UNIVERSITY OF LUCKNOW

D.Pharm Entrance Examination

Mathematics Group — Model Test Paper Set 10

Total Questions: 100 | Section A: Chemistry & Physics (50) + Section B: Mathematics (50)

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SECTION A — Chemistry & Physics [50]

Chemistry

1. sp3d2 hybridisation is seen in: sp3d2 mebke :

(a) BrF (b) BrCl

(c) ICl (d) ClF 5 3

Answer: (c) ICl

2. The donor band close to_____

(a) Valence band, valence band (b) Conduction band, conduction band

(c) Conduction band, valence band (d) Valence band, conduction band

Answer: (c) Conduction band, valence band

3. The v-shaped graph represents conductometric titration of : Jeer-Deeke :

(a) Weak acid vs weak base (b) Strong acid vs weak base

(c) Strong acid & weak acid vs weak base (d) Strong acid vs strong base

Answer: (d) Strong acid vs strong base

4. Then, 2 Activity coefficient :

(a) +3 (b) +12

(c) +2 (d) +6

Answer: (d) +6

5. Calculate the limiting value of molar conductance when degree of ionisation is 2.02 and molar conductance is 4.04 Sm2 mole :

(a) 2Sm (b) Sm2mole

(c) Sm (d) 2Sm2 mole

Answer: (d) 2Sm2 mole

6. The two phenomenon associated with Debye- Hu :

(a) Relaxation effect and electrophoretic effect (b) Relaxation and asymmetric effect

(c) Mesomeric and asymmetric effect (d) Mesomeric and relaxation effect

Answer: (a) Relaxation effect and electrophoretic effect

7. Which is the weak electrolyte among the below?

(a) HBr (b) HCI

(c) HF (d) HI

Answer: (c) HF

8. Dipole moment is maximum in: [eFheesue ceesceW :

(a) HBr (b) HCl

(c) HF (d) HI

Answer: (c) HF

9. These both hybridization have octahedral geometry. 98. Shape of Mg [Th(NO)] is: 3 6 Mg[Th(NO)

(a) Octahedral (b) Icosahedral

(c) Square antiprism (d) Pentagonal bipyramidal

Answer: (b) Icosahedral

10. Which of the following metal carbonyls doesn't exhibit EAN rule?

(a) Fe(CO) (b) Cr(CO)

