

UNIVERSITY OF LUCKNOW

D.Pharm Entrance Examination

Biology Group — Model Test Paper Set 5

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

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SECTION A — Chemistry & Physics [50]

Chemistry

1. Meissner effect is shown by : ceerpevej :

- (a) Superconductors (b) Ferromagnetic substances
(c) Diamagnetic substances (d) Anti-ferromagnetic substances

Answer: (a) Superconductors

2. The Structure of ClF is : 3 :

- (a) Trigonal planar (b) Sea-saw
(c) Pyramidal (d) T-shaped

Answer: (d) T-shaped

3. Hybridization of XeF is represented by : 4 XeF :

- (a) sp³d (b) sp²
(c) sp³ (d) sp³d²

Answer: (d) sp³d²

4. Which of the following bonds is the strongest?

- (a) Covalent (b) Van der wall
(c) Hydrogen (d) Ionic

Answer: (d) Ionic

5. Molar conductance, specific conductance ____

- (a) decreases, decreases (b) decreases, increases
(c) increases, decreases (d) increases, increases

Answer: (c) increases, decreases

6. Slope = Zero when :

- (a) infinity (b) minimum
(c) maximum (d) zero

Answer: (c) maximum

7. Ion association in electrolyte solution is given by : efJe :

- (a) Vant'hoff theory (b) Bjerrum theory
(c) Debye-huckel theory (d) Electrolyte theory

Answer: (b) Bjerrum theory

8. Calculate the mean ionic activity of 0.01 molal NaCl. 0.01 ceesuej NaCl :

- (a) 0.559 (b) 0.779
(c) 0.889 (d) 0.669

Answer: (c) 0.889

9. The half life of third-order reaction related to the initial concentration of reactant :

- (a) Directly proportional to a^{-2} (b) Inversely proportional to a^{-2}

(c) is : efke (d) Inversely proportional to 'a1 2' a1 2'kes

Answer: (b) Inversely proportional to 'a2' 'a2' kes

10. The conversion :

(a) Simple reaction (b) Parallel reaction

(c) Consecutive reaction (d) Reversible reaction

Answer: (d) Reversible reaction

11. A first order reaction is 15% complete in 20 minutes. How long will it take to be 60% complete?

(a) 112.7 sec (b) 78.3 sec

(c) 61.2 sec (d) 154.6 sec

Answer: (a) 112.7 sec

12. Osmotic pressure of solution is 0.3284 atm at a temperature of 300 K. The concentration in mole :

(a) 0.066 (b) 0.0133

(c) 0.033 (d) 0.133

Answer: (b) 0.0133

13. 6g of urea is dissolved in 90g of boiling water. The vapour pressure of the solution :

(a) 760.3 mm (b) 744.8 mm

(c) 758.2 mm (d) 761.0 mm

Answer: (b) 744.8 mm

14. The SI unit of molality is : ceesueeeefue :

(a) mole. lit (b) mole.Kg

(c) mole.ml (d) g.equivalent.Kg

Answer: (b) mole.Kg

15. Which of the following pairs of solutions shows large positive deviations from ideal behavior?

(a) Water-propyl alcohol (b) Acetone-chloroform

(c) Cyclohexane-carbon tetrachloride (d) Water-nitric acid

Answer: (a) Water-propyl alcohol

16. Which of the following is an extensive property?

(a) Pressure (b) Density

(c) Volume (d) Temperature

Answer: (c) Volume

17. The equilibrium constant of a reaction doubles on raising temperature from 25 :

(a) 52.8 (b) 37.2

(c) 98.2 (d) 76.3

Answer: (a) 52.8

18. For a given reaction $N(g) + 3H(g)$:

(a) Low temperature, low pressure (b) Low temperature, high pressure

(c) High temperature, low pressure (d) High temperature, high pressure

Answer: (b) Low temperature, high pressure

19. The PH of 0.01M solution of NH Cl in water at 4 25 :

(a) 10.24 (b) 4.32

(c) 12.26 (d) 5.63

Answer: (d) 5.63

20. The PH of a solution, obtained by mixing 5g of acetic acid 7.5g of sodium acetate, and making the volume equal to 500 ml, is (given that dissociation constant of acetic acid at 25 :

(a) 4.78 (b) 5.89

(c) 6.98 (d) 3.45

Answer: (a) 4.78

21. Which of the following expressions represents the criterion for a reaction to be labeled spontaneous?

(a) $(dH)_{s,p} >$ (b) $(dU)_{s,v} >$

(c) $(dG)_{t,p} >0$ (d) $(dS)_{u,v} >$

Answer: (d) $(dS)_{u,v} >$

22. A transition for which first derivative of the chemical potential with respect to temperature at constant pressure is discontinuous is classified :

