-5}\,s^{-1}$ respectively at a given instant. The molar concentration of PCl_5 at that instant is :

(A) $8.0\,mol\,L^{-1}$ (B) $3.0\,mol\,L^{-1}$

(C) $0.2\,mol\,L^{-1}$ (D) $2.0\,mol\,L^{-1}$

Ans. B

47. Which one of the following does not represent Arrhenius equation?

(A) $\log k = \log A - \dfrac{Ea}{2.303\,RT}$ (B) $k = A\,e^{-Ea/RT}$

(C) $\ln k = -\dfrac{Ea}{RT} + \ln A$ (D) $k = A\,e^{Ea/RT}$

Ans. D

48. Identify the incorrect statement :

(A) Values of colligative properties of colloidal solution are of small order compared to values of true solution

(B) Tyndall effect is observed only when diameter of the dispersed particles is not much smaller than wavelength of incident light

(C) Colour of colloidal solution depends on the wavelength of light scattered by the dispersed particles

(D) Brownian movement is due to balanced bombardment of molecules of dispersion medium on colloidal particles

Ans. D

49. For the coagulation of positively charged hydrated ferric-oxide sol, the flocculating power of the ions is in the order :

(A) $PO_4^{3-} > SO_4^{2-} > Cl^- > \left[Fe(CN)_6\right]^{4-}$ (B) $Cl^- > SO_4^{2-} > PO_4^{3-} > \left[Fe(CN)_6\right]^{4-}$

(C) $SO_4^{2-} = Cl^- = PO_4^{3-} = \left[Fe(CN)_6\right]^{4-}$ (D) $\left[Fe(CN)_6\right]^{4-} > PO_4^{3-} > SO_4^{2-} > Cl^-$

Ans. D

50. For which one of the following mixtures is composition uniform throughout?

(A) Sand and water   (B) Grains and pulses with stone

(C) Mixture of oil and water   (D) Dilute aqueous solution of sugar

Ans. D

51. The energy associated with first orbit is He^+ is

(A) $0\,J$ (B) $-8.72 \times 10^{-18}\,J$

(C) $-4.58 \times 10^{-18}\,J$ (D) $-0.545 \times 10^{-18}\,J$

Ans. B

52. A metalloid is

(A) Bi

(B) Sb

(C) P

(D) Se

Ans. B

53. A pair of isoelectric species having bond order of one is:

(A) N_2, CO

(B) N_2, NO^+

(C) O_2^{2-}, F_2

(D) CO, NO^+

Ans. C

54. Identify the *wrong* relation for real gases

(A) $Z = \dfrac{V_{ideal}}{V_{real}}$

(B) $P_{ideal} = P_{real} + \dfrac{an^2}{V^2}$

(C) $V_{real} = V_{ideal} - nb$

(D) $\left(p + \dfrac{a}{V^2}\right)(V - b) = RT$

Ans. A & C

55. From the diagram
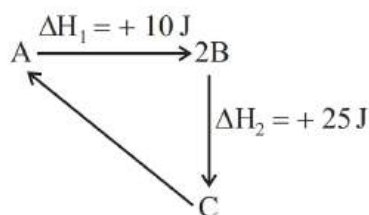
$\Delta_r H$ for the reaction $C \rightarrow A$ is

(A) +35J

(B) −15J

(C) −35J

(D) +15J

Ans. C

56. The transition element ($\approx 5\%$) present with lanthanoid metal in Misch metal is:

(A) Mg

(B) Fe

(C) Zn

(D) Co

Ans. B

57. Match the following:

I. Zn^{2+} i. d^8 configuration

II. Cu^{2+} ii. colourless

III. Ni^{2+} iii. $\mu = 1.73$ BM

	I	II	II
(A)	i	ii	iii
(B)	ii	iii	i
(C)	ii	i	iii
(D)	i	iii	ii

Ans. B

58. Which of the following statements related to lanthanoids is **incorreect**?

(A) Lanthanoids are silvery white soft metals

(B) Samarium shows +2 oxidation state

(C) Ce^{+4} solutions are widely used as oxidising agents in titrimetric analysis

