ECET 2016 (T.S)

Set Code : **Y2**

Booklet Code : **B**

Note: *(1) Answer **all** questions.*

*(2) Each question carries **1** mark. There are no negative marks.*

*(3) Answer to the questions must be entered only on OMR Response Sheet provided separately by completely shading with **Ball Point Pen (Blue/Black),** only one of the circles 1, 2, 3 or 4 provided against each question, and which is most appropriate to the question.*

(4) The OMR Response Sheet will be invalidated if the circle is shaded using pencil or if more than one circle is shaded against each question.

MATHEMATICS

1. $\lim\limits_{x \to 0} \left[\dfrac{e^{2x} - 1 - 2x}{x^2}\right] =$

(1) 1 (2) 2 (3) 3 (4) $\frac{1}{2}$

2. $\lim\limits_{x \to 0} \left[\dfrac{\sin x}{x}\right]^{\frac{1}{x^2}} =$

(1) 0 (2) 1 (3) e^{-1} (4) $e^{\frac{-1}{6}}$

3. If $x^y = e^{x-y}$, then $\dfrac{dy}{dx} =$

(1) $\dfrac{\log x}{(1+\log x)^2}$ (2) $\dfrac{1}{1+\log x}$ (3) $\left(\dfrac{\log x}{1+\log x}\right)^2$ (4) $\dfrac{e^x}{1+e^x}$

4. If $f(x) = \left(x^2 + 2x + 1\right)^{10}$, then $f'(x) =$

(1) $20(x+1)^{19}$ (2) $20(1+x)^{10}$ (3) $20(1+x)^{21}$ (4) $20(1+x)^{11}$

5. If $f(x) = 7^{x^3+3x}$; $(x > 0)$, then $f'(x) =$

(1) $(x^2+1)\,7^{x^3+3x}$ (2) $3(x^2+1)\,7^{x^3+3x} \cdot \log 7$

(3) $(x^2+1) \cdot 7^{x^3+3x} \cdot \log 7$ (4) $(x^2+1)\,(27)^{x^3+3x}$

6. If $f(x) = |\sin x - \cos x|$, then $f'\left(\frac{\pi}{2}\right) =$

(1) -1 (2) 0 (3) $\frac{1}{\sqrt{2}}$ (4) 1

7. If $y = \frac{1}{x^2+1}$, then $\frac{d^4y(0)}{dx^4} =$

(1) 12 (2) 24 (3) 6 (4) 1

8. The normal to the curve $x = a(1 + \cos\theta)$; $y = a \sin\theta$ at 'θ' always passes through the point

(1) (0,0) (2) (a,0) (3) (0,a) (4) (a,a)

9. The maximum and minimum values of $f(x) = \sin^2 x + \cos^4 x$ are

(1) 1,0 (2) $\frac{1}{2}, \frac{1}{2}$ (3) 1, $\frac{1}{2}$ (4) 1, $\frac{3}{4}$

10. If $u = \log(\tan x + \tan y)$, then $(\sin 2x)\frac{\partial u}{\partial x} + (\sin 2y)\frac{\partial u}{\partial y} =$

(1) 1 (2) 0 (3) 2 (4) $\frac{1}{2}$

11. If $u = e^{x+y} + f(x) + g(y)$, then $\frac{\partial^2 u}{\partial x \partial y} =$

(1) e^{x-y} (2) e^{xy} (3) e^{x+y} (4) 0

12. The value of $\int x^2\sqrt{1+x^3}\,dx =$

(1) $\frac{1}{9}\left(1+x^3\right)^{\frac{3}{2}} + C$ (2) $\frac{2}{9}\left(1+x^3\right)^{\frac{3}{2}} + C$

(3) $\frac{1}{3}\left(1+x^3\right)^{\frac{2}{3}} + C$ (4) $\left(1+x^3\right)^{\frac{3}{2}} + C$

13. $\int \frac{1}{\left(e^x + e^{-x}\right)^2}\,dx =$

(1) $\frac{-1}{2\left(e^{2x}+1\right)} + C$ (2) $\frac{1}{e^{2x}+1} + C$ (3) $\frac{e^x}{1+e^{-x}} + C$ (4) $e^x + C$