(a) Lambda transition (b) Second order phase transition

(c) Zero order phase transition (d) First order phase transition

Answer: (d) First order phase transition

23. The increase in entropy on mixing Neon and 1 Xenon, the mole fractions of which are, 5/4 and respectively, is : 5 (in cal degree :

(a) 1.24 (b) 4.36

(c) 5.76 (d) 3.64 *****

Answer: (d) 3.64 *****

24. C for Uranium metal is 6.08 :

(a) 2.02 (b) 3.03

(c) 1.01 (d) 4.04

Answer: (a) 2.02

25. The change in internal energy and change in entropy, respectively, for the reversible isothermal expansion of one mole of an ideal gas at 27 :

(a) 0 J, 20 J (b) 10 J, 20 J

(c) 20 J, 0 J (d) 0 J, 0 J

Answer: (d) 0 J, 0 J

Physics

26. A boat which has speed of 5km/hr in still water crosses a river of width 1 km along the shortest possible path in 15 minutes. The velocity of water of the river in km/hr is:

(a) 14 (b) 3

(c) 4 (d) 2

Answer: (b) 3

27. A 2.5 kg iron ball has the same diameter as a 1.25 kg aluminium ball. The balls are dropped at the same time from a cliff. Just before they reach the ground, they have same :

(a) Kinetic energy (b) Potential energy

(c) Momentum (d) Acceleration

Answer: (d) Acceleration

28. Planck's constant has the dimension of:

(a) Angular momentum (b) Momentum

(c) Frequency (d) Energy

Answer: (a) Angular momentum

29. If 1.20 V potential difference must be applied to stop the fastest photoelectrons emitted by a nickel surface under the action of ultraviolet light of wavelength 2000\AA , calculate the work function of nickel ?

- (a) 6.21 eV (b) 5.01 eV
(c) 4.80 eV (d) 4.50 eV

Answer: (b) 5.01 eV

30. Which of the following parameters is the same for hydrogen-like atoms and ions in ground states?

- (a) Radius of the orbit (b) Energy of the atom
(c) Speed of the electron (d) Orbital angular momentum of the electron

Answer: (d) Orbital angular momentum of the electron

31. A coil having inductance 0.15 H and resistance 15Ω is connected across a 220 V, 50 Hz line. Compute the current in the coil ?

- (a) 3.50 A (b) 4.00 A
(c) 4.25 A (d) 4.45 A

Answer: (d) 4.45 A

32. In Helium-Neon laser, helium atoms ?

- (a) Impart energy to the Neon atoms (b) Emit laser radiation
(c) Act as catalytic atom (d) Act as quenching agents

Answer: (a) Impart energy to the Neon atoms

33. For D and D lines of Na ≈ 1000 . In order $1/2 \Delta\lambda$ to resolve these lines by a grating in the fourth order of spectrum the total number of line on the grating should be ?

- (a) 500 (b) any number
(c) 250 (d) 1000

Answer: (c) 250

34. A zone plate behaves like a ?

- (a) Concave lens (b) Plane mirror
(c) Convex lens (d) Glass plate

Answer: (c) Convex lens

35. The instrument used to measure optical rotation is known as ?

- (a) Polarimeter (b) Microscope
(c) Interferometer (d) Spectrometer

Answer: (a) Polarimeter

36. In the diffraction of a plane wave due to a circular obstacle (disc) the axial point is always ?

- (a) dark (b) may be bright or dark
(c) bright (d) None of the above

Answer: (c) bright

37. When a thin transparent plate is introduced in the path of interfering beams, the fringe width will ?

- (a) decrease (b) remains the same
(c) become zero (d) increase

Answer: (b) remains the same

38. A converging lenses of focal length f is placed in contact with a diverging lens of focal length $3f$. The combination is ?

- (a) A diverging lens of focal length $3f$ (b) A converging lens of focal length $3f/2$
(c) A diverging lens of focal length $3f/2$ (d) A converging lens of focal length $2f$

Answer: (b) A converging lens of focal length $3f/2$

39. For which one of the following concave mirror is not used?

- (a) Reflector in search lights
- (b) Rear-view mirror in cars
- (c) Shaving glass
- (d) Inspection internal parts of ear

Answer: (b) Rear-view mirror in cars

40. In Young's double slit experiment the slit separation is 0.12 mm, the wavelength of light used is 5893 \AA and interference pattern is observed on a screen 1 m away. The separation between successive bright fringes will be ?