(D) Colour of Lanthanoid ion in solution is due to d–d transition

Ans. **D**

59. The correct decreasing order of boiling point of hydrogen halides is

(A) HF > HCl > HBr > HI

(B) HI > HBr > HCl > HF

(C) HF > HI > HBr > HCl

(D) HI > HF > HBr > HCl

Ans. **C**

60. The synthetically produced radioactive noble gas by the collision of $^{249}_{98}Cf$ with $^{48}_{20}Ca$ is

(A) Radon

(B) Radium

(C) Oganesson

(D) Xenon

Ans. **C**

KCET-2024 TEST PAPER WITH ANSWER KEY

(HELD ON THURSDAY 18TH APRIL 2024)

BIOLOGY

1. The typical 'lub-dub' sounds heard during heartbeat are produced due to

(A) Closure of semilunar valves

(B) Closure of bicuspid and tricuspid valves

(C) Closure of bicuspid and tricuspid valves followed by semilunar valves

(D) Opening of bicuspid and tricuspid valves followed by semilunar valves

Ans. C

2. The functional unit of contraction is a

(A) Portion of myofibril between two successive Z-lines

(B) Portion of myofibril between two successive M-lines

(C) Centre of the H-zone

(D) Centre of the I-band

Ans. A

3. Match the parts of the brain given in List I with their functions given in List II.

List I	*List II*
(Parts of the brain)	*(Functions)*
1. Medulla oblongata	p. Body temperature
2. Hypothalamus	q. Olfaction
3. Cerebral cortex	r. Respiration
4. Limbic system	s. Motor function

Choose the correct option from the following :

(A) 1-p, 2-r, 3-s, 4-q   (B) 1-q, 2-s, 3-r, 4-p

(C) 1-s, 2-p, 3-q, 4-r   (D) 1-r, 2-p, 3-s, 4-q

Ans. D

4. Hydra reproduces asexually by producing

(A) Zoospores   (B) Conidia

(C) Buds   (D) Gemmule

Ans. C

5. When male and female gametes are morphologically distinct, the condition is known as

(A) Homogametes   (B) Heterogametes

(C) Hermaphrodites   (D) Sexual dimorphism

Ans. B

6. The role of Filiform apparatus in synergids is to

(A) Protect the egg apparatus   (B) Endosperm formation

(C) Guide the entry of pollen tube   (D) Prevention of gamete entry

Ans. C

7. Transfer of pollen grains from the anther to the stigma of another flower of the same plant is called

(A) Xenogamy   (B) Autogamy

(C) Cleistogamy   (D) Geitonogamy

Ans. D

8. Match the content of List I with List II :

List I		List II	
1.	Polyembryony	p.	Black pepper
2.	Perisperm	q.	Banana
3.	False fruit	r.	Lemon
4.	Parthenocarpy	s.	Apple

Choose the correct option from the following :

(A) 1-r, 2-p, 3-s, 4-q   (B) 1-p, 2-r, 3-s, 4-q

(C) 1-q, 2-p, 3-s, 4-r   (D) 1-r, 2-s, 3-p, 4-q

Ans. A

9. Which of the following hormones is *not* secreted by human placenta ?

(A) Progestogen   (B) hCG

(C) Estrogen   (D) LH

Ans. D

10. In human females, the endometrium of uterus consists of

(A) Smooth muscle   (B) Glandular layer

(C) Adipose layer   (D) Cartilaginous layer

Ans. B

11. If two primary spermatocytes and two primary oocytes undergo meiosis simultaneously, what will be the ratio of spermatozoa and ova produced at the end of the gametogenesis ?

(A) 2 : 1   (B) 4 : 1

(C) 6 : 2   (D) 1 : 2

Ans. B

12. The Government of India legalised MTP with some strict regulations in the year

(A) 1951   (B) 1961

(C) 1971   (D) 2001

Ans. C

13. The process in which a small part of the vas deferences is removed or tied up through a small incision, is called

(A) MTP   (B) Vasectomy

(C) Tubectomy   (D) GIFT

Ans. B

14. Test cross in Pea plant is

(A) A cross between F_2 tall plant and recessive parent

(B) A cross between F_2 dwarf plant and recessive parent

(C) A cross between F_2 tall plant with dominant parent

(D) A cross between two F_1 plants

Ans. A

15. The genotype ratio of incomplete dominance is

(A) 3 : 1   (B) 1 : 2 : 1

(C) 1 : 1 : 2   (D) 9 : 3 : 3 : 1

Ans. B

16. Find the incorrect statement among the following :

(A) In sex linked recessive traits the gene is transmitted from unaffected carrier female to some of male progeny