14. $\int \frac{x^5}{1+x^{12}}\,dx$ =

(1) $\frac{1}{6}\tan^{-1}\left(x^6\right)+C$ (2) $\frac{1}{3}\tan^{-1}\left(x^3\right)+C$

(3) $\frac{1}{6}\cot^{-1}\left(x^3\right)+C$ (4) $\frac{1}{9}\tan^{-1}\left(x^3\right)+C$

15. $\int_0^{\pi/2} \frac{\cos x\,dx}{(1+\sin x)(2+\sin x)}$ =

(1) $\log\left(\frac{1}{3}\right)$ (2) $\log\left(\frac{2}{3}\right)$ (3) $\log\left(\frac{4}{3}\right)$ (4) log2

16. $\int_0^1 \frac{\log(1-x)}{x}\,dx$ =

(1) $\frac{\pi^2}{2}$ (2) $\frac{\pi^2}{3}$ (3) $\frac{\pi^2}{12}$ (4) $\frac{-\pi^2}{6}$

17. $\int \frac{xe^x}{(x+1)^2}\,dx$ =

(1) $\frac{e^x}{e^x+1}+C$ (2) $\frac{e^{-x}}{1+x^2}+C$ (3) $\frac{e^x}{1+x}+C$ (4) $\frac{e^{-x}}{1+x}+C$

18. $\int_0^{\pi/4} \log(1+\tan\theta)\,d\theta$ =

(1) $\frac{1}{8}\log 2$ (2) $\frac{\pi}{2}\log 2$ (3) $\frac{\pi}{8}\log 2$ (4) $\frac{-\pi}{6}\log 2$

19. The area of the cardioid $r = a(1-\cos\theta)$ is

(1) $\frac{3a^2\pi}{2}$ (2) $\frac{a^2\pi}{2}$ (3) $\frac{a\pi^2}{2}$ (4) $\frac{3a\pi^2}{2}$

20. The area bounded by the curve $y = 7x - 10 - x^2$ and the x-axis is

(1) $\frac{9}{2}$ sq.units (2) $\frac{1}{3}$ sq.units (3) $\frac{2}{3}$ sq.units (4) $\frac{3}{5}$ sq.units

21. The area bounded by the curve $x^2 = 4ay$ and the line $y = 2a$ is

(1) $\frac{\sqrt{2}}{3} \cdot a^2$ sq.units (2) $\frac{8\sqrt{2}}{3} a^2$ sq.units

(3) $\frac{8}{3}a^2$ sq.units (4) $\frac{1}{\sqrt{3}} a^2$ sq.units

22. The area of the ellipse $x = a \cos t$; $y = b \sin t$ is

(1) $\frac{\pi}{2} ab$ (2) $\frac{\pi}{3} ab$ (3) $\pi a^2 b^2$ (4) πab

23. The length of the arc of the equiangular spiral $r = e^{\theta \cot \alpha}$, between the points for which the radii vectors are r_1 and r_2 is

(1) $r_1 \cdot r_2 \sec \alpha$ (2) $r_1 \cdot r_2 \operatorname{cosec} \alpha$ (3) $(r_2 - r_1)\sec \alpha$ (4) $(r_1 - r_2)\operatorname{cosec} \alpha$

24. Solution of $yxdy = (y^2 - 1)\, dx$ is

(1) $y^2 = \frac{x^2}{2} + 1$ (2) $y^2 = cx^2 + 1$ (3) $y = \sqrt{x + \frac{1}{2}}$ (4) $y = cx^2 + x$

25. Solution of $e^x \cot y\, dx + (1 - e^x) \operatorname{cosec}^2 y\, dy = 0$ is

(1) $e^{-x} \cot y = C$ (2) $(e^x - 1)\cot y = C$

(3) $e^x + \cot y.x = C$ (4) $(e^x - \cot y) + 1 = C$

26. Solution of $(D^2 - 2D + 1)y = e^{-x}$ is

(1) $y = (c_1 + c_2 x)e^x + \frac{1}{4} e^{-x}$ (2) $y = (c_1 + c_2 x)e^{-x} + \frac{1}{4} e^x$