- (a) 5.50 mm
- (b) 4.91 mm
- (c) 6.50 mm
- (d) 4.50 mm

Answer: (b) 4.91 mm

41. When the length of an astronomical telescope tube increases, its magnifying power :

- (a) Does not change
- (b) Decreases
- (c) May decrease or increase
- (d) Increases

Answer: (b) Decreases

42. The number of cardinal points in a thin lens is :

- (a) zero
- (b) six
- (c) three
- (d) two

Answer: (b) six

43. The minimum distance between an object and its real image formed by a convex lens is ?

- (a) $f/2$
- (b) $2f$
- (c) f
- (d) $4f$

Answer: (d) $4f$

44. The ratio of the speeds of sound in nitrogen gas to that in helium gas at 300 K is ?

- (a) 5
- (b) $3/7$
- (c) $1/7$
- (d) $2/7$

Answer: (a) 5

45. A source of unknown frequency produces 8 beats with a source of 250 Hz and 12 beats with a source of 270 Hz. The frequency of the unknown source is ?

- (a) 262 Hz
- (b) 282 Hz
- (c) 242 Hz
- (d) 258 Hz

Answer: (d) 258 Hz

46. For a diatomic gas the root mean square velocity at room temperature is 1930 m/s. The gas will be:

- (a) H
- (b) O
- (c) Cl₂
- (d) F₂

Answer: (a) H

47. In a mixture of ideal gas which one of the following is same for all molecules :

- (a) Speed
- (b) Mean translational kinetic energy
- (c) Root mean square speed
- (d) Root mean square momentum

Answer: (c) Root mean square speed

48. The first law of thermodynamics is a special case of :

- (a) Charles' law
- (b) the law of conservation of energy
- (c) the law of heat exchange
- (d) Newton's law

Answer: (b) the law of conservation of energy

49. In an adiabatic process the quantity which remains constant is :

- (a) Volume (b) Total heat energy of the system
- (c) Pressure (d) Temperature

Answer: (b) Total heat energy of the system

50. A 10 V battery of negligible internal resistance is connected to 50 ohm resistance coil. The heat energy produced in 1 hour in joules will be:

- (a) 7200 J (b) 8000 J
- (c) 4500 J (d) 6500 J

Answer: (a) 7200 J

SECTION B — Biology [50]

Zoology

51. A file like rasping organ for feeding, called radula, present in the phylum _____ ?

- (a) Paramecium Caudatum (b) Mollusca
- (c) Arthropoda (d) Metamerism

Answer: (b) Mollusca

52. In amphibians, respiration occurs through ?

- (a) A mantle and non-segmented body (b) Silkworm and apis
- (c) Gills, Lungs and Skin (d) Bilaterally symmetrical, Triploblastic

Answer: (c) Gills, Lungs and Skin

53. Pairs of animals comprises jawless fishes is ?

- (a) Gills, Book-gills, Book-lungs and tracheae (b) Sea pen and sea fan
- (c) Lampreys and Hag fishes (d) Presence of a muscular diaphragm

Answer: (c) Lampreys and Hag fishes

54. _____ is responsible for maintaining the current of water in sponge ?

- (a) Hemichordata (b) Proboscis gland
- (c) Choanocytes (d) Mollusca

Answer: (c) Choanocytes

55. Aquatic annelids (like Nereis) possess lateral appendages called _____, which help in swimming ?

- (a) Schizocoel (b) Molluscs
- (c) Aedes (d) Parapodia

Answer: (d) Parapodia

56. _____ possesses electric organs and belongs to class chondrichthyes ?

- (a) Torpedo (b) Metamorphosis
- (c) Pseudocoelomate 8 (d) Proboscis gland

Answer: (a) Torpedo

57. Few cnidarians like corals have a skeleton composed of ?

- (a) Calcium carbonate (b) Notochord is absent
- (c) Jointed legs (d) Exclusively marine Hemichordata

Answer: (a) Calcium carbonate

58. _____ is universal for sponges ?

- (a) High regenerative power (b) Cnidoblasts 8

(c) Prawn, Scorpion, Locusta (d) Malpighian tubules

Answer: (a) High regenerative power

59. Correct combination of aquatic mammals is ?

(a) Pavo, Psittacula, Corvus (b) Mantle cavity

(c) Mammary glands (d) Whales, Dolphins, Seals

Answer: (d) Whales, Dolphins, Seals

60. Body cavity is the cavity present between body wall and gut wall. In some animals the body cavity is not lined by mesoderm. Such animals are called ?