(B) Accumulation of phenylpyruvic acid in brain results in mental retardation

(C) Individuals affected by Down's Syndrome will have congenital heart defect and are more intelligent

(D) Turner's Syndrome is caused due to the absence of one X-chromosome

Ans. **C**

17. In a dihybrid cross between a true breeding round yellow seeded and true breeding wrinkled green seeded pea plant, the ratio of segregation of round and wrinkled seed traits in F_2 is

(A) 9 : 1   (B) 3 : 1   (C) 9 : 3   (D) 3 : 3

Ans. **B**

18. Following representation P, Q and R denote few steps of Griffith Experiment. Identify the correct one(s).

P. R strain $\rightarrow$ Inject into mice $\rightarrow$ Mice die

Q. S strain (Heat killed) $\rightarrow$ Inject into mice $\rightarrow$ Mice die

R. R strain $\rightarrow$ Inject into mice $\rightarrow$ Mice live

(A) P only   (B) R only   (C) P and R   (D) Q and R

Ans. **B**

19. In tRNA the region that binds with mRNA is

(A) Anticodon loop of tRNA   (B) Amino acid acceptor end of tRNA

(C) Amino acyl synthetase loop of tRNA   (D) Ribosomal binding loop of tRNA

Ans. **A**

20. The mRNA has Untranslated Regions (UTRs)

(A) At 3'-end beyond Terminator codon

(B) At 5'-end before AUG

(C) At both 3'-end and 5'-end beyond Terminator codon and before AUG respectively

(D) AUG and Terminator codon flanks the UTR

Ans. **C**

21. In Structural gene, the template DNA strand has nucleotide sequences 3'-ATGCATGCATGCATGC-5'. Find the correct and complimentary nucleotide sequence on coding strand.

(A) 5'-ATGCATGCATGCATGC-3'   (B) 3'-GCATGCATGCATGCAT-5'

(C) 5'-TACGTACGTACGTACG-3'   (D) 3'-TACGTACGTACGTACG-5'

Ans. **C**

22. Read the following statements :

Statement I : All vertebrates develop a row of vestigial gill slits during embryonic stage.

Statement II : Embryos always pass through the adult stages of other animals

Which of the following options is correct with reference to these statements?

(A) Statement I is correct, Statement II is incorrect

(B) Statement I is incorrect, Statement II is correct

(C) Both Statements I and II are correct

(D) Both Statements I and II are incorrect

Ans. **A**

23. Stanley Miller simulated the conditions of pre-biotic earth using spark-discharge apparatus. Which organic compounds were observed by him on analysing the end product of his experiment?

(A) Pigments (B) Fats

(C) Nitrogen bases (D) Amino acids

Ans. D

24. Most ape-like ancestral primate was

(A) Dryopithecus (B) Ramapithecus

(C) Australopithecus (D) Neanderthal man

Ans. A

25. The principle of vaccination is based on which property of immune system?

(A) Memory (B) Specificity

(C) Diversity (D) Plasticity

Ans. A

26. Genome of HIV replicates in the macrophages with the help of an enzyme called

(A) DNA Polymerase (B) RNA Polymerase

(C) Reverse Transcriptase (D) DNA Ligase

Ans. C

27. Read the following statements :

Statement I : Morphine is obtained by acetylation of Heroin.

Statement II : Cannabinoids are known for their effect on cardiovascular system.

Which of the following options is correct with reference to these statements?

(A) Both Statement I and II are correct

(B) Statement I is correct and Statement II is incorrect

(C) Statement I is incorrect and Statement II is correct

(D) Both Statements I and II are incorrect

Ans. C

28. Mule is the result of

(A) Out-crossing (B) Cross-breeding

(C) Interspecific hybridization (D) Out-breeding

Ans. C

29. Identify the bacterial disease among the following :

(A) Brown rust of wheat (B) Tobacco mosaic disease

(C) Black rot of crucifers (D) Late blight of potato

Ans. C

30. Match the nutrients given in List I with the source in List II :

List I		List II
1.	Vitamin A	p.	Bitter gourd
2.	Single cell protein	q.	Beans
3.	Vitamin C	r.	Carrots
4.	Protein	s.	Spirulina spp

