

# UNIVERSITY OF LUCKNOW

## D.Pharm Entrance Examination

### Biology Group — Model Test Paper Set 6

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

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#### SECTION A — Chemistry & Physics [50]

##### Chemistry

**1. Cheese is an example :**

- (a) Solid in liquid (b) Gas in solid  
(c) Solid in solid (d) Liquid in solid

**Answer: (d) Liquid in solid**

**2. Which of the following types of catalysis can be explained by the adsorption theory?**

- (a) Autocatalysis (b) Heterogeneous catalysis  
(c) Enzyme catalysis (d) Homogeneous catalysis

**Answer: (b) Heterogeneous catalysis**

**3. How many times  $Al^{3+}$  ion is more effective than  $Na^{+}$  ion in flocculating a negatively charged sol?**

- (a) Three times (b) Nine times  
(c) Six times (d) Two times

**Answer: (b) Nine times**

**4. Which of the following are favourable conditions for physical adsorption?**

- (a) High temperature, high pressure (b) Low temperature, low pressure  
(c) Low temperature, high pressure (d) High temperature, low pressure

**Answer: (c) Low temperature, high pressure**

**5. At critical micelle concentration (CMC), the surfactant molecules :**

- (a) Dissociate (b) Associate  
(c) Decompose (d) Become completely soluble

**Answer: (b) Associate**

**6. What is the result for the following calculation with appropriate number of significant figures?**

- (a) 42.6429 (b) 42.6  
(c) 42.64 (d) 42.643

**Answer: (b) 42.6**

**7. The percentage composition of nitrogen in urea :**

- (a) 20% (b) 6.67%  
(c) 46.67% (d) 26.67%

**Answer: (c) 46.67%**

**8. The ratio of the masses of oxygen that are combined with one gram of nitrogen in the compounds  $NO$  and  $NO_2$  is 3 : 2. This statement is correct as per which law?**

- (a) Law of conservation of mass (b) Gay Lussac's law of gaseous volumes  
(c) Law of multiple proportions (d) Law of definite proportions

**Answer: (c) Law of multiple proportions**

**9. What is the limiting reactant, and what amount of Ni(OH)<sub>2</sub> is formed when 25.9g of NiCl<sub>2</sub> · 2H<sub>2</sub>O reacts with 10 g of NaOH?**

- (a) NiCl<sub>2</sub> and 5.8g of Ni(OH)<sub>2</sub> (b) NaOH and 5.8 g of Ni(OH)<sub>2</sub>  
(c) NiCl<sub>2</sub> and 11.6g of Ni(OH)<sub>2</sub> (d) NaOH and 11.6g of Ni(OH)<sub>2</sub>

**Answer: (d) NaOH and 11.6g of Ni(OH)<sub>2</sub>**

**10. What is the frequency of the radiation corresponding to the spectral line of lowest energy in Lyman series in the H-atomic spectrum?**

- (a) 2.47 (b) 3.28  
(c) 1.64 (d) 1.22

**Answer: (a) 2.47**

**11. The Aufbau principle implies that a new electron will enter an orbital for which : nBhe :**

- (a) l has lower value (b) n has lower value  
(c) The value of (n + l) is maximum (d) The value of (n + l) is minimum

**Answer: (d) The value of (n + l) is minimum**

**12. Eka-aluminium and Eka-silicon, respectively, are references to : Fke :**

- (a) Silicon and Aluminium (b) Germanium and Gallium  
(c) Aluminium and Silicon (d) Gallium and Germanium

**Answer: (d) Gallium and Germanium**

**13. What is the IUPAC name of the element with atomic number 111?**

- (a) Ununnilium (b) Unnilennium  
(c) Unununium (d) Ununbium

**Answer: (c) Unununium**

**14. The ionization energy of Li in its ground state is 519 :**

- (a) 0.63 (b) 1.87  
(c) 1.26 (d) 2.52

**Answer: (c) 1.26**

**15. The correct order of first electron affinity values of Al, Si and P is : Al, Si :**

- (a) P > Si > Al (b) Si > P > Al  
(c) Al > P > Si (d) Si > Al > P

**Answer: (b) Si > P > Al**

**16. Based on the electronegativity difference between the bonded atoms in molecules, the correct order of ionic character is : DeCegDeeW ceW DeeyebefOele hejceeCegDeeW :**

