ANDHRA PRADESH
ECET 2015

Set Code : **L2**

Booklet Code : **D**

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

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

(3) Answer to the questions must be enetered 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. The area of the segment cut off from the parabola $x^2 = 8y$ by the line $x - 2y + 8 = 0$ is _____.

(1) 36　　　　(2) 34　　　　(3) 32　　　　(4) 38

2. The area bounded by the parabola $y = 4 - x^2$, $y = 0$ and $y = 3$ is _____.

(1) $\dfrac{26}{3}$　　　(2) $-\dfrac{26}{3}$　　　(3) $-\dfrac{28}{3}$　　　(4) $\dfrac{28}{3}$

3. The length of the arc of the curve $y = \log \sec x$ from $x = 0$ to $x = \dfrac{\pi}{3}$ is _____.

(1) $\log(2+\sqrt{3})$　　(2) $\log(2-\sqrt{3})$　　(3) $\log(1+\sqrt{3})$　　(4) $\log(1-\sqrt{3})$

4. The degree of the differential equation $\left(\dfrac{dy}{dx}\right)^3 - \left(\dfrac{d^2y}{dx^2}\right)^{3/2} + 5x = 0$ is _____.

(1) 3　　　　(2) 6　　　　(3) 1　　　　(4) 2

5. The differential equation formed by eliminating the arbitrary constant a from $a^2y + ax + 8 = 0$ is _____.

(1) $8y_1^2 - xy_1 + y = 0$　　　　(2) $8y_1^2 + xy_1 + y = 0$

(3) $8y_1^2 - xy_1 - y = 0$　　　　(4) $8y_1^2 + 2xy_1 - y = 0$

6. Solution of the equation $(1 + y^2)\, dx + (1 + x^2)\, dy = 0$ is _____.

(1) $\tan^{-1}x + \tan^{-1} y = c$　　　　(2) $\tan^{-1} x + \tan^{-1} y = 0$

(3) $y + \dfrac{y^3}{3} + x + \dfrac{x^3}{3} = c$　　　　(4) $\sin^{-1} x + \sin^{-1} y = 0$

7. The solution of the differential equation $\dfrac{dy}{dx} + \dfrac{y}{x} = x^2$ under the condition that $y = 1$ when $x = 1$ is _____.

   (1) $4xy = x^3 + 3$ (2) $4xy = x^4 + 3$ (3) $4xy = y^3 + 3$ (4) $4xy = y^4 + 3$

8. The Particular Integral of $(D^2 + a^2)\, y = \cos ax$ is _____.

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

9. The complimentary function of $(D^2 + 4D + 5)\, y = 13e^x$ is _____.

   (1) $e^{-2x}(c_1 \cos x + c_2 \sin x)$ (2) $e^{2x}(c_1 \cos x + c_2 \sin x)$

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

10. The Particular Integral of $(D^2 - 2D + 1)\, y = \cosh x$ is _____.

   (1) $\dfrac{x^2 e^x}{4} + \dfrac{e^{-x}}{8}$ (2) $\dfrac{x^2 e^{-x}}{4} + \dfrac{e^{x}}{8}$ (3) $\dfrac{x^2 e^x}{4} - \dfrac{e^{-x}}{8}$ (4) $\dfrac{x^2 e^{-x}}{4} - \dfrac{e^{x}}{8}$

11. If A and B are Skew-symmetry matrices, then $A + B$ is

   (1) Orthogonal   (2) Symmetric   (3) Skew-symmetry (4) Unitary

12. If n is an even natural number then $\begin{bmatrix} 2 & -1 \\ 3 & -2 \end{bmatrix}^n =$

   (1) Null matrix of order 2   (2) Unit matrix of order 2

   (3) Scalar matrix of order 2   (4) Unit matrix of order n

13. The determinant of orthogonal matrix is

   (1) 1 only   (2) 0   (3) ± 1 (4) 2

14. If $A - B = \begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$, $A + B = \begin{bmatrix} 3 & 4 \\ 2 & 5 \end{bmatrix}$, then $AB =$