(3) $y = (c_1 + c_2 x)e^x + \frac{1}{2} e^x$ (4) $y = c_1 \cos x + c_2 \sin x + \frac{1}{4} e^{-x}$

27. Solution of $xe^{x^2 + y} = y \frac{dy}{dx}$ is

(1) $(y+1)e^{-y} + \frac{1}{2} e^{x^2} = C$ (2) $ye^{-y} + \frac{1}{2} e^{x^2} = C$

(3) $\left(y + \frac{1}{2} e^{x^2}\right) e^{-y} = C$ (4) $y = e^{-y} + 1 + \frac{1}{2} e^{x^2}$

28. The solution of $ydx + (x + x^2 y)\, dy = 0$ is

(1) $\log y = cx$ (2) $\log y = \frac{1}{xy} + c$

(3) $-\frac{1}{xy} + \log y = c$ (4) $\log \left(\frac{y}{x}\right) = c$

29. If $y - \cos x \frac{dy}{dx} = y^2(1 - \sin x)\cos x$; $y(0) = 1$, then $y\left(\frac{\pi}{3}\right) =$

(1) 0 (2) 1 (3) 2 (4) $\sqrt{3}$

30. If $A = \begin{bmatrix} -1 & 2 \\ 2 & 3 \end{bmatrix}$; $B = \begin{bmatrix} 3 & 0 \\ 1 & 1 \end{bmatrix}$, then $(A + B)^2 =$

(1) $\begin{bmatrix} 10 & 18 \\ 12 & 22 \end{bmatrix}$ (2) $\begin{bmatrix} 10 & 12 \\ 18 & 22 \end{bmatrix}$ (3) $\begin{bmatrix} 9 & 4 \\ 4 & 11 \end{bmatrix}$ (4) $\begin{bmatrix} 5 & 6 \\ 7 & 11 \end{bmatrix}$

31. If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$, then $A^2 =$

(1) $\begin{bmatrix} 9 & 8 & 7 \\ 8 & 8 & 8 \\ 8 & 7 & 9 \end{bmatrix}$ (2) $\begin{bmatrix} 8 & 7 & 9 \\ 9 & 8 & 9 \\ 7 & 8 & 9 \end{bmatrix}$ (3) $\begin{bmatrix} 9 & 8 & 8 \\ 8 & 9 & 8 \\ 8 & 8 & 9 \end{bmatrix}$ (4) $\begin{bmatrix} 6 & 7 & 8 \\ 7 & 6 & 8 \\ 7 & 8 & 9 \end{bmatrix}$

32. $\begin{vmatrix} a-b & m-n & x-y \\ b-c & n-p & y-z \\ c-a & p-m & z-x \end{vmatrix} =$

(1) abcmnpxyz (2) 1 (3) 0 (4) 3

33. The inverse of the matrix $A = \begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$ is

(1) $\begin{bmatrix} \cos\alpha & \sin\alpha \\ -\sin\alpha & \cos\alpha \end{bmatrix}$ (2) $\frac{1}{2}\begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$

(3) $\begin{bmatrix} -\cos\alpha & \sin\alpha \\ -\sin\alpha & \cos\alpha \end{bmatrix}$ (4) $\begin{bmatrix} \sin\alpha & \cos\alpha \\ -\cos\alpha & \sin\alpha \end{bmatrix}$

34. If $A = \begin{bmatrix} 4-5i & 3+4i \\ 2 & 4-5i \end{bmatrix}$, then adj A =

(1) $\begin{bmatrix} 4+5i & 3-4i \\ 2 & 4-5i \end{bmatrix}$ (2) $\begin{bmatrix} 4-5i & 3+4i \\ -2 & 4+5i \end{bmatrix}$

(3) $\begin{bmatrix} 4-5i & 3-4i \\ 2 & 4-5i \end{bmatrix}$ (4) $\begin{bmatrix} 4-5i & -3-4i \\ -2 & 4-5i \end{bmatrix}$