(a) Arthropoda (b) Crocodile

(c) Pseudocoelomate (d) Mantle cavity

Answer: (c) Pseudocoelomate

61. pairs of animals has non-glandular skin ?

(a) Pseudocoelomate (b) Proteinaceous pellicle

(c) Chameleon and Turtle (d) Flagellated protozoans

Answer: (c) Chameleon and Turtle

62. Phylum and its three examples is ?

(a) Mollusca - Loligo, Sepia, Octopus (b) A mantle & unsegmented body

(c) Gills, Book-gills, Book-lungs and tracheae (d) Presence of a muscular diaphragm

Answer: (a) Mollusca - Loligo, Sepia, Octopus

63. "Pearl Oyster" is commonly called ?

(a) Pinctada (b) Chitin

(c) Echinodermata (d) Aves

Answer: (a) Pinctada

64. Stinging capsules (nematocysts) are found in ?

(a) Mesodermal and ventral to nerve cord (b) A mantle and non-segmented body

(c) Gills, Book-gills, Book-lungs and tracheae (d) Sea pen and sea fan

Answer: (d) Sea pen and sea fan

65. A soft and spongy layer of skin forms a mantle over the visceral hump in is ?

(a) Calcium carbonate (b) Aves

(c) Molluscs (d) Mantle cavity

Answer: (c) Molluscs

66. Octopus is commonly called as ?

(a) Devil fish (b) Paramecium Caudatum

(c) Presence of feathers (d) Mantle cavity

Answer: (a) Devil fish

67. Mollusca is not a ?

(a) Labeo rohita (b) Parapodia

(c) Hemichordata (d) Mollusca

Answer: (a) Labeo rohita

68. Second largest phylum is ?

(a) Molluscs (b) Indirect

(c) Asterias (d) Eight

Answer: (a) Molluscs

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69. Phylum molluscs can be distinguished from other invertebrates by the presence of is ?

- (a) Sea pen and sea fan
- (b) Mesodermal and ventral to nerve cord
- (c) Mesoderm on both sides
- (d) A mantle & unsegmented body

Answer: (d) A mantle & unsegmented body

70. System in mollusca opens into mantle cavity is ?

- (a) Proboscis gland
- (b) Interstitial cells
- (c) Respiratory, Excretory system
- (d) Jointed appendages Mollusca

Answer: (c) Respiratory, Excretory system

71. Squid, cuttlefish and Octopus belong to the phylum ?

- (a) Struthios
- (b) Aplysia
- (c) Jointed legs
- (d) Mollusca

Answer: (d) Mollusca

72. Sea-hare is the common name of ?

- (a) Eight
- (b) Statocyst
- (c) Aplysia
- (d) Aves

Answer: (c) Aplysia

73. The space between the hump and the mantle is called ?

- (a) Proboscis gland
- (b) Mantle cavity
- (c) Molluscs
- (d) Arthropoda

Answer: (b) Mantle cavity

74. Members of phylum Mollusca is ?

- (a) Whales, Dolphins, Seals
- (b) Bilaterally symmetrical, Triploblastic
- (c) Crocodiles, Birds and Mammals
- (d) Exclusively marine Hemichordata

Answer: (b) Bilaterally symmetrical, Triploblastic

75. Feather like gills are present in ?

- (a) Jointed legs
- (b) Cnidoblasts 8
- (c) Arthropoda
- (d) Mantle cavity

Answer: (d) Mantle cavity

Botany

76. Sclerenchymatous tissue commonly found in fruit walls of nuts and leaves of tea known as sclereids. They ?

- (a) are highly thick, lignified and dead cells
- (b) Food material, resins latex and mucilage
- (c) Both are the regions of secondary xylem
- (d) Radial and tangential walls of endodermis

Answer: (a) are highly thick, lignified and dead cells

77. Secondary lateral meristem like cork cambium or phellogen involved in secondary tissues formation is derived from ?

- (a) Cortex
- (b) Pericycle
- (c) Maize stem
- (d) Unicellular

Answer: (a) Cortex

78. Phloem parenchyma stores is ?

- (a) Food material, resins latex and mucilage
- (b) are highly thick, lignified and dead cells
- (c) Adaxial epidermis of dorsiventral leaf
- (d) Both monocot and dicot roots.

Answer: (a) Food material, resins latex and mucilage

79. The distinguishing feature of open vascular bundles is presence of ?

- (a) Cuticle covering (b) Xylem parenchyma
(c) Dicot stem (d) Cambium

Answer: (d) Cambium

80. _____ type of arrangement of vascular bundles occurs in the roots of monocots ?

