UNIVERSITY OF LUCKNOW

D.Pharm Entrance Examination

Mathematics Group — Model Test Paper Set 11

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

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SECTION A — Chemistry & Physics [50]

Chemistry

1. Which of the following methods is not used for soil protection?

(a) Menimising use of fossil fuels (b) Useses of excess fertilisers

(c) Afforestation (d) Neutralisation of acid in rain by adding lime

Answer: (b) Useses of excess fertilisers

2. Which of the following is NOT a greenhouse gas?

(a) Helium (b) Methane derivatives

(c) CH (d) CO

Answer: (a) Helium

3. The pH of Acid rain is: Decueer :

(a) Below 3.5 (b) Between 8-9

(c) Below 4.5 (d) Below 5.6

Answer: (d) Below 5.6

4. A five-carbon ketose is known as: Ske :

(a) Arabinose (b) Ribose

(c) Ketohexose (d) Pentulose

Answer: (d) Pentulose

5. The change in optical rotation with time is called: mece :

(a) Muta rotation (b) Internal rotation

(c) Flipping (d) Optical activity

Answer: (a) Muta rotation

6. Which of the following is a basic amino acid?

(a) Valine (b) Alanine

(c) Tyrosine (d) Arginine

Answer: (d) Arginine

7. Which of the following is not an example of fibrous protein?

(a) Keratin (b) Haemoglobin

(c) Collogen (d) Fibroin

Answer: (b) Haemoglobin

8. Amino acids at iso-electric point have: DeeFmees-Fuesefke :

(a) High solubility (b) Unequal acid-base ionisation

(c) High mobility (d) No electrical conductivity

Answer: (d) No electrical conductivity

9. Formation of RNA from DNA is known as: DNA mes RNA :

(a) Polymerisation (b) Transcription

(c) Replication (d) Translation

Answer: (b) Transcription

10. Which of the following does not occur in DNA?

(a) Uracil (b) Guanine

(c) Thymine (d) Cytosine

Answer: (a) Uracil

11. The place of the DNA at which it interacts with macromolecules is called: DNA :

(a) Deoxy ribose rings (b) Major groove

(c) Base pairs (d) Minor groove

Answer: (b) Major groove

12. Which of the following rubbers is hard and brittle?

(a) Complete rubber (b) Trans rubber

(c) Only at bonding sites (d) Cis rubber

Answer: (b) Trans rubber

13. The melamine is formed by the trimerization of which of the following compounds?

(a) Polystyrene (b) Formaldehyde

(c) Cyanamide (d) Urea

Answer: (c) Cyanamide

14. Which of the following is not a fiber?

(a) Nylon (b) Neoprene

(c) Myosin (d) Nylon 6,

Answer: (b) Neoprene

15. The word polymer is derived originally _____

(a) English (b) Greek

(c) French (d) Swiss

Answer: (b) Greek

16. Which of the following is a co-polymer?

(a) PVC (b) Bakelite

(c) Melamine (d) Polyethylene

Answer: (b) Bakelite

17. While it exist also as triethylaluminium along with TiCl . Here it exists in + 4 oxidation state. 4 146. Gabriel phthalimide reaction is used for preparation of: iesyeefj :

(a) Tertiary amines (b) Secondary amines

(c) Quaternary amines (d) Primary amines

Answer: (d) Primary amines

18. Libermann nitroso reaction is used for testing: efueyejcewve veeF :

(a) Tertiary amines (b) Quaternary amines

(c) Secondary amines (d) Primary amines

Answer: (c) Secondary amines

19. The nitrogen in the Quaternary ammonium salt :

(a) Square planar (b) Bent

(c) Tetrahedral (d) Linear

Answer: (c) Tetrahedral

20. Amines have:

(a) Non-polar nature (b) High boiling points than COOH's

(c) High boiling points than alcohols (d) High boiling points than non-polar compounds

