

# UNIVERSITY OF LUCKNOW

## D.Pharm Entrance Examination

### Biology Group — Model Test Paper Set 11

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

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

##### Chemistry

1.  $sp^3d^2$  hybridisation is seen in:  $sp^3d^2$  mebbe :

- (a) BrCl (b) ICl  
(c) BrF (d) ClF<sub>5</sub>

Answer: (b) ICl

2. The donor band close to \_\_\_\_\_

- (a) Valence band, valence band (b) Conduction band, valence band  
(c) Conduction band, conduction band (