- (a) Monocot root (b) Cambium
(c) Epidermis (d) Radial

Answer: (d) Radial

81. The presence of cambium in the vascular bundles provides them the ability to is ?

- (a) Monocot stem dicot root (b) Form secondary tissues
(c) Companion cells (d) Monocot root

Answer: (b) Form secondary tissues

82. Lateral roots are arise from ?

- (a) Cell dedifferentiation (b) Pericycle
(c) Secondary xylem (d) Monocot stem

Answer: (b) Pericycle

83. Polyarch xylem bundles are found in ?

- (a) Maize stem (b) Cambium
(c) Monocot root (d) Guard cell

Answer: (c) Monocot root

84. The casparian strips are present on the plant cells of the root are ?

- (a) Bulliform cells (b) Dorsiventral leaf
(c) Secondary xylem (d) Barrel-shaped

Answer: (d) Barrel-shaped

85. The conjunctive tissue lines between the is ?

- (a) Xylem and Phloem (b) Monocot stem
(c) Collenchymatous, sclerenchymatous (d) The cambial ring

Answer: (a) Xylem and Phloem

86. A monocot root differs from a dicot root by is ?

- (a) Monocot root (b) Large pith
(c) Form secondary tissues (d) Bulliform cells

Answer: (b) Large pith

87. Vascular bundles surrounded by a sclerenchymatous bundle sheath is a feature of ?

- (a) Monocot stem (b) Lateral meristem
(c) Xylem and Phloem (d) Monocot root

Answer: (a) Monocot stem

88. The central most portion of stem of dicotyledonous plants is occupied by ?

- (a) Pinus (b) Dicot stem
(c) Pith (d) Summer

Answer: (c) Pith

89. Numerous large spaces and air cavities between its cells is ?

- (a) Spongy mesophyll in dicot leaf (b) Radial and tangential walls of endodermis
(c) Deposition of organic compounds (d) Has a sclerenchymatous hypodermis

Answer: (a) Spongy mesophyll in dicot leaf

90. Cells provide mechanical support to petiole of a level is ?

- (a) Collenchyma (b) Dicot root
- (c) Sclerechymatous (d) Dicot leaf

Answer: (a) Collenchyma

91. Tracheids differ from other tracheary elements in is ?

- (a) Being imperforate (b) Xylem and Phloem
- (c) Lateral meristem (d) Monocot stem

Answer: (a) Being imperforate

92. The fate of primary xylem in a dicot root showing extensive secondary growth is ?

- (a) Mechanical support (b) Sclerenchymatous
- (c) Dorsiventral leaf (d) It is retained in the centre of the axis

Answer: (d) It is retained in the centre of the axis

93. A conjoint and open vascular bundle will be observed in the transverse section of is ?

- (a) Dicot stem (b) Casparian strip
- (c) Dorsiventral leaf (d) From medullary rays

Answer: (a) Dicot stem

94. Interfascicular cambium and cork cambium are formed due to ?

- (a) Endarch primary xylem (b) Cell dedifferentiation
- (c) Monocot root (d) Dorsiventral leaf

Answer: (b) Cell dedifferentiation

95. Polyarch vascular bundles generally occur in ?

- (a) Monocot root (b) Xylem and Phloem
- (c) Fibrous (d) Epidermis

Answer: (a) Monocot root

96. The plant part which possesses polyarch condition of vascular bundles with a well developed pith is ?

- (a) Size of veins (b) Xylem and Phloem
- (c) Maize stem (d) Monocot root

Answer: (d) Monocot root

97. Vascular bundle is enclosed within a well developed sclerenchymatous sheath in ?

- (a) Casparian strip (b) Epidermis
- (c) Dicot Root (d) Monocot stem

Answer: (d) Monocot stem

98. Hypodermis is in sunflower stem and in maize stem ?

- (a) Mechanical support (b) Collenchymatous, sclerenchymatous
- (c) Being imperforate (d) Form secondary tissues

Answer: (b) Collenchymatous, sclerenchymatous

99. Large and well developed pith is not found in ?

- (a) Form secondary tissues (b) Leaves of tea
- (c) Monocot stem dicot root (d) Xylem and Phloem

Answer: (c) Monocot stem dicot root

100. Conjoint and closed vascular bundles are found in ?

- (a) Xylem and Phloem (b) Cell dedifferentiation
- (c) Maize stem (d) Large pith

Answer: (c) Maize stem