Answer: (d) High boiling points than non-polar compounds

21. Which of the following has the highest boiling point?

(a) Dimethyl amine (b) Butylamine

(c) Ethyl-methyl amine (d) Isopentane

Answer: (b) Butylamine

22. Which of the following is not a dicarboxylic acid?

(a) Butyric acid (b) Succinic acid

(c) Malonic acid (d) Glutamic acid

Answer: (a) Butyric acid

23. Oxidation of Tollen's reagent is done by which of the following?

(a) Glucose (b) Cellulose

(c) Sucrose (d) Fructose

Answer: (a) Glucose

24. Which of the following has highest pKa values?

(a) Fluoroacetic acid (b) Acetic acid

(c) Difluoro acetic acid (d) Trifluoro acetic acid

Answer: (b) Acetic acid

25. The common name of pentanoic acid is: heW :

(a) Valeric acid (b) Lauric acid

(c) Pivalic acid (d) Stearic acid

Answer: (a) Valeric acid

Physics

26. Newton's Law of cooling is an approximate form of ?

(a) Kirchoff's law (b) Wien displacement law

(c) Jeans's law (d) Stefan's law

Answer: (d) Stefan's law

27. Which of the following laws has the same place in magnetostatics as the Gauss's law has in electrostatics?

(a) Bio-Savart Law (b) Faraday's Law

(c) Ampere's Law (d) Coulomb's Law

Answer: (a) Bio-Savart Law

28. Current through a capacitive element is called :

(a) Steady state current (b) Conduction current

(c) Displacement current (d) Transient current

Answer: (c) Displacement current

29. A conductor has a positive charge of 19.2 × 10– 19 Coulombs. How many electrons are in short on the conductor ?

(a) 12 (b) 16

(c) 18 (d) 20

Answer: (a) 12

30. The cell reaction of a secondary battery is ?

(a) Reversible (b) Irreversible

(c) Endothermic (d) Equilibrium

Answer: (a) Reversible

31. The internal resistance of an ideal constant voltage source is ?

(a) Zero (b) Infinite

(c) equal to resistance of load (d) None of the above

Answer: (a) Zero

32. A body of mass 1 kg is suspended from a string of length 1 meter. The body is rotated in a vertical circle with constant speed 2 m/s. The tension of the string when it is horizontal is ?

(a) 3N (b) 2N

(c) 4N (d) 1N

Answer: (c) 4N

33. A person climbs up a stalled escalator in 60 s. If standing on the same but escalator running with constant velocity he takes 40 s. How much time is taken by the person to walk up the moving escalator ?

(a) 37 s (b) 27 s

(c) 45 s (d) 24 s

Answer: (d) 24 s

34. A projectile has a maximum range of 16 km. At the highest point of its motion, it explodes into two equal masses. One mass drops vertically downward. The horizontal distance covered by the other mass from the time of explosion will be:

(a) 16 km (b) 8 km

(c) 32 km (d) 24 km

Answer: (a) 16 km

35. In Bohr model of the hydrogen atom, the 2.2×106 electron travels with speed m/s in a circle (r = 5.3×10−11 m) about the nucleus. The value of B at the nucleus due to electron's motion, is:

(a) 25.0 T (b) 40.0 T

(c) 30.0 T (d) 12.5 T

Answer: (d) 12.5 T

36. The equation −J.E = +∇.sis called ∂t ?

(a) Poynting theorem (b) Stoke's law

(c) None of these (d) Coulombs law

Answer: (a) Poynting theorem

37. The peak voltage in a 240V A.C. source is ?

(a) 300 V (b) 240 V

(c) 380 V (d) 340 V

Answer: (d) 340 V

38. The phenomenon of adiabatic demagnetization is used to ?

(a) Demagnetize a magnet (b) Generate electricity

(c) Produce very low temperature (d) Purify a gas i

Answer: (c) Produce very low temperature

39. Which of the following produces magnetic field?

(a) Time varying field (b) Electric dipole

(c) Force (d) Diamagnetic substance

Answer: (a) Time varying field

40. The increase in the relativistic mass of a particle of rest mass 1 gm when it is moving with 0.8 c velocity is :

(a) 0.667 gm (b) 1.667 gm

(c) zero (d) 1 gm

Answer: (b) 1.667 gm

41. The frequency of a light spring when 1 kg weight is suspended on its end is 4 oscillations per second. If 4 kg weight suspended to the same spring, the frequency of oscillations shall be ?

(a) 8 per sec (b) 2 per sec

(c) 16 per sec (d) 4 per sec

Answer: (b) 2 per sec

42. If work required to blow a soap bubble of radius R is W, then the additional work required to blow its radius upto 3 R will be ?