- (a) Cl > LiCl > HCl (b) HCl > Cl > LiCl  
(c) LiCl > Cl > HCl (d) LiCl > HCl > Cl<sub>2</sub>

**Answer: (d) LiCl > HCl > Cl<sub>2</sub>**

**17. Oxygen brings out the group oxidation state for many elements more readily than fluorine :**

- (a) Higher ionization enthalpy (b) Higher electronegativity  
(c) Decreased steric crowding (d) Lower atomic radius

**Answer: (c) Decreased steric crowding**

**18. Hydrogen is predicted to exist naturally in metallic state :**

- (a) Extremely low pressure (b) Extremely high pressure  
(c) Room temperature (d) Extremely high temperature

**Answer: (b) Extremely high pressure**

**19. Which of the following is the non-renewable energy source?**

- (a) Solar energy (b) Coal
- (c) Water (d) Wind energy

**Answer: (b) Coal**

**20. In the prolonged electrolysis of water to prepare heavy water, the anode and cathode, respectively, are :  
Yeejer heeveer yeveeves :**

- (a) Steel and nickel (b) Nickel and graphite
- (c) Graphite and steel (d) Nickel and steel

**Answer: (d) Nickel and steel**

**21. The dihedral angles in gas phase and solid phase, respectively, of hydrogen peroxide :**

- (a) 132.5 (b) 90.2
- (c) 111.5 (d) 101.5

**Answer: (c) 111.5**

**22. Which of the following is not a method for the commercial production of dihydrogen?**

- (a) Action of water on metals (b) Bosch's process
- (c) Lane's process (d) Electrolysis of water

**Answer: (a) Action of water on metals**

**23. The formula of phenacite is : Hes :**

- (a)  $MgSO \cdot 7H_2O$  (b)  $Be_3Si_6O_{18}$
- (c)  $MgCO_3$  (d)  $Be_2AlSi_2O_{10}$

**Answer: (b)  $Be_3Si_6O_{18}$**

**24. Which of the following is not a polymorph of calcium carbonate?**

- (a) Aragonite (b) Perovskite
- (c) Vaterite (d) Calcite

**Answer: (b) Perovskite**

**25. The correct biological function of magnesium is cewiveerefMe :**

- (a) Important constituent of DNA and RNA (b) Electrochemical and enzyme-activating functions
- (c) Important in tertiary structure of protein (d) Important in nerve functioning in animals

**Answer: (b) Electrochemical and enzyme-activating functions**

**Physics**

**26. The laser material in He-Ne laser is activated by ?**

- (a) supersonic gas explosion (b) chemical reaction
- (c) optical pumping (d) electrical discharge

**Answer: (d) electrical discharge**

**27. The population inversion between energy states in a Ruby laser is achieved through ?**

- (a) optical pumping (b) lowering of temperature
- (c) vacuum pumping (d) raising of temperature

**Answer: (a) optical pumping**

**28. Fraunhofer spectrum is a ?**

- (a) Band emission spectrum (b) Band absorption spectrum
- (c) Line absorption spectrum (d) Line emission spectrum

**Answer: (c) Line absorption spectrum**

29. Consider : A. The wavelength of scattered light may be greater or less than that of incident light. B. Above statement A is true for scattering of photons by electrons :

- (a) A, B both are true (b) A is true, B is false  
(c) A is false, B is true (d) A, B both are false

Answer: (b) A is true, B is false

30. The thermal conductivities of brick and pine wood are respectively 0.6 and 0.13W/(mOC). What thickness of brick has the same insulating ability at 5 cm of pine ?