35. If $\frac{1-x+6x^2}{x-x^3} = \frac{A}{x} + \frac{B}{1-x} + \frac{C}{1+x}$, then A =

(1) 0 (2) 1 (3) 2 (4) 3

36. If $\frac{3+2i\sin\theta}{1-2i\sin\theta}$ is real, then the value of θ =

(1) $\frac{\pi}{6}$ (2) 0 (3) $\frac{\pi}{4}$ (4) $\frac{\pi}{8}$

37. $(1+i\sqrt{3})^9$ =

(1) -2^9 (2) 2^9 (3) -1 (4) 2

38. If $\left|\frac{z-i}{z+i}\right| = 1$, then the locus of z is

(1) x = 1 (2) y = 1 (3) x–axis (4) y–axis

39. If $\sin\theta + \sin^2\theta = 1$, then $\cos^8\theta + 2\cos^6\theta + \cos^4\theta$ =

(1) 1 (2) -1 (3) 2 (4) 0

40. $\sin\left[\cot^{-1}\left(\frac{2x}{1-x^2}\right) + \cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)\right]$ =

(1) 0 (2) -1 (3) $\frac{1}{2}$ (4) 1

41. If $\sin^{-1}x + \sin^{-1}y = \frac{2\pi}{3}$, then $\cos^{-1}x + \cos^{-1}y$ =

(1) π (2) $\pi + \frac{x}{2}$ (3) $\frac{\pi}{3}$ (4) $\frac{\pi}{4}$

42. Solution of $7\sin^2x + 3\cos^2x - 4 = 0$ is

(1) $n\pi \pm \frac{\pi}{2}$; $n \in z$ (2) $n\pi \pm \frac{\pi}{3}$; $n \in z$

(3) $n\pi \pm \frac{\pi}{4}$; $n \in z$ (4) $n\pi \pm \frac{\pi}{6}$; $n \in z$

43. If the sum of acute angles $\tan^{-1}x$ and $\tan^{-1}\left(\frac{1}{2}\right)$ is 45^0, then the values of x is equal to

(1) $\frac{1}{\sqrt{3}}$ (2) $\frac{1}{3}$ (3) $\frac{1}{\sqrt{2}}$ (4) $\frac{1}{2}$

44. If $z_1 = 8 + 3i$; $z_2 = 9 - 2i$, then $\frac{z_1}{z_2}$ =

(1) $\frac{11}{15}+\frac{43}{85}i$ (2) $\frac{66}{85}+\frac{43}{85}i$ (3) $\frac{55}{85}+\frac{42}{85}i$ (4) $\frac{66}{85}+\frac{78}{85}i$

45. If $z_1 = -2 + 2i$ and $z_2 = 3i$, then arg z_1z_2 =

(1) $\frac{3\pi}{2}$ (2) $\frac{3\pi}{4}$ (3) $\frac{-3\pi}{4}$ (4) π

46. The angle between the tangents from the point (4, –2) to the circle $x^2 + y^2 = 10$ is

(1) $\frac{\pi}{6}$ (2) $\frac{\pi}{4}$ (3) $\frac{\pi}{2}$ (4) $\frac{2\pi}{3}$

47. The value of 'a', if the line $2y - 5x = a$ touches the parabola $y^2 = 6x$ is

(1) $\frac{6}{5}$ (2) $\frac{4}{5}$ (3) $\frac{3}{5}$ (4) $\frac{2}{5}$

48. The pole of $2x + 3y = 1$ with respect to $\frac{x^2}{3}+\frac{y^2}{2} = 1$ is

(1) (3,4) (2) (4,6) (3) (5,5) (4) (6,6)

49. The equation of hyperbola whose vertices are (2, 5),(2, –1) is

(1) $\frac{(x-1)^2}{7}-\frac{(y-2)^2}{9}=1$ (2) $\frac{(x-2)^2}{7}-\frac{(y-2)^2}{9}=-1$

(3) $\frac{(x-2)^2}{9}-\frac{(y-1)^2}{9}$ (4) $\frac{(x-2)^2}{9}-\frac{(y-2)^2}{7}$