(a) 8 W (b) 27 W

(c) 3 W (d) 9 W

Answer: (a) 8 W

43. Eight equal drops of water are falling through air with a steady velocity of 5 cm/sec. If the drops collapse, what will be the new terminal velocity?

(a) 10 cm/s (b) 5 cm/s

(c) 20 cm/s (d) 40 cm/s

Answer: (c) 20 cm/s

44. In the circuit show in figure, power developed across 1 Ω, 2 Ω and 3 Ω resistance are in the ratio of ?

(a) 1 : 2 : (b) 4 : 2 :

(c) 6 : 4 : (d) 2 : 1 :

Answer: (b) 4 : 2 :

45. A capacitor of capacitance 6 μF is changed upto 100 volt. The energy stored in the capacitor is– ?

(a) 0.6 J (b) 0.03 J

(c) 0.06 H (d) 0.3 J

Answer: (b) 0.03 J

46. An electron and a proton are about m apart. Their relative motion is chiefly determined by ?

(a) gravitational forces (b) electrical forces

(c) magnetic forces (d) nuclear forces

Answer: (b) electrical forces

47. Twenty seven identical drops of mercury are charged simultaneously to the potential of 10 volts. If all the drops combine to form a single drop, what will be the potential of bigger drop ? Assume drops to be spherical ?

(a) 90 volts (b) 120 volts

(c) 100 volts (d) 70 volts

Answer: (a) 90 volts

48. J=σE, where J is current density, σ is conductivity and E is electric field, is ?

(a) A form of Ohm's law (b) Maxwell's equation

(c) Continuity equation (d) Ampere's law

Answer: (a) A form of Ohm's law

49. Zone plate is a device to study diffraction. The radii of its zones are proportional to ?

(a) inverse of natural numbers (b) square root of natural numbers

(c) square of natural numbers (d) natural numbers

Answer: (b) square root of natural numbers

50. Two yellow sodium lines of wavelengths ° ° 5890A and 5896A are just resolved by a prism. The resolving power of the prism is ?

(a) 981.16 (b) 0.102

(c) 6 (d) 5893

Answer: (a) 981.16

SECTION B — Mathematics [50]

51. Value of the limit lim2xsin is equal to x ?

(a) not defined (b) none of these

(c) 1 (d) 0

Answer: (d) 0

52. The number of factors and their sum of 360 are:

(a) 12 & 810 (b) 24 & 1080

(c) 12 & 540 (d) 24 & 1170

Answer: (d) 24 & 1170

53. If a= ,b= , then the value of 3 ?

(a) 34 (b) 35

(c) 37 (d) 36

Answer: (a) 34

54. The number of ways in which 39312 can be resolved into two factors, which are prime to each other, are:

(a) 6 (b) 8

(c) 4 (d) 10

Answer: (b) 8

55. Which of the following is false?

(a) 2is a rational number (b) Every irrational number is a real number

(c) Every rational number is a real number (d) Every integer is a real number

Answer: (a) 2is a rational number

56. The sum of the first 20 terms of an arithmetic progression whose first term is 5 and common difference is 4 is ?

(a) 860 (b) 850

(c) 830 (d) 820

Answer: (a) 860

57. The general term of A.P. whose sum of n terms is given by $4n^2 + 3n$, is:

(a) 6n (b) 8n

(c) 6n + 2 (d) 8n + 1

Answer: (b) 8n

58. Mukesh has some cows and some hens in the shed. The total number of legs is 92 and total number of heads is 29. Find the total number of cows in shed:

(a) 14 (b) 17

(c) 12 (d) 19

Answer: (b) 17

59. Which term of the arithmetic progression 21, 42, 63, 84 _____ is 420?

(a) 19 (b) 22

(c) 20 (d) 21

Answer: (c) 20

60. For what value of k do the equations 3(k ?

(a) 2 (b) 4

(c) 3 (d) 1

Answer: (a) 2

61. The sum of the first 51 terms of the arithmetic progression, 2nd term is 2 and 4th term is 8, is : _____ ?

(a) 7458 (b) 7548

(c) 3774 (d) 3477

Answer: (c) 3774

62. In the following figure (not to scale), AB = CD and AB and CD are produced to meet at point P. If ?

(a) 30 (b) 45

(c) 40 (d) 50

Answer: (c) 40

63. If n be a positive integer, if the coefficient of 2nd, 3rd, 4th x)n terms in the expansion of (1 + are in A.P. Then the value of n is:

(a) 5 (b) 9

(c) 8 (d) 7

Answer: (d) 7

64. If f(x)= then at x = 0 the function is: 1+21 ?

(a) Discontinuous because Llimf(x) (b) Discontinuous because limf(0)

(c) Discontinuous because Rlimf(x)does not x (d) Continuous

Answer: (a) Discontinuous because Llimf(x)

65. If a, b, c, x, y, z are the real numbers such that $a^2 + b^2 + c^2 = 1$, $x^2 + y^2 + z^2 = 1$, then ax + by + cz ?

(a) Greater than or equal to 1 (b) Greater than or equal to 3

(c) Less than or equal to 1 (d) Less than or equal to 3

Answer: (c) Less than or equal to 1

66. How many numbers from 1 to 1000 are not divisible by 2, 3 and 5?

(a) 266 (b) 268

(c) 262 (d) 264

Answer: (a) 266

67. The relevant residues are 1, 7, 11, 13, 17, 19, 23 and 29 (eight). We count 8 ?

(a) 17 cm (b) 20 cm

(c) 15 cm (d) 14 cm

Answer: (c) 15 cm

68. In the following figure, O is the centre of the circle and D, E and F are the mid points of AB, BO and OA respectively. If ?

(a) 120 (b) 60

(c) 90 (d) 30

Answer: (b) 60

69. If a, b, c, d are four positive real numbers such that abcd = 1, then (1 + a) (1 + b)(1 + c) (1 + d) is :

(a) Greater than or equal to 8 (b) Less than or equal to 8

(c) Less than or equal to 15 (d) Greater than or equal to 16

Answer: (d) Greater than or equal to 16

70. The volume of a hemisphere is 18 ?

(a) 21 (b) 18

(c) 27 (d) 24

Answer: (c) 27

71. If (3, 2), (6, 3), (x, y) and (6, 5) are the vertices of a parallelogram, the (x, y) is:

(a) (9, 6) (b) (9, 8)

(c) (5, 6) (d) (8, 7)

Answer: (a) (9, 6)

72. From the following results of two colleges A and B, find out which of the two is better?

(a) college B (b) college A

(c) data is not sufficient (d) both are same

Answer: (d) both are same

73. The measure of the central tendency is given by the X-coordinate of the point of intersection of the more than ogive and less than ogive is:

(a) Median (b) Mean

(c) Mode (d) All the above

Answer: (a) Median

74. If the mean of n observations is 46n , then n is equal to: 11 ?

(a) 12 (b) 22

(c) 11 (d) 23

Answer: (c) 11

75. In a Mathematics test 15 students scored 80 marks, 20 students scored 75 marks, 28 students scored 65 marks and 25 students scored 60 marks, mode of the score is:

(a) 65 (b) 75

(c) 80 (d) 60

Answer: (a) 65

76. For the following distribution: Class 0 -5 5 -10 10 -15 15 -20 20- 25 Frequency 10 15 12 20 9 The sum of lower limits of the median class and modal class is:

(a) 30 (b) 15

(c) 25 (d) 35

Answer: (c) 25

77. The units digit of 3100 is :

(a) 0 (b) 2

(c) 1 (d) 3

Answer: (c) 1

78. The number of positive divisors of 8 ?

(a) 20 (b) 80

(c) 16 (d) 100

Answer: (b) 80

79. If the point P(x, y) is equidis tant from the points A (a + b, b ?

(a) bx = ay (b) y = bx

(c) ax = by (d) x = ay

Answer: (a) bx = ay

80. How many cards must be picked from a standard pack of 52 cards to surely get 2 cards of the same suit?

(a) 5 (b) 3

(c) 2 (d) 4

Answer: (a) 5

81. Among any group of 11 integers, the number of integers with the same remainder when they are divided by 10 is:

(a) exactly 3 (b) atmost 5

(c) atleast 5 (d) atleast 2

Answer: (d) atleast 2

82. What should be the value of k so that the linear equation in two variables x and y, 31x+124y = k has integer valued solutions?