- (a) 23 cm (b) 4.6 cm  
(c) 5 cm (d) 30 cm

Answer: (a) 23 cm

31. Transference of molecules from the vapour phase to the liquid phase is called ?

- (a) Sublimation (b) None of these  
(c) Condensation (d) Evaporation

Answer: (c) Condensation

32. A parallel plate capacitor has two layers of different dielectrics as shown in figure. The ratio of potential difference across the dielectric layers when connected to the battery is  $K K_a$  ?

- (a) 1 (b) 1 : 1  $K_b$   
(c) 1  $K K_b$  2 2  $K_a$  (d) 2

Answer: (d) 2

33. Water rises to a height of 10 cm in a capillary. Mercury falls to a depth of 3.42 cm in same capillary. If the relative density of mercury is 13.6 g/cc and its angle of contact is  $135^\circ$ , the ratio of surface tension of water and mercury is :

- (a) 0.15 (b) 0.05  
(c) 0.20 (d) 0.10

Answer: (a) 0.15

34. If density of earth increased by 2% and radius by 1% the acceleration due to gravity  $g$  will change as follows :

- (a) Decrease 3% (b) Decrease 5%  
(c) Increase 3% (d) Increase 5%

Answer: (c) Increase 3%

35. The same retarding force is applied to stop a train. If the speed is doubled, then the distance will be :

- (a) The same (b) four times  
(c) half (d) doubled

Answer: (b) four times

36. The speed of a boat in still water is 10 km/hr. If the boat crosses a 2 km wide river in 15 min along the shortest possible route, the water velocity in the river is :

- (a) 6 km/hr (b) 5 km/hr  
(c) 4 km/hr (d) 3 km/hr

Answer: (a) 6 km/hr

37. The gauge transformation in which  $\nabla \cdot \mathbf{A} = 0$ , is called ?

- (a) Coulomb gauge (b) Longitudinal gauge ,  
(c) Gauss gauge (d) Lorentz gauge

Answer: (a) Coulomb gauge

**38. Anderson's Bridge is used for measurement of ?**

- (a) Self-inductance (b) Frequency of AC supply
- (c) Resistance (d) Capacitance

**Answer: (a) Self-inductance**

**39. The given circuit diagram is equivalent to ?**

- (a) JK Flip-flop (b) Clocked RS Flip-flop
- (c) D Flip-flop (d) T Flip-flop

**Answer: (c) D Flip-flop**

**40. The amount of work done in rotating a magnet 180° of moment M through from its position along the magnetic meridian is:**

- (a) zero (b)  $\frac{1}{2} MB$
- (c) MB (d) 2MB

**Answer: (d) 2MB**

**41. A galvanometer connected in series with a high resistance is called :**

- (a) Voltmeter (b) Ammeter
- (c) Wattmeter (d) None of these

**Answer: (a) Voltmeter**

**42. The temperature of Sun is 6000 K and the  $2.88 \times 10^{-3}$  Wien's constant is mK. Assuming Sun to be a perfectly black body, the wavelength corresponding to the maximum intensity in the solar radiation must be ?**

- (a) 172.8 nm (b) 480 nm
- (c) 290 nm (d) None of the above

**Answer: (b) 480 nm**

**43. When a metal rod is heated it expands because ?**

- (a) The actual cause is unknown (b) The size of its atoms increase
- (c) None of these (d) The distance among its atom increase

**Answer: (d) The distance among its atom increase**

**44. The expansion of a string, obeying Hooke's law is x. The velocity of sound in this expanded string is v. If the expansion is increased to 1.5x, then the velocity of sound in the string will be :**

- (a) 1.22v (b) 0.75v
- (c) 0.61v (d) 1.50v

**Answer: (a) 1.22v**

**45. Unit of surface tension is ?**

- (a) Dyne cm<sup>-2</sup> (b) Dyne cm
- (c) None of these (d) Dyne cm<sup>-1</sup>

**Answer: (d) Dyne cm<sup>-1</sup>**

**46. A metal in which even Iron can float is :**

- (a) magnesium (b) manganese
- (c) mercury (d) sodium

**Answer: (c) mercury**

**47. The ratio of mass of a planet to that of the earth, if its radius is half that of the earth and acceleration due to gravity on its surface is twice that on earth's surface, is ?**