Choose the correct option from the following :

(A) 1- p, 2 - q, 3 - r, 4 - s (B) 1 - r, 2 - s, 3 - p, 4 - q

(C) 1 - p, 2 - r, 3 - s, 4 - q (D) 1 - q, 2 - s, 3 - p, 4 - r

Ans. B

31. The chemical substances which are produced by some microbes which can kill or retard the growth of other microbes are known as

(A) Statins   (B) Streptokinases

(C) Cyclosporins   (D) Antibiotics

Ans. D

32. Select the correct statement from the following :

(A) Methanobacterium is an aerobic bacteria found in the rumen of cattle

(B) Biogas is produced by the activity of aerobic bacteria

(C) Biogas is pure methane

(D) Activated sludge in sediment tanks is a rich source of aerobic bacteria

Ans. D

33. Which of these enzymes is required to cleave a plasmid ?

(A) Ligase   (B) Endonuclease

(C) Exonuclease   (D) Polymerase

Ans. B

34. DNA polymerase of *Thermus aquaticus* is

(A) Thermolabile   (B) Thermophobic

(C) Exonuclease   (D) Thermostable

Ans. D

35. If a recombinant DNA bearing gene for resistance to Ampicillin is transferred into *E. coli* cells, host cells become transformed into Ampicillin resistant cells. What happens when these *E. coli* are grown on medium containing Ampicillin ?

(A) Non-transformants will grow and transformants will die

(B) Non-transformants will die and transformants will grow

(C) Both non-transformants and transformants will die

(D) Both non-transformants and transformants will grow

Ans. B

36. Which of the following is based upon the principle of antigen-antibody interaction ?

(A) PCR   (B) ELISA

(C) rDNA technology   (D) Gel Electrophoresis

Ans. B

37. Which among the following is used to treat Emphysema ?

(A) Human Hormone $-\alpha-$ Antitrypsin   (B) Human $-\alpha-$ Interferon

(C) Human protein $-\alpha-$ Antitrypsin   (D) Human $-\alpha-$ Lactalbumin

Ans. C

38. Homeostasis is a condition where the organisms

(A) Maintain a constant internal environment in an everchanging external environment

(B) Do not maintain a constant internal environment

(C) Change their internal environment according to their external environment

(D) Change their internal environment when the external environment is constant

Ans. A

39. Which of the following is **not** a parasitic adaptation?

(A) Loss of unnecessary sense organs

(B) Absence of adhesive organs or suckers

(C) Loss of digestive system

(D) High reproductive capacity

Ans. B

40. Match the type of adaptation given in List I with their examples given in List II. Select the option showing correct combination.

List I		*List II*
(Type of adaptation)		*(Examples)*
1. Biochemical adaptation	p.	Desert lizards
2. Behavioural adaptation	q.	Deep sea fishes
3. Physiological adaptation	r.	Opuntia
4. Morphological adaptation	s.	Kangaroo rats

(A) 1-q, 2-r, 3-s, 4-p

(B) 1-p, 2-q, 3-r, 4-s

(C) 1-q, 2-p, 3-s, 4-r

(D) 1-s, 2-r, 3-q, 4-p

Ans. C

41. The annual net primary productivity of the biosphere is approximately

(A) 170 billion tons

(B) 55 billion tons

(C) 170 million tons

(D) 55 million tons

Ans. A

42. The natural reservoir of phosphorus is

(A) Rocks

(B) Soil solution

(C) Detritus

(D) Atmosphere

Ans. A

43. The sequence of communities of primary succession in water is

(A) Phytoplanktons → Scrubs → Free floating hydrophytes → Rooted hydrophytes → Grasses → Trees

(B) Phytoplanktons → Free floating hydrophytes → Rooted hydrophytes → Trees → Scrubs

(C) Free floating hydrophytes → Scrubs → Phytoplanktons → Rooted hydrophytes → Grasses → Trees

(D) Phytoplanktons → Rooted hydrophytes → Free floating hydrophytes → Reed swamps → Marsh meadows → Scrubs → Trees

Ans. D

44. A strict protection of biodiversity hotspots could reduce the ongoing mass extinction by almost

(A) 20%

(B) 25%

(C) 30%

(D) 35%

Ans. C

45. Identify the *incorrect* match with respect to recently extinct animals and their place of extinction according to IUCN Red List.