50. If $f(x)$ satisfies the functional equation $x^2f(x) + f(1 - x) = 2x - x^4$, then $f\left(\frac{1}{2}\right)$ =

(1) $\frac{1}{2}$ (2) $\frac{3}{4}$ (3) $\frac{1}{4}$ (4) $\frac{3}{2}$

ANSWERS

1) 2	2) 4	3) 1	4) 1	5) 2
6) 4	7) 1	8) 2	9) 4	10) 3
11) 3	12) 2	13) 1	14) 1	15) 3
16) 4	17) 3	18) 3	19) 4	20) 1
21) none	22) 4	23) 3	24) 2	25) 2
26) 1	27) 1	28) 3	29) 3	30) 2
31) 3	32) 3	33) 1	34) 4	35) 2
36) 2	37) 1	38) 3	39) 1	40) 4
41) 3	42) 4	43) 2	44) 2	45) none
46) 3	47) 1	48) 4	49) 2	50) 2

ECET PHYSICS (T.S) 2016

51. A body is falling freely from a height of 78.4 m. Its velocity on reaching ground is (given that $g = 9.8\ m/s^2$) ( )

(1) 19.6 m/s (2) 39.2 m/s (3) 78.4 m/s (4) 156.8 m/s

52. The maximum height reached by a ball thrown at an angle 60^0 to the horizontal with an initial velocity 9.8 m/s is (given that $g = m/s^2$)

(1) 7.35 m (2) 14.70 m (3) 29.4 m (4) 3.675 m

53. Which of the following statement is wrong pertaining to coefficient of static friction (μ_s)

(1) μ_s is different for different pairs of surfaces

(2) $\mu_s = 0$ when there is no applied force

(3) $\mu_s > 0$ when there is an applied force

(4) $\mu_s < 0$ when there is an huge applied force

54. If θ is the angle of inclination plane and α is the angle of repose then the body slides down with some accelaration when

(1) $\theta = \alpha$ (2) $\theta > \alpha$ (3) $\theta > \alpha$ (4) $\theta > 2\alpha$

55. The mass of a person in kg, if the work done in carrying a box of mass 20 kg through a vertical height of 10 m is 9800 J is ($g = 9.8\ ms^{-2}$)

(1) 80 (2) 40 (3) 60 (4) 70

56. The horse power of the engine required to lift 0.54×10^6 kg of coal in 30 minutes from a mine of 37.3 m deep is ($g = 9.8\ ms^{-2}$)

(1) 294 (2) 588 (3) 688 (4) 147

57. In hydroelectric stations

(1) Kinetic energy is converted into heat energy

(2) Potential energy is converted into electrical energy

(3) Kinetic energy is converted into electrical energy

(4) Kinetic energy is converted into potential energy

58. If 'X' is displacement and 'a' is acceleration of a particle executing simple harmonic motion then its time period (T) is given by

(1) $2\pi\sqrt{\frac{X}{a}}$ (2) $2\pi\sqrt{\frac{a}{X}}$ (3) $\frac{1}{2\pi}\sqrt{\frac{X}{a}}$ (4) $\frac{1}{2\pi}\sqrt{\frac{a}{X}}$

59. If T is time period of a particle executing simple harmonic motion then the phase of the particle when $t = \frac{T}{4}$ is

(1) Zero (2) $\frac{\pi}{2}$ (3) π (4) $\frac{3\pi}{2}$

60. The displacement of a particle executing simple harmonic motion is given by $y = 8 \sin\left(0.4\pi t + \frac{\pi}{2}\right)$. Then its time period in seconds is

(1) 20 (2) 10 (3) 5 (4) 2.5

61. A seconds pendulum is taken to a planet where acceleration due to gravity is one-fourth of the value on the earth, then the time period on that planet is

(1) 1 s (2) 2 s (3) 4 s (4) 8 s

62. On a planet a freely falling body takes 2 seconds when dropped from a height of 32 metres. If the time period of a simple pendulum is 2π seconds, then its length on the planet is

(1) 4 m (2) 8 m (3) 32 m (4) 16 m

63. A boy hears an echo of his own voice from a distant hill after 5 seconds. If the velocity of sound is 330 m/s, the distance of the hill is