   (1) $\begin{bmatrix} 4 & 10 \\ 3 & 8 \end{bmatrix}$ (2) $\begin{bmatrix} 4 & 3 \\ 10 & 8 \end{bmatrix}$ (3) $\begin{bmatrix} 4 & -10 \\ -3 & 8 \end{bmatrix}$ (4) $\begin{bmatrix} 4 & 3 \\ 8 & 10 \end{bmatrix}$

15. If $A = \begin{bmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ then $A^{-1} =$

   (1) A   (2) 2A   (3) $-A$ (4) I

16. If $\dfrac{1-x+6x^2}{x-x^3} = \dfrac{1}{x} + \dfrac{3}{1-x} + \dfrac{A}{1+x}$ then A =

    (1) 4   (2) 2   (3) −4   (4) −2

17. If $\dfrac{x^3}{(x+2)^2(x^2+2)} = \dfrac{10}{9(x+2)} - \dfrac{4}{3(x+2)^2} - \dfrac{Ax+4}{9(x^2+2)}$ then A =

    (1) 3   (2) 1   (3) −1   (4) −3

18. The general solution of the equation $\tan\theta + \tan 4\theta + \tan 7\theta = \tan\theta \tan 4\theta \tan 7\theta$ is

    (1) $\theta = \dfrac{n\pi}{4}$ (2) $\theta = \dfrac{n\pi}{12}$ (3) $\theta = \dfrac{n\pi}{6}$ (4) $\theta = \dfrac{n\pi}{2}$

19. If $\cos\theta = \dfrac{1}{2}\left(a + \dfrac{1}{a}\right)$, then $\cos 3\theta = K\left(a^3 + \dfrac{1}{a^3}\right)$ where K is equal to

    (1) $\dfrac{1}{2}$ (b) $-\dfrac{1}{2}$ (3) 1   (4) $\dfrac{3}{2}$

20. $\tan 20^0 + \tan 40^0 + \tan 60^0 + \cdots + \tan 180^0 =$

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

21. $\dfrac{3\cos\theta + \cos 3\theta}{3\sin\theta - \sin 3\theta} =$

    (1) $\cot^2\theta$ (2) $\cot^4\theta$ (3) $\cot^3\theta$ (4) $2\cot\theta$

22. If $\sin\theta + \sin 3\theta + \sin 5\theta = 0$, $0 \le \theta \le \dfrac{\pi}{2}$ then $\theta =$ _____.

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

23. $\cos^{-1}\left(\cos\left(\dfrac{5\pi}{4}\right)\right) =$

    (1) $\dfrac{5\pi}{4}$ (2) $\dfrac{3\pi}{4}$ (3) $-\dfrac{\pi}{4}$ (4) $\dfrac{-5\pi}{4}$

24. If $u = \log\tan\left(\dfrac{\pi}{4} + \dfrac{\theta}{2}\right)$ then $\cosh u =$

    (1) $\sin\theta$ (2) $\cos\theta$ (3) $\sec\theta$ (4) $\operatorname{cosec}\theta$

25. In $\triangle ABC$, if $a \cos A + b \cos B + c \cos C = \dfrac{2\Delta}{k}$ then $k =$ _____.

    (1) r   (2) R   (3) s   (4) R^2

26. In $\triangle ABC$, if $b \cos A = a \cos B$ then the triangle is

    (1) right angled   (2) isosceles   (3) equilateral   (4) scalene

27. If in $\triangle ABC$, $\tan \dfrac{A}{2} = \dfrac{5}{6}$ and $\tan \dfrac{C}{2} = \dfrac{2}{5}$ a, b, c are in such that

    (1) $b^2 = ac$ (2) $2b = a + c$ (3) $2ac = b\,(a + c)$ (4) $a + b = c$

28. Imaginary part of $\dfrac{4 + 3i}{(2 + 3i)(4 - 3i)} =$

    (1) $\dfrac{86}{325}$ (2) $-\dfrac{86}{325}$ (3) $\dfrac{27}{325}$ (4) $\dfrac{29}{325}$