(A) Dodo-Mauritius

(B) Quagga-Africa

(C) Thylacine-Australia

(D) Steller's Sea Cow-North America

Ans. D

46. According to the hypothesis proposed by environmental biologists, a relatively constant environment in tropics promotes

(A) Niche specialization and lesser species diversity.

(B) Niche specialization and greater species diversity.

(C) Niche diversity and lesser species specialization.

(D) Niche diversity and greater species specialization.

Ans. B

47. In the prevention of air pollution, the role of scrubber is to remove

(A) Particulate SO_2 (B) Liquid SO_2

(C) Gaseous SO_2 (D) Liquid SO_3

Ans. C

48. Match List I wit h List II and choose the correct answer.

List I	*List II*
1. Nitrogen rich fertilizers	p. Ozone depletion
2. Carbon dioxide	q. Eutrophication
3. Carbon monoxide	r. Greenhouse effect
4. CFC s	s. Air pollutant

(A) 1-p, 2-q, 3-r , 4-s   (B) 1-q, 2-r , 3-s, 4-p

(C) 1-r, 2-s , 3-p, 4- q   (D) 1-s, 2-p, 3-q, 4- r

Ans. B

49. Which of the following exhibits haplodiplontic lifecycle ?

(A) Fucus   (B) Chlamydomonas

(C) Gelidium   (D) Ectocarpus

Ans. D

50. Identify the phylum which shows the following characteristics :

(1) Animals are exclusively marine, radially symmetrical and diploblastic

(2) Body bears eight external rows of ciliated comb plates which help in locomotion.

(3) Digestion is both extracellular and intracellular.

(4) Reproduction only by sexual modes.

(A) Coelenterata   (B) Mollusca

(C) Arthropoda   (D) Ctenophora

Ans. D

51. When a flower has both stamens and carpels it is described as

(A) Asexual   (B) Unisexual

(C) Bisexual   (D) Dioecious

Ans. C

52. Ciliated epithelial cells are present in

(A) Kidneys   (B) Intestines

(C) Blood Vessels   (D) Bronchioles

Ans. D

53. Which of the following statement is correct with reference to vacuoles ?

(A) It is membrane bound and contains storage proteins and lipids.

(B) It is membrane bound and contains water and excretory substance.

(C) It lacks membrane and contains air.

(D) It lacks membrane and contains water and excretory substances.

Ans. B

54. Exoskeleton of Arthropods is made up of unique complex polysaccharide known as

(A) Hyaluronic Acid   (B) Chitin

(C) Waxes   (D) Cellulose

Ans. B

55. The enzyme Recombinase is required at which stage of Meiosis I ?

(A) Pachytene   (B) Zygotene

(C) Diplotene   (D) Diakinesis

Ans. A

56. The water potential of pure water is

(A) One   (B) More than one

(C) Zero   (D) Less than zero

Ans. C

57. Match the pigments given in List I with their colour in chromatogram given in List II.

List I (Pigments)	List II (Colour in chromatogram)
1. Chlorophyll 'b'	p. Yellow orange
2. Carotenoids ,	q. Orange red
3. Chlorophyll 'a'	r. Yellow
4. Xanthophylls.	s. Blue green
	t. Yellow green

Choose the correct option from the following :

(A) 1-s, 2-t, 3-r, 4-q   (B) 1-t, 2-p, 3-s, 4- r

(C) l-p, 2-q, 3-r, 4-t   (D) 1-t, 2-p, 3-r, 4-s

Ans. B

58. Which is the intermediate compound that links the end product of Glycolysis wit h TCA Cycle ?

(A) Acetyl CoA   (B) Pyruvic Acid

(C) OAA   (D) Citric Acid

Ans. A

59. Auxins : Apical dominance : : Gibberellins_____.

(A) Adventitious shoot formation   (B) Accelerates abscission

(C) Closure of stomata   (D) Bolting

Ans. D

60. The term Uremia refers to

(A) Accumulation of Urea in blood.   (B) Presence of Glucose in the urine.

(C) Accumulation of Uric acid in blood. (D) Accumulation of Uric acid in kidneys.

Ans. A