(1) 425 m (2) 825 m (3) 1650 m (4) 850 m

64. A litre of gas is at 27^0C. Then the temperature required to heat to make its volume double is

(1) 600^0 C (2) 300^0 C (3) 100^0 C (4) 327^0 C

65. Which of the following statement is correct in case of a isothermal process of a gas

(1) Temperature changes

(2) Exchange of heat takes place between gas and surroundings

(3) Internal energy changes

(4) It is a quick process

66. If the pressure of gas is increased four times and its absolute temperature is reduced to half of its initial value, then the ratio of initial to final volume is

(1) 8 : 1 (2) 4 : 1 (3) 1 : 8 (4) 1 : 4

67. Light transmitted through the optical fiber by the phenomenon of

(1) Reflection (2) Refraction

(3) Interference (4) Total internal reflection

68. The superconductivity of a substance below critical temperature can be destroyed by

(1) Increasing temperature (2) Decreasing temperature

(3) Application of magnetic field (4) Application of electric field

69. The dimensional formula of Planck's constant, h is

(1) ML^2T^{-1} (2) MLT^{-1} (3) ML^2T^{-2} (4) MLT^{-1}

70. Which one of the following physical quantity has the dimensional formula MLT^{-1}

(1) Work (2) Power (3) Impulse (4) Pressure

71. The angle in radians between two vectors of equal magnitude whose resultant magnitude is equal to one of them is

(1) $\frac{2\pi}{3}$ (2) $\frac{\pi}{3}$ (3) π (4) $\frac{\pi}{2}$

72. If two vectors are parallel to each other, then their dot product is

(1) Minimum and equal to product of their magnitudes

(2) Minimum and equal to sum of their magnitudes

(3) Maximum and equal to product of their magnitudes

(4) Maximum and equal to sum of their magnitudes

73. The area of the parallelogram in square metres formed by adjacent sides $2i + j + 3k$ and $2i + j + k$ metres is

(1) $\sqrt{20}$ (2) 5 (3) 6 (4) $\sqrt{68}$

74. If a body is projected vertically up with a velocity 'u' and acceleration due to gravity 'g' then time of flight is

(1) $\frac{u}{g}$ (2) $\frac{2u}{g}$ (3) $\frac{3u}{g}$ (4) $\frac{u^2}{g}$

75. The initial velocity of a body projected upwards from the ground reaches maximum height of 10 metres is (given that $g = 9.8\ m/s^2$)

(1) 225 m/s (2) 196 m/s (3) 15 m/s (4) 14 m/s

KEY

51. 2	52. 4	53. 4	54. 2	55. 1	56. 4	57. 3	58. 1	59. 2	60. 3
61. 3	62. 4	63. 2	64. 4	65. 2	66. 1	67. 4	68. 3	69. 1	70. 3
71. 1	72. 1	73. 1	74. 2	75. 4					

ECET CHEMISTRY (T.S) 2016

76. E^0 of Zn electrode is –0.762 volts. The single electrode potential of Zn electrode in deci molar $ZnSO_4$ solution is ( )

(1) –0.7915 V (2) –0.671 V (3) +0.7915 V (4) +0.671 V

77. The function of salt bridge is ( )

(1) to produce a link between two half cells

(2) to allow ions to go from one cell to another cell

(3) to keep the EMF of the cell positive

(4) to maintain electrical neutrality of the solution in two half cells

78. The chemical composition of rust is ( )

(1) $Fe_2O_3.XH_2O$ (2) Fe_2O_3 (3) $Fe_3O_4.XH_2O$ (4) Fe_3O_4

79. Which one of the following could provide cathodic protection to iron? ( )

(1) Cu (2) Zn (3) Ni (4) Co

80. Degree French (^0F) is ( )

(1) The parts of $CaCO_3$ equivalent hardness per 10^5 parts of water

(2) The parts of $CaCO_3$ equivalent hardness per 10^6 parts of water

(3) The parts of $CaCO_3$ equivalent hardness per 10^4 parts of water

(4) The parts of $CaCO_3$ equivalent hardness per 10^7 parts of water

81. The chemical formula of Zeolite is ( )

(1) $Na_2OAl_2O_3xSiO_2yH_2O$ (x = 2–10, y=2–6)