(c) Ni(CO) 6 (d) Mn(CO) 5

Answer: (d) Mn(CO) 5

11. Cis isomer and trans isomers are examples of____.

(a) Ionisation isomerism (b) Geometrical isomerism

(c) Hydrated isomerism (d) Posional isomerism

Answer: (b) Geometrical isomerism

12. In octahedral complexes, the difference in energy between two d-levels is?

(a) 1000 Dq (b) 10 Dq

(c) 1 Dq (d) 100 Dq

Answer: (b) 10 Dq

13. The structure of (NH) CrO is: 3 3 4 (NH) CrO :

(a) Pentagonal bipyramidal (b) Tetrahedral

(c) Octahedral (d) Trigonal bipyramidal

Answer: (a) Pentagonal bipyramidal

14. Cis and trans isomers are possible in: efmeme (Cis) :

(a) [Cr(NH) Cl]+ (b) [Cr(NH) Cl]2+

(c) [Cr(NH)]3+ 3 6 3 (d) [Cr(NH) Cl] 3 4 2 3 3

Answer: (a) [Cr(NH) Cl]+

15. Which of the following is the high spin complex?

(a) [FeCl]3 (b) [Fe(bpy)]3+

(c) [Mn(CN)]4 (d) [Fe(CN)]3

Answer: (a) [FeCl]3

16. In basic solution, Cl disproponates to?

(a) ClO and Cl (b) Both ClO and Cl

(c) ClO (d) Cl and Cl

Answer: (a) ClO and Cl

17. What does a bacteriostatic drug do?

(a) It does not react with bacteria (b) It kills bacteria

(c) It increases the growth of bacteria (d) It inhibits the growth of bacteria

Answer: (d) It inhibits the growth of bacteria

18. Antiulcer agents among the following :

(a) Tolbutamide (b) Both Paracetamol and Zantac

(c) Paracetamol (d) Zantac

Answer: (d) Zantac

19. In group II B, which metal has greater tendency to form coordination compound?

(a) Hg (b) Zn

(c) Cd (d) Both Zn and Cd

Answer: (a) Hg

20. Which metals of the following have the greatest tendency to form metal clusters?

(a) Zr, V, Nb (b) Nb, Mo, Tc

(c) V, Nb, Ta (d) Cr, Mo, Tc 88 YCT

Answer: (b) Nb, Mo, Tc

21. Which of the following is isoelectronic species?

(a) Sn ,Al 95+ 95+ (b) Sn ,Bi 95+

(c) Se ,Bi (d) Sn4

Answer: (b) Sn ,Bi 95+

22. Pale blue coloured [Cu(H O)]2+ ion reacts with 2 6 aqueous ammonia solution, to form which coloured ion?

(a) Colourless (b) Green coloured ion

(c) Pale blue coloured ion (d) Deep blue coloured ion

Answer: (d) Deep blue coloured ion

23. Thiocyanogen (SCN) is stable only at: 2 efLe :

(a) Room temperature (b) High temperature

(c) Low temperature (d) Very high temperature

Answer: (c) Low temperature

24. The correct order of ionic radius of lanthanides :

(a) Tb3+ > Sm3+ > Tm3+ > Yb3+ (b) Tb3+ > Ho3+ > Dy3+ > Yb3+

(c) Sm3+ < Ho3+ < Gd3+ < Lu3+ (d) Nd3+ > Gd3+ > Ho3+ > Tm3+

Answer: (d) Nd3+ > Gd3+ > Ho3+ > Tm3+

25. Polluting strength of water is given by: heeveer :

(a) Saline content in water (b) BOD in water

(c) COD in water (d) Amount of phosphates and carbonates in water

Answer: (b) BOD in water

Physics

26. The sum of three vectors shown in fig. is zero. What is magnitude of OC?

(a) 5 2m (b) 10 m

(c) 5 m (d) 5 5 m

Answer: (a) 5 2m

27. What will be the degree of freedom for a rigid body having N particles?

(a) 3 (b) Infinite

(c) N (d) 3N

Answer: (d) 3N

28. The ionization potential of hydrogen atom is 13.6 eV. The ionization potential of singly ionized helium ion will be (in eV) :

(a) 54.4 (b) 27.2

(c) 3.4 (d) 6.8

Answer: (a) 54.4

29. At curie point, a ferromagnetic material becomes?

(a) Paramagnetic (b) Strongly ferromagnetic

(c) Non-magnetic (d) Diamagnetic

Answer: (a) Paramagnetic

30. The wavelength of the radiations for which the energy is maximum in the spectrum is 490 nm. The effective temperature of the sun is ?

(a) 5820 K (b) 6000 K

(c) 6920 K (d) 5914 K

Answer: (d) 5914 K

31. Transmission of heat by molecular collision is ?

(a) Scattering (b) Conduction

(c) Radiation (d) Convenction

Answer: (b) Conduction

32. Two photons each with velocity c are moving in opposite direction. Their relative velocity will be :

(a) 2 c (b) c

(c) Zero (d) None of these

Answer: (b) c

33. Two capillary tubes of same material having radii 1 mm and 2 mm respectively are immersed in a liquid. If the liquid rises to 30 cm in the first, then the height in second will be ?

(a) 120 cm (b) 7.5 cm

(c) 15 cm (d) 60 cm

Answer: (c) 15 cm

34. Critical velocity of a liquid may not possible be related to:

(a) coefficient of viscosity (b) density of liquid

(c) radius of tube (d) mass of liquid

Answer: (d) mass of liquid

35. The graph between square of time period and length of a simple pendulum is :

(a) Parabola (b) Hyperbola

(c) Straight line (d) Circle

Answer: (c) Straight line

36. Kepler's II law is a consequence of – ?

(a) Conservation of energy (b) None of these

(c) Conservation of liner momentum (d) Conservation of angular momentum

Answer: (d) Conservation of angular momentum

37. A body of mass 4 kg is moving in a circle of radius 1m with an angular velocity of 2 radian/sec. Find the Centripetal force acting on body ?