- (a) 0.5 (b) 2
- (c) 0.33 (d) 0.25

Answer: (a) 0.5

48. How much force is required to change the velocity of a body of mass 1 kg from 20 m/s to 30 m/s in 2 seconds?

- (a) 25 N (b) 10 N  
(c) 1 N (d) 5 N

Answer: (d) 5 N

49. Scalar quantity is :

- (a) velocity (b) displacement  
(c) momentum (d) temperature

Answer: (d) temperature

50. The photoelectric threshold wavelength for tungsten is 2300 Å. If this surface is irradiated by ultra-violet light of wavelength 1800 Å, the kinetic energy of emitted electrons is ?

- (a) 2.4 eV (b) 1.8 eV  
(c) 1.5 eV (d) 2.7 eV

Answer: (c) 1.5 eV

## SECTION B – Biology [50]

### Zoology

51. Head, foot & visceral mass this combination of characters is a diagnostic feature of ?

- (a) Statocyst (b) Molluscs  
(c) Struthios (d) Chordata

Answer: (b) Molluscs

52. Sepia is commonly known as ?

- (a) Cuttle fish (b) Notochord is absent  
(c) Struthio (d) Mollusca

Answer: (a) Cuttle fish

53. An enterocoelomate invertebrate group is ?

- (a) Petromyzon (b) Testudo  
(c) Echinodermata (d) Ornithorhynchus

Answer: (c) Echinodermata

54. Coelom produced by splitting of mesoderm is ?

- (a) Interstitial cells (b) Choanocytes  
(c) Calcareous (d) Schizocoel

Answer: (d) Schizocoel

55. True coelom is cavity between alimentary canal and body wall enclosed by ?

- (a) A mantle and non-segmented body (b) Mesoderm on both sides  
(c) Notochord is absent (d) Exclusively marine Hemichordata

Answer: (b) Mesoderm on both sides

56. Water-vascular system is present in ?

- (a) Asterias (b) Chordata  
(c) Indirect (d) Mollusca

Answer: (a) Asterias

57. The development in echinodermata is ?

- (a) Parapodia (b) Trygon  
(c) Indirect (d) Schizocoel

**Answer: (c) Indirect**

**58. Radial symmetrical adult and bilateral symmetrical larva has ?**

- (a) Mollusca (b) Echinodermata  
(c) Statocyst (d) Torpedo

**Answer: (b) Echinodermata**

**59. Exoskeleton of echinoderms is ?**

- (a) Eight (b) Calcareous  
(c) Trygon (d) Aurelia

**Answer: (b) Calcareous**

**60. Echinoderms are ?**

- (a) Calcium carbonate (b) Gills, Lungs, Skin  
(c) Exclusively marine Hemichordata (d) Monkey, Chimpanzee, Man

**Answer: (c) Exclusively marine Hemichordata**

**61. Excretory organ like proboscis gland is present in ?**

- (a) Cnidoblasts 8 (b) Struthios  
(c) Proboscis gland (d) Hemichordata

**Answer: (d) Hemichordata**

**62. Characteristic cells of Hydra are ?**

- (a) Respiratory, Excretory system (b) Limulus  
(c) Warm blooded (d) Cnidoblasts 8

**Answer: (d) Cnidoblasts 8**

**63. Excretory organ of hemichordata is ?**

- (a) Proboscis gland (b) Mollusca  
(c) Struthio (d) Parapodia

**Answer: (a) Proboscis gland**

**64. Proboscis gland is an excretory organ in ?**

- (a) Pigeon (b) Struthios  
(c) Reptilia (d) Hemichordata

**Answer: (d) Hemichordata**

**65. Hemichordates have now been placed with the non- chordates close to echinoderms, because ?**

- (a) Reduce body weight (b) Notochord is absent  
(c) Crocodiles, Birds and Mammals (d) Pseudocoelomate 8