(a) 134 (b) 103

(c) 155 (d) 72

Answer: (c) 155

83. If a rectangle has perimeter 96 meters and its length is three times its breadth, then the area of the rectangle is :

(a) 432 cubic meters (b) 436 sq. meters

(c) 432 sq. meters (d) 436 cubic meters

Answer: (c) 432 sq. meters

84. Two hotels stand 25m apart. One of them is 70m high and the angle of depression of the top of other as observed from the top of this hotel is 45 ?

(a) 43 m (b) 45 m

(c) 44 m (d) 46 m

Answer: (b) 45 m

85. Consider a population with is finite and sampling is with replacement. If the variance of the population is 2176.8 with sample size of 16, then the variance of the sampling distribution of means is:

(a) 137.04 (b) 134.12

(c) 136.05 (d) 135.21

Answer: (c) 136.05

86. The median for a moderately asymmetrical series having mode and mean as 125 km and 130.7 km respectively is:

(a) 129.7 m (b) 124.8 m

(c) 128.8 m (d) 128.8 km

Answer: (d) 128.8 km

87. Which of the following is a rational number?

(a) 4+ 5 4 (b) 4+ 5 4+ 5

(c) 4 (d) 4+ 5

Answer: (a) 4+ 5 4

88. For 4 data points of two correlated variables x and y, it is given that ?

(a) x= (103+36y) 116 1 (103+36x) (b) x= 116 1

(c) y= 116 (d) y= (36+103x) 116 1 (36+103y)

Answer: (c) y= 116

89. What should be filled at the places of 1, 2 and 3 to make the statement correct?

(a) rectangles; parameters; item size (b) rectangles; areas; frequencies

(c) triangles; parameters; frequencies (d) triangles; areas; item size

Answer: (b) rectangles; areas; frequencies

90. For a given series of items, if we subtract 'a' from every item and divide every item by 'b', then arithmetic mean of the series:

(a) diminishes by 'a' and divided by 'b' (b) increases by 'a' and divided by 'b'

(c) diminishes by 'a' and multiplied by 'b' (d) increases by 'a' and multiplied 'b'

Answer: (a) diminishes by 'a' and divided by 'b'

91. The curves that occur for a distribution in which class - frequencies go on decreasing symmetrically on either side of central value, are called :

(a) U - shaped curves (b) moderately asymmetrical curves

(c) symmetrical curves (d) extremely asymmetrical curves

Answer: (c) symmetrical curves

92. An equilateral triangle of side 10 m is to be painted on a wall. If the cost of painting is ` 15 per m^2, then the cost to paint the triangle is :

(a) 649.5 (b) 659.5

(c) ` 549.5 (d) ` 559.5 ` `

Answer: (a) 649.5

93. Find the two numbers whose sum is 30 and product of whose HCF and LCM is 224 ?

(a) 13, 17 (b) 14, 16

(c) 11, 19 (d) 12, 18

Answer: (b) 14, 16

94. At how many points does the polynomial x^3 ?

(a) 3 (b) 2

(c) 1 (d) 0

Answer: (c) 1

95. A non-terminating but recurring decimal is:

(a) A rational number (b) An integer

(c) A natural number (d) A whole number

Answer: (a) A rational number

96. Number of positive integers, which are less than 108 and prime to 108, is ?

(a) 15 (b) 18

(c) 17 (d) 36

Answer: (d) 36

97. PQ is the direct common tangent of two circles (S, 9 cm) and (R, 4 cm) which touch each other externally. Find the area of the quadrilateral cm^2)?

(a) 69 (b) 72

(c) 78 (d) 65

Answer: (c) 78

98. Then Euclid's Division lemma gives 31513=dq +r & 34369=dq +r 1 2 ?

(a) 3 (b) 1.9

(c) 0.3 (d) 1

Answer: (d) 1

99. Find the remainder when 3215 is divided by 43 ?

(a) 33 (b) 35

(c) 28 (d) 30

Answer: (c) 28

100. Find the number of ways in which 8064 can be resolved as the product of two factors?

(a) 26 (b) 24

(c) 22 (d) 20

Answer: (b) 24