29. The value of $i^2 + i^4 + i^6 + \cdots$ (2n + 1) terms = _____.

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

30. The locus of the point equidistant from the points $(a + b, a - b)$ and $(a - b, a + b)$ is _____.

    (1) $bx - ay = 0$ (2) $bx + ay = 0$ (3) $ax - by = 0$ (4) $x - y = 0$

31. If $3x + 4y + k = 0$ touches the circle $x^2 + y^2 = 16$, then the value of k is _____.

    (1) ± 10 (2) ± 20 (3) ± 5 (4) ± 15

32. The point $(-1, 0)$ lies on the circle $x^2 + y^2 - 4x + 8y + k = 0$. The radius of the circle is _____.

    (1) 4   (2) 5   (3) 3   (4) 2

33. The equation of the axis of the parabola $x^2 - 3y = 8x + 7$ is _____.

    (1) $y + 3 = 0$ (2) $y - 3 = 0$ (3) $x - 4 = 0$ (4) $x + 4 = 0$

34. The eccentricity of the ellipse $3x^2 + 4y^2 + 6x - 8y = 5$ is _____.

    (1) $1/3$ (2) $1/2$ (3) $1/4$ (4) $1/5$

35. The length of the latusrectum of the hyperbola $16x^2 - 9y^2 - 32x + 36y = 164$ is _____.

    (1) $\dfrac{32}{9}$ (2) $\dfrac{16}{3}$ (3) $\dfrac{32}{3}$ (4) $\dfrac{3}{16}$

36. If $f(x) = \begin{cases} ax^2 - b, & |x| < 1 \\ \dfrac{1}{|x|}, & |x| \geq 1 \end{cases}$ is differentiable at $x = 1$, then

    (1) $a = 1/2$, $b = -1/2$ (2) $a = -1/2$, $b = -3/2$

    (3) $a = b = 1/2$ (4) $a = b = -1/2$

37. If $y = |\sin x| + |\cos x|$, then $\dfrac{dy}{dx}$ at $x = \dfrac{4\pi}{3}$ is

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

38. If $y = x^x$, then $\dfrac{dy}{dx} = $ _____.

(1) $x^x (1 + \log x)$ (2) $x^x (1 - \log x)$ (3) $x^x (\log x - 1)$ (4) $x^x \log x$

39. If $y = \tan^{-1} \dfrac{\cos x}{1 + \sin x}$, then the value of $\dfrac{dy}{dx} = $

(1) $-1/2$ (2) $1/2$ (3) $x/2$ (4) $-x/2$

40. If $x = a(\cos\theta + \theta \sin\theta)$, $y = a(\sin\theta - \theta\cos\theta)$, then the value of $\dfrac{dy}{dx}$ at $\theta = \dfrac{\pi}{4}$ is

_____.

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

41. Given the function $f(x) = x^2 e^{-2x}$, $x > 0$. Then $f(x)$ has the maximum value equal to

(1) e^{-2} (2) $(2e)^{-1}$ (3) e^{-1} (4) None of these

42. If the curves $ay + x^2 = 7$ and $x^3 = y$ cut orthogonally at $(1, 1)$. Then $a = $ _____.

(1) 1   (2) -6 (3) 6   (4) 0

43. The maximum possible area that can be enclosed by a wire of length 20cm by bending it into the form of a sector in sq. cm is _____.

(1) 20 sq.cm   (2) 25 sq.cm   (3) 30 sq.cm   (4) 15 sq.cm

44. If $u = \dfrac{x^3 + y^3}{x - y}$ and if $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} = ku$, then $k = $ _____

(1) 3   (2) -3 (3) 2   (d) -1

45. If $z = e^{ax + by} \cdot f(ax - by)$, then the value of $b\dfrac{\partial z}{\partial x} + a\dfrac{\partial x}{\partial y}$ is _____.

(1) abz   (2) 2abz   (3) 3abz   (4) 4abz

46. $\displaystyle\int \dfrac{\sin x - \cos x}{\sqrt{\sin 2x}}\, dx = $ _____.

(1) $-\cosh^{-1}(\sin x + \cos x)$ (2) $-\cosh^{-1}(\sin x - \cos x)$

(3) $\cosh^{-1}(\sin x + \cos x)$ (4) $\cosh^{-1}(\sin x - \cos x)$

47. $\displaystyle\int_{1}^{5} \frac{\sqrt{x-1}}{x}\,dx = $ _____ .