(2) $K_2OAl_2O_3SiO_2H_2O$

(3) $CaOAl_2O_3xSiO_2yH_2O$(x=2–10, y=2–6)

(4) $BaOAl_2O_3SiO_2H_2O$

82. The total dissolved solids in drinking water should be ( )

(1) Less than 600 ppm (2) Less than 700 ppm

(3) Less than 500 ppm (4) Less than1000 ppm

83. The monomer of Teflon is ( )

(1) FCIC = CCIF (2) $Cl_2C = CCl_2$ (3) $F_2C = CF_2$ (4) FCIC = CF_2

84. Which one of the following is a thermosetting polymer? ( )
(1) Nylon (2) Terylene (3) Bakelite (4) Poly ethane

85. The monomers of Buna-S polymer are ( )
(1) Vinyl chloride & vinylidene (2) Styrene & butadiene
(3) Acrylonitrile & butadiene (4) Isobutylene & isoprene

86. Which one of the following is present in maximum amount in natural gas? ( )
(1) CH_4 (2) C_2H_6 (3) C_3H_8 (4) C_2H_4

87. The chief pollutants which are responsible for ozone depletion ( )
(1) SO_2 & CO_2 (2) CO & SO_2
(3) CO & CO_2 (4) Oxides of nitrogen & CFC's

88. Which one of the following is secondary pollutant ( )
(1) CO (2) SO_2 (3) PAN (4) Aerosol

89. The BOD value in clean water is ( )
(1) Less than 5 ppm (2) More than 5 ppm (3) Less than 10 ppm (4) More than 10 ppm

90. Which one of the following pairs of atoms or ions will have same configuration? ( )
(1) F^+ and Ne (2) Li^+ and He^- (3) Cl^- and Ar (4) Na and K

91. Which one of the following is most covalent in nature? ( )
(1) NaCl (2) $MgCl_2$ (3) $CaCl_2$ (4) $AlCl_3$

92. The oxidation number of 'S' in H_2SO_5 is ( )
(1) 5 (2) 6 (3) 7 (4) 8

93. Which one of the following sets of quantum numbers represents an impossible arrangements? ( )
(1) $n = 3, l = 2, m_l = -2, m_s = \frac{1}{2}$ (2) $n = 3, l = 2, m_l = -3, m_s = \frac{1}{2}$
(3) $n = 4, l = 0, m_l = 0, m_s = \frac{1}{2}$ (4) $n = 5, l = 3, m_l = 0, m_s = -\frac{1}{2}$

94. The number of moles of hydroxide (OH^-) ions in 0.3 liter of 0.0005 M solution of Ba $(OH)_2$ is ( )
(1) 0.0050 (2) 0.0030 (3) 0.0015 (4) 0.0075

95. The normality of 0.3 M of H_3PO_3 is ( )
(1) 0.1 (2) 0.9 (3) 0.6 (4) 0.3

96. In I_3^- Lewis base is ( )

(1) I^- (2) I_2^+ (3) I_2^- (4) I_2

97. One ml of 0.1N HCl is added to one liter of sodium chloride solution, the pH of the resulting solution is ( )

(1) 7 (2) 1 (3) 4 (4) 2

98. Which oil is used as frother in froth floatation process ( )

(1) Mustard oil (2) Coconut oil (3) Olive oil (4) Pine oil

99. German silver consists of ( )

(1) 46% Cu, 34% Zn, 20% Ni (2) 46% Fe, 34% Cu, 20% Zn

(3) 46% Ni, 34% Mn, 20% Cu (4) 46% Fe, 34% Ni, 20% Zn

100. The units of molar conductance are ( )

(1) Ω cm mol^{-1} (2) Ω^{-1} cm^2 mol^{-1} (3) Ω^{-2} cm^{-2} mol^{-1} (4) Ω $cm^2 mol$

KEY

76. 1	77. 4	78. 1	79. 2	80. 1	81. 1	82. 3	83. 3	84. 3	85. 2
86. 1	87. 4	88. 3	89. 1	90. 3	91. 4	92. 4	93. 2	94. 3	95. 2
96. 1	97. 3	98. 4	99. 1	100. 2					