(a) 16N (b) 20N

(c) 24N (d) 8N

Answer: (a) 16N

38. Which of the following can NOT be obtained from rotational levels?

(a) Rotational frequencies (b) Force constant

(c) Moment of inertia (d) Internuclear distance

Answer: (b) Force constant

39. The packing fraction of a f.c.c. lattice is ?

(a) 0.74 (b) 0.48

(c) 0.68 (d) 0.52

Answer: (a) 0.74

40. With a decrease of current in primary coil from 2 Amp to 0 Amp in 0.01 sec, the e.m.f. generated in secondary coil is 100 Volt. The mutual inductance will be ?

(a) 5 Henry (b) 10 Henry

(c) 0.5 Henry (d) 1 Henry

Answer: (c) 0.5 Henry

41. Rotation of plane polarised light can be measured by :

(a) Viscometer (b) Galvanometer

(c) Manometer (d) Polarimeter

Answer: (d) Polarimeter

42. Which property of light shows it is a transverse wave?

(a) Refraction (b) Interference

(c) Diffraction (d) Polarization

Answer: (d) Polarization

43. Best way to demonstrate temporal coherence is ?

(a) Newton's ring (b) Michelson interferometer

(c) Fabry Parot interferometer (d) Fresnel biprism

Answer: (b) Michelson interferometer

44. What is the number of nodal points in a coaxial lens system?

(a) Zero (b) One

(c) Two (d) Any number

Answer: (c) Two

45. A car moving at 30 m/s is approaching a factory, whose whistle has a frequency of 500 Hz. If the speed of sound in air is 340 m/s, what is the apparent frequency of whistle as heard by the car driver?

(a) 500 Hz (b) 600 Hz

(c) 544 Hz (d) 480 Hz

Answer: (c) 544 Hz

46. The volume of hollow hall is 2000 m^3 and total absorption coefficient is 165 unit. Then reverberation time of hall is ?

(a) 0.5s (b) 4s

(c) 2s (d) 1s

Answer: (c) 2s

47. The vibration of a string fixed at both ends are described by the equation πx y=5sin sin100πt 2 If the length of the string is 16 cm, the number of loops formed in vibration shall be ?

(a) 8 (b) 12

(c) 16 (d) 4

Answer: (a) 8

48. The speed of wave in a medium is 960 m/s. If 3600 waves are passing through a point in one minute, the wavelength will be :

(a) 14 m (b) 32 m

(c) 16 m (d) 64 m

Answer: (c) 16 m

49. Vibrations of the diaphragm of a microphone are ?

(a) forced oscillations (b) Damped oscillations

(c) resonant oscillations (d) free oscillation

Answer: (a) forced oscillations

50. A system in contact with a heat reservoir can most suitably be represented by ?

(a) Canonical ensemble (b) Coulomb ensemble

(c) Grand canonical ensemble (d) Micro canonical ensemble

Answer: (a) Canonical ensemble

SECTION B — Mathematics [50]

51. If the subtraction of two roots is 2, of the $2x^2$ equation - 12x + m + 2 = 0, then the value of m is ?

(a) m = 2 (b) m =

(c) m = 7 (d) m = 14

Answer: (d) m = 14

52. If a, b, c are positive real numbers and all are not equal, and a+b+c = 1 then the least value of 2 2 2 ?

(a) 80 (b) 32

(c) 16 (d) 64

Answer: (d) 64

53. For what value of a, the equation axy ?

(a) a = 0, 2 (b) a = 0 YCT

(c) a = 6 (d) a = 0, 6

Answer: (c) a = 6

54. A solution-curve of the equation xy' = 2y, passing through (1, 2) also passes through meceerke ?

(a) (0, 0) (b) (2, 3)

(c) (4, 12) (d) (24, 5)

Answer: (a) (0, 0)

55. If the equation Mdx + Ndy = 0 has one and only one solution, then the number of integrating- factor is ?

(a) One (b) Two

(c) Infinite (d) Finite

Answer: (c) Infinite

56. If A is an idempotent matrix and A+B = I, then B is :

(a) A involuntary matrix Ske (b) An idempotent matrix

(c) A null (d) A nilpotent matrix

Answer: (b) An idempotent matrix

57. The equation = 0, where a, b, c, d are positive and not all equal, has - meceerke ?

(a) Two real (b) All roots are

(c) Only one real root (d) No real root

Answer: (c) Only one real root

58. The remainder when is divided by (x+2) is:

(a) 25 YCT (b) 2

(c) 32 (d) 24

Answer: (a) 25 YCT

59. Let = 4x be the coordinates of particle moving over an ellispe at a point where the growth rate of the ground is twice, then the rate of the Y-axis is ceeve ueerefpe ?