(1) $\dfrac{2}{5}\log 2$ (2) $\dfrac{1}{5}\log 2$ (3) $\dfrac{5}{2}\log 5$ (4) $\dfrac{1}{2}\log 5$

48. $\displaystyle\int_{0}^{1} \frac{\sin^{-1} x}{x}\,dx = $ _____ .

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

49. $\displaystyle\int_{0}^{\pi} \frac{1}{5+4\cos x}\,dx = $ _____ .

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

50. $\displaystyle\lim_{n\to\infty}\left(\frac{1}{n^3+1} + \frac{4}{n^3+8} + \frac{9}{n^3+27} + \cdots + \frac{r^2}{n^3+r^3} + \cdots + \frac{1}{2n} \right) = $ _____ .

(1) $\dfrac{1}{2}\log 3$ (2) $\log 2$ (3) $\dfrac{1}{2}\log 2$ (4) $\dfrac{1}{3}\log 2$

ANSWERS

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

ECET PHYSICS

2015

51. For an object thrown at 45^0 to the horizotal, the maximum height (H) and horizontal range (R) are related as   (   )
    (1) R = 16 H
    (2) R = 8 H
    (3) R = 4 H
    (4) R = 2 H

52. At the uppermost point of a projectile, its velocity and acceleration ae at an angle of   (   )
    (1) 0^0
    (2) 45^0
    (3) 90^0
    (4) 180^0

53. A particle A is dropped from a height and another particle B is projected in horizontal direction with speed of 5 m / sec from the same height, then correct statement is   (   )
    (1) Both particles will reach at ground simultaneously\
    (2) Particle A will reach at ground first with respect to particle B
    (3) Particle B will reach at ground first with respect to particle A
    (4) Both particles will reach at ground with same speed

54. A missile is fired for maximum range with an intial velocity of 20 m/s. If g = 10 m/s^2, the range of the missile is   (   )
    (1) 20 m
    (2) 40 m
    (3) 50 m
    (4) 60 m

55. A body of mas 2 kg is kept stationary by pressing to a vertical wall by a force of 100 N. The coefficient of friction between wall and body is 0.3. Then the frictional force is equal to
    (1) 6N   (   )
    (2) 20 N
    (3) 600N
    (4) 700 N

56. If the normal force is doubled, then coefficient of friction is
    (1) Halved   (   )
    (2) Tripled
    (3) Doubled
    (4) Remains same

57. A body moves a distance of 10 m along a straight line under the action of a 5 N force. If the workdone is 25J, then the angle between the force and direction of motion of the body is
    (1) 60^0 (   )
    (2) 75^0
    (3) 30^0
    (4) 45^0

58. Two bodies of mass m and 4 m are moving with equal kinetic energies. The ratio of their linear momenta is
    (1) 1 : 2   (   )
    (2) 1 : 4
    (3) 4: 1
    (4) 1 : 1

59. If the kinetic energy of a body becomes four times of its initial value, then new momentum will ( )

(1) Become four times its initial value
(2) Become thrice its initial value
(3) Become twice its initial value
(4) Remain constant

60. If a spring has time period T and is cut into n equal parts, then the time period of each part will be ( )

(1) $T\sqrt{n}$
(2) $T/\sqrt{n}$
(3) nT
(4) T

61. In a simple harmonic oscillator, at the mean position ( )

(1) Kinetic energy is minimum, potential energy is maximum
(2) Both Kinetic and potential energies are maximum
(3) Kinetic energy is maximum, potential energy is minimum
(4) Both Kinetic and potential energies are minimum

62. Source of sound and observer are moving towards each other, the observer will hear ( )

(1) High Frequency, High wavelength
(2) Low frequency, Low wavelength
(3) High Frequency, low wavelength
(4) Low frequency, High wavelength

63. The two waves of the same frequency moving with same speed in the same direction give rise to ( )

(1) Beats
(2) Interference
(3) Stationary waves
(4) Diffraction

64. The ratio of frequencies of two pendulums are 2 : 3, then their lengths are in the ratio ( )

(1) $\sqrt{2}/\sqrt{3}$
(2) $\sqrt{3}/\sqrt{2}$
(3) 4 / 9
(4) 9 / 4

65. The first law of thermodynamics confirms the law of ( )

(1) Conservation of momentum of molecules
(2) Conservation of energy
(3) Flow of heat in particular direction
(4) Conservation of heat energy and mechanical energy