**Answer: (b) Notochord is absent**

**66. Hemichordata was earlier considered as a subphylum under phylum ?**

- (a) Aurelia (b) Pigeon  
(c) Chordata (d) Ichthyophis

**Answer: (c) Chordata**

**67. Balanoglossus belong to the phylum ?**

- (a) Presence of feathers (b) Echinodermata  
(c) Mantle cavity (d) Hemichordata Chordata

**Answer: (d) Hemichordata Chordata**

**68. Vertebrate group of animals characterised by crop and gizzard in its digestive system is ?**

- (a) Aves (b) Warm blooded
- (c) Bony fishes (d) Devil fish

**Answer: (a) Aves**

**69. Digestive tract has additional chambers like crop and gizzard, that animals is ?**

- (a) Presence of feathers (b) Chameleon and Turtle
- (c) Pavo, Psittacula, Corvus (d) Crocodiles, Birds and Mammals

**Answer: (c) Pavo, Psittacula, Corvus**

**70. Features distinguish mammals from other vertebrates is ?**

- (a) Mollusca - Loligo, Sepia, Octopus (b) Beak is absent in them
- (c) Have gill slits at some stage (d) Hairy skin and mammary glands

**Answer: (d) Hairy skin and mammary glands**

**71. Crocodile and penguin are similar to Whale and Dogfish ?**

- (a) Mollusca - Loligo, Sepia, Octopus (b) A mantle & unsegmented body
- (c) Beak is absent in them (d) Have gill slits at some stage

**Answer: (d) Have gill slits at some stage**

**72. The scientific name of Ostrich ?**

- (a) Devil fish (b) Labeo rohita
- (c) Struthios (d) Echinodermata

**Answer: (c) Struthios**

**73. The exclusive feature of the birds is ?**

- (a) Hemichordata Chordata (b) Presence of feathers
- (c) Interstitial cells (d) Devil fish

**Answer: (b) Presence of feathers**

**74. In chordates during embryonic development the notochord is ?**

- (a) Mesodermal and ventral to nerve cord (b) A mantle & unsegmented body
- (c) Have gill slits at some stage (d) Beak is absent in them

**Answer: (a) Mesodermal and ventral to nerve cord**

**75. Oviparous mammal is ?**

- (a) Interstitial cells (b) Ornithorhynchus
- (c) Hemichordata (d) Viviparity

**Answer: (b) Ornithorhynchus**

## Botany

**76. In plants, lateral roots arise from is ?**

- (a) Dicot root (b) Meristems
- (c) Heart wood (d) Pericycle

**Answer: (d) Pericycle**

**77. In a dorsiventral leaf, location of palisade tissue and phloem is respectively on the ..... surfaces ?**

- (a) Monocot root (b) Adaxial and abaxial
- (c) Mechanical support (d) Secondary xylem

**Answer: (b) Adaxial and abaxial**

**78. Stomata are distributed more on the lower surface than on the upper surface in ?**

- (a) Dorsiventral leaf (b) Being imperforate

(c) Large pith (d) Endodermis

**Answer: (a) Dorsiventral leaf**

**79. In a dorsiventral leaf, ..... is true regarding the position of xylem ?**

(a) Radial and tangential walls of endodermis (b) Xylem is towards adaxial epidermis

(c) Phellem, Phelloderm, Secondary cortex (d) Cork cambium and cork

**Answer: (b) Xylem is towards adaxial epidermis**

**80. All the xylem elements, when mature, are dead except ?**

(a) Xylem parenchyma (b) Lateral meristem

(c) Dicot root (d) Pericycle

**Answer: (a) Xylem parenchyma**

**81. Vessel-less plant is a ?**

(a) Pinus (b) Phellem

(c) Monocot stem (d) Closed

**Answer: (a) Pinus**

**82. Vascular cambium and cork cambium are the examples of ?**

(a) Monocot plants (b) Periderm

(c) Endodermis (d) Lateral meristem

**Answer: (d) Lateral meristem**

**83. Layer of cells impervious to water because of a band of suberised matrix called ?**

(a) Bundle sheath cells (b) Heart wood

(c) Bulliform cells (d) Casparian strip

**Answer: (d) Casparian strip**

**84. Casparian strips occur in ?**

(a) Sieve tubes, Companion cells, Vessels (b) Xylem is towards adaxial epidermis

(c) Radial and tangential walls of endodermis (d) Both are the regions of secondary xylem

**Answer: (c) Radial and tangential walls of endodermis**

**85. The specialised cells in the epidermis of Monocot leaves that help in rolling and unrolling of leaves are ?**

(a) Barrel-shaped (b) Monocot stem

(c) Dicot root (d) Bulliform cells

**Answer: (d) Bulliform cells**

**86. Water containing cavities are present within the vascular bundles of ?**

(a) Dorsiventral leaf (b) Being imperforate

(c) Secondary xylem (d) Monocot stem

**Answer: (d) Monocot stem**

**87. Gymnosperms lacks is ?**

(a) Sieve tubes, Companion cells, Vessels (b) Has a sclerenchymatous hypodermis

(c) Food material, resins latex and mucilage (d) Xylem is towards adaxial epidermis

**Answer: (a) Sieve tubes, Companion cells, Vessels**

**88. The central portion of the stem is called ?**

(a) Pith (b) Dicot stem

(c) Grasses (d) Heart wood

**Answer: (a) Pith**

**89. In monocot stem, hypodermis is ?**

- (a) Sclerechymatous (b) Sclerenchymatous  
(c) Monocot plants (d) Dicot Root

**Answer: (b) Sclerenchymatous**

**90. Pith is not well developed in ?**

- (a) Dicot root (b) Bulliform cells  
(c) Cortex (d) Lateral meristem

**Answer: (a) Dicot root**

**91. Less than six radial vascular bundles are present in ?**

- (a) Dicot Root (b) Monocot stem  
(c) Lateral meristem (d) Large pith

**Answer: (a) Dicot Root**

**92. Vascular bundles in dicot stem are ?**

- (a) Monocot stem dicot root (b) Cork cambium and cork 8  
(c) Conjoint, open and endarch 7 (d) Suberised, impermeable to water

**Answer: (c) Conjoint, open and endarch 7**

**93. Hypodermis in dicot stem and monocot stem is respectively ?**

- (a) Form secondary tissues (b) Being imperforate  
(c) Interfascicular cambium (d) Collenchymatous, Sclerenchymatous

**Answer: (d) Collenchymatous, Sclerenchymatous**

**94. Monocot root features is ?**

- (a) Epidermis (b) Vascular cambium  
(c) Fibrous (d) Cambium

**Answer: (c) Fibrous**

**95. In dicot stem, starch sheath is ?**

- (a) Endodermis (b) Trochodendron  
(c) Collenchyma (d) Monocot root

**Answer: (a) Endodermis**

**96. Numerous vascular bundles are found scattered in monocot stem. Each vascular bundle is surrounded immediately by ..... bundle sheath ?**

- (a) Being imperforate (b) Heart wood  
(c) Cell dedifferentiation (d) Sclerechymatous

**Answer: (d) Sclerechymatous**

**97. In dicot roots, cell wall of endodermal cells is ?**

- (a) Sieve tubes, Companion cells, Vessels (b) Suberin Secondary Growth  
(c) Bundle sheath cells (d) Suberised, impermeable to water

**Answer: (d) Suberised, impermeable to water**

**98. Vascular bundles surrounded by thick walled bundle sheath cells can be observed in is ?**

- (a) Xylem parenchyma (b) Cambium  
(c) Dicot leaf (d) Bulliform cells

**Answer: (c) Dicot leaf**

**99. Vascular bundles are surrounded by a layer of thick walled ?**

- (a) Maize stem (b) Monocot root  
(c) Bundle sheath cells (d) Phellem, Phelloderm, Secondary cortex

**Answer: (c) Bundle sheath cells**

**100. In monocot stems, secondary growth cannot occur because vascular bundles are ?**

(a) Heart wood (b) Closed

(c) Bulliform cells (d) Phellogen

**Answer: (b) Closed**