(a) (4, 2) (b) (2, 4)

(c) (2, 2) (d) (4, 4)

Answer: (d) (4, 4)

60. The number of basic solution to the system- efoS ieS ?

(a) 9 (b) 6

(c) 12 (d) 4

Answer: (b) 6

61. In a metric space (X, d), A be a metric space, AC then the largest open subset of (complement of A) is ?

(a) Exterior of A (b) Closure of A

(c) Interior of A (d) Boundary of A

Answer: (a) Exterior of A

62. In may metric space (X, d), if A be any subset, then A ?

(a) Only 1 (b) Only 2

(c) Only 3 (d) Only 1 and 3

Answer: (b) Only 2

63. A stone is thrown horizontally with a velocity 2ghfrom the top of a tower of height h. At what distance will it strike the horizontal ground from of the tower?

(a) h (b) 2h

(c) 6h (d) 3h

Answer: (b) 2h

64. A manufacturer of steel blades found 5 percent of its blades defective. He sells blades in packets, each containing 5 blades. The probability that a packet contains one defective blade is Ske ?

(a) e (b) 0.5

(c) 0.25.e (d) 0.25

Answer: (c) 0.25.e

65. Mother's age is three times the age of her son. After 5 years, their ages will add to 66 years. What is the present age of the mother?

(a) 42 years (b) 30 years

(c) 45 years (d) 55 years

Answer: (a) 42 years

66. The sum of the finite series 5 + 8 + 11 + ... + 47 + 50 is heefjefcele ?

(a) 244 (b) 435

(c) 442 (d) 440

Answer: (d) 440

67. For any event E, if P(E) = 0.999, find the value of P(not E). efke ?

(a) 0.1 (b) 0.01

(c) 0.001 (d) None of these

Answer: (c) 0.001

68. Mean of 100 observations is 45. It was later found that two observations 19 and 31 were recorded incorrectly as 91 and 13, then the correct mean is 100 DeJeueeske ?

(a) None of these (b) 44.46

(c) 45 (d) 44

Answer: (b) 44.46

69. The remainder when the sum of 0!+1!+2!+.....+99!+100!, divided by 12 is 0!+1!+2!+.....+99!+100! ?

(a) 11 (b) 10
(c) 5 (d) 6
Answer: (b) 10

70. The number of positive divisors of 252 is 252 ?
(a) 5 (b) 11
(c) 2 (d) 18
Answer: (d) 18

71. The value of x satisfying 150x = 35 (mod31) is ke ?
(a) 14 (b) 12
(c) 24 (d) 22
Answer: (c) 24

72. If A = {a,b,c} B = {b,c,d} and C = {a,d,c}, then (A ?
(a) {(a,b), (c,d)} (b) {(a,c), (a,d), (b,d)}
(c) {(c,a), (d,a)} (d) {(a,c), (a,d)}
Answer: (d) {(a,c), (a,d)}

73. The digit in the unit's place of is 5834 ?
(a) 3 (b) 0
(c) 5 (d) 1
Answer: (c) 5

74. If they are 12 persons in a party and if each of them shake hands with each other, then number of handshakes in party are ?
(a) 48 (b) 66
(c) 72 (d) 132 12C
Answer: (b) 66

75. Two angles of an isosceles triangle are always meceef ?
(a) Equal (b) Equal to 60
(c) None of these (d) Equal to 45
Answer: (a) Equal

76. Therefore the required limit is x+1 ?
(a) 2 1 (b) 2 ke
(c) 1 (d) None of these
Answer: (b) 2 ke

77. A two-digit number is such that the product of its digits 12. When 36 is added to this number, the digits interchange their places. The number is oes Debke ?
(a) 26 (b) 62
(c) 36 (d) 48
Answer: (a) 26

78. If the roots of the quadratic equation $(4+m)x^2+(m+1)x+1 = 0$ are equal than the value of m is ?
(a) None of these (b) 5
(c) 4 (d) 2
Answer: (b) 5

79. If sin (A+B) = cos (A ?
(a) 45 (b) 15

(c) None of these (d) 30

Answer: (a) 45

80. The number of points at which the function 1 f(x) = is not continuous is x ?

(a) 1 (b) 2

(c) 3 (d) None of these

Answer: (d) None of these

81. If f(x) = then f"(0) is equal to ?

(a) ab(a+b) (b) 2ab

(c) ab (d) 0

Answer: (a) ab(a+b)

82. The hollow sphere, in which the circus motor cyclist performs his stunts, has a diameter of 7m. Then the area available to the motorcyclist for riding is meke& ?

(a) 59 (b) 49

(c) None of these (d) 50

Answer: (b) 49

83. and thus is a basis for 1 12 0 (b) 2 24 0 =24 ?

(a) 2 (b) None of these

(c) 3 (d) 0 ke

Answer: (a) 2

84. Therefore, by rank- nullity theorem Rank(T) = dim(IR^3) ?

(a) Null (b) None of these

(c) Symmetric matrix (d) Skew symmetric

Answer: (d) Skew symmetric

85. The number of elements in the se S ={(a, b)| $2a^2 +3b^2 = 35$: a, b are integers} is $2a^2 +3b^2$ hetCe ?

(a) 2 (b) 8

(c) 12 (d) 4

Answer: (b) 8

86. In a frequency distribution, the mea.... and median are 21 and 2... frequenctively then its mode ..... Approximately Ske ?

(a) 25.5 (b) 24

(c) 20.5 (d) 22

Answer: (b) 24

87. If altitudes of a triangle are in A. P. then sides of the triangle are in ?

(a) H.P (b) None of these

(c) G.P (d) A.P

Answer: (a) H.P

88. It three positive integers a, b, c are in GP then log a, log b, log c are in ?

(a) G. P (b) Both A.P. and G.P

(c) A. P (d) None of these

Answer: (c) A. P

89. If log 81=x, then the value of x is 3 ?

(a) 32 (b) 8

(c) 16 (d) 4

Answer: (b) 8

90. If nC = then the sum + is r r-1 r (n ?

(a) None of these (b) r nC

(c) r+1 n+1C (d) r+1

Answer: (b) r nC

91. How many terms of the G.P. 3, , ... are 2 4 3069 needed to give the sum ?

(a) 8 (b) 9 ke

(c) None of these (d) 10

Answer: (d) 10

92. If volume of a sphere is 36 ?

(a) 6 (b) 12

(c) 36 (d) 18

Answer: (c) 36

93. The distance of the point (2, 3, 4) from the plans 3x-6y+2z +11 = 0 is 3x-6y+2z +11 = 0 meceleue efyevog (2,3,4) ke ?

(a) 10 (b) 9

(c) None of these (d) 7

Answer: (c) None of these

94. How many real solution are there for the x^4 equation ?

(a) 1 (b) 2

(c) 3 (d) 4

Answer: (a) 1

95. A five digit number is formed by using the digits 1,2,3,4,5 in a random order without repetitions. Then the probability that the number is divisible by 4 is Debke ?

(a) 6 (b) 8

(c) 3 (d) 1

Answer: (d) 1

96. The average of the squares of the numbers 0,1,2,..., n is mebK ?

(a) None of these (b) n(n+1)(2n+1) 6

(c) 2 1 n(2n+1) (d) 6 1

Answer: (b) n(n+1)(2n+1) 6

97. A stone is dropped in quiet take and waves move in circles at the speed of 5 cms-1 At the instant when the radius of the circular wave is 8cm, how fast is the enclosed area increasing?

(a) ke (b) 80

(c) None of these (d) 60

Answer: (d) 60

98. In a school there are 20 teachers who teach mathematics or physics of these, 12 teach mathematics and 4 teach both physics and mathematics. How many teach only physics?

(a) 12 (b) 8

(c) None of these (d) 16 ke

Answer: (b) 8

99. How many integers from 1 to 500 are divisible by at least one of 3, 5 and 7 ?

(a) None of these (b) 337 ke

(c) 271 (d) 2666

Answer: (c) 271

100. If A is skew symmetric matrix, then A^2 is a ?

(a) Null matrix (b) Skew

(c) Symmetric (d) Unitary matrix

Answer: (c) Symmetric