66. A sample of gas expands from volume V_1 to V_2. The amount of work done by the gas is greatest, when the expansion is ( )

(1) Isothermal
(2) Isobaric
(3) Adiabatic
(4) Equal in all cases

67. During adiabatic compression of a gas, its temperature ( )

(1) Falls
(2) Remains Constant
(3) Rises
(4) Becomes Zero

68. A gas behaves as an ideal gas at
    (1) Low pressure and high temperature
    (2) Low pressure and low temperature
    (3) High pressure and low temperature
    (4) High pressure and high temperature   ( )

69. In photoelectric effect, the KE of electrons emitted from the metal surface depends upon   ( )
    (1) Intensity of light
    (2) Frequency of incident light
    (3) Velocity of incident light
    (4) Both intensity and velocity of ligh

70. The propagation of light through an optical fiber is due to   ( )
    (1) Polarization of light
    (2) Rectilinear propagation of light
    (3) Total internal reflection of light
    (4) Interference of light

71. $\left[ML^2T^{-2} \right]$ are dimensions of   ( )
    (1) Force
    (2) Moment of force
    (3) Momentum
    (4) Power

72. Out of the following pairs, which one does not have identical dimensions   ( )
    (1) Moment of inertia and moment of a force   (2) Work and torque
    (3) Angular momentm and Planck's constant   (4) Impulse and momentum

73. If the magnitudes of two vectors are 3 and 4 and their scalar product is 6, the angle between the vecotrs is   ( )
    (1) 30^0
    (2) 45^0
    (3) 60^0
    (4) 90^0

74. The value of λ in the unit vector $0.4i + 0.8j + \lambda k$ is   ( )
    (1) $(0.12)^{1/2}$
    (2) $(0.2)^{1/2}$
    (3) $(0.4)^{1/2}$
    (4) $(0.8)^{1/2}$

75. Vector product of a vector with itself is   ( )
    (1) 1
    (2) –1
    (3) 0
    (4) ∞

KEY

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

ECET
CHEMISTRY
2015

76. Which one among the following water sample contains more hardness ? ( )
    (1) 5000 ppm of hardness
    (2) 0.5 g of C_aCO_3 in 100 ml of water
    (3) 50 equivalents of C_aCO_3 in 100 ml of water
    (4) 50 moles of C_aCO_3 in 100 ml of water

77. The synthetic polymer which resembles natural rubber is ( )
    (1) Neoprene   (2) Chloroprene
    (3) Nylon   (4) Polyphenol

78. What is meant by mastification of rubber ? ( )
    (1) Its softening
    (2) Depression of its freezing point
    (3) A treatment to retard its deterioration due to acids
    (4) Improving its curing rate

79. What is the monomer used to make Teflon ? ( )
    (1) Tetra fluoro ethane   (2) Tetra fluoro ethylene
    (3) Di fluoro ethylene   (4) Tetra fluoro acetylene

80. What are the constituents of coal gas ? ( )
    (1) Methane and carbon dioxide (2) Methane and Hydrogen
    (3) Methane, Hydrogen and Carbonmonoxide (4) Methane and Butane

81. Which one among the following is NOT a green house gas ? ( )
    (1) CH_4 (2) CO_2
    (3) CO   (4) NO

82. Which one among the following causes depletion of ozone ? ( )
    (1) CF_2Cl_2 (2) CH_2F_2
    (3) CF_4 (4) C_2H_3F

83. Which part of the atmosphere contains highest temperature ? ( )
    (1) Troposphere   (2) Mesosphere
    (3) Stratosphere   (4) Thermosphere

84. Which one of the following set of quantum numbers is not possible for 'p' electron ? ( )
    (1) $n = 4, l = 1, m = +1$ and $m_s = +1/2$ (2) $n = 4, l = 1, m = 0$ and $m_s = +1/2$
    (3) $n = 4, l = 1, m = +2$ and $m_s = +1/2$ (4) $n = 4, l = 1, m = -1$ and $m_s = -1/2$

85. The first emission line of hydrogen atomic spectrum in Balmer series appears at (R = rydberg constant) ( )

   (1) $5R/36 \text{ cm}^{-1}$
   (2) $3R/4 \text{ cm}^{-1}$
   (3) $7R/144 \text{ cm}^{-1}$
   (4) $9R/400 \text{ cm}^{-1}$

86. Which ion is iso electronic with 'CO' ? ( )

   (1) N_2^+
   (2) O_2^+
   (3) O_2^-
   (4) CN^-

87. Why sodum chloride is more soluble in water ? ( )

   (1) Sodium chloride is a covalent compound and water is a polar solvent

   (2) Sodium chloride is a ionic compound and water is a polar solvent

   (3) Sodium chloride is a covalent compound and water is a non - polar solvent
   (4) Sodium chloride is ionic compound and water is a non - polar solvent

88. What happened to a solution when a non - volatile solute is added to a solvent ? ( )

   (1) Vapour pressure decreases
   (2) Vapour pressure increases
   (3) Boiling point decreases
   (4) No change in vapour pressure

89. How much volume of $0.1 M$ H_2SO_4 solution is required to nuetralize completely 50 ml of 0.2 N NaOH solution ? ( )

   (1) 25 ml
   (2) 50 ml
   (3) 75 ml
   (4) 100 ml

90. What is the conjugate base of OH^- ? ( )

   (1) H_2O
   (2) H_2O^+
   (3) O^-
   (4) 2.7

91. 10 ml of $0.05 M$ H_2SO_4 is diluted to 100 ml with water. What is the pH of the resultant solution ? ( )

   (1) 2.0
   (2) 1.0
   (3) 2.3
   (4) 2.7

92. Which type of ores are purified by using Froth floatation method ? ( )

   (1) Oxide Ores
   (2) Carbonate Ores
   (3) Sulphide Ores
   (4) Sulphate Ores

93. What is the metal present as major constituent in nichrome alloy ? ( )

   (1) Cr
   (2) Ni
   (3) Cu
   (4) Fe

94. When one Faraday of electrictity is passed for $CuSO_4$ solution, how much copper is deposited a cathode ? (Atomic weight of Cu = 63.54) ( )

   (1) 63.54 g
   (2) 31.72 g
   (3) 15.86 g
   (4) 127.08 g

95. Calculate the emf of the following cell at 25^0C of Zn/Zn^{2+} (0.1M) // Cu^{2+} (0.1M) / Cu standard reduction potentials of Zn/Zn^{2+} and Cu^{2+} Cu / Cu are -0.76 and $+0.34$ respectively ( )

(1) +1.1 V

(2) −1.1 V

(3) +1.07 V

(4) +1.13 V

96. Which one of the following reaction takes place under standard conditions ? ( )

(1) A strip of lead is placed into an aqueous solution of zinc nitrate

(2) A strip of copper is placed into an aqueous solution sinc nitrate

(3) A strip of silver is placed into an aqueous solution of copper nitrate

(4) A strip of iron is placed in the air under acidic conditions

97. How is anode metal selected to prevent corrosion by sacrificial anodic protection method ? ( )

(1) Oxidation potential of anode metal is higher than that of protected metal

(2) Oxidation potential of anode metal is lower than that of protected metal

(3) Reduction potential of anode metal is higher than that of protected metal

(4) Sacrificial anode is always zinc

98. Which one of the following statement is correct ? ( )

(1) Aluminum corrodes faster than iron in air

(2) Rusting of iron is quicker in saline water

(3) Corrosion do not occur in steel pipe connected to copper plumbing

(4) Bolts and nuts made of the different metals are preferred to prevent corrosion

99. 100 ml of a water contains 40 mg of Ca^{2+} ions. What is the hardness of the water ? ( )

(1) 500 ppm

(2) 100 ppm

(3) 400 ppm

(4) 1000 ppm

100. Which solution is used to regenerate the cationic exchange resin ? ( )

(1) NaOH

(2) HCl

(3) NaCl

(4) KCl

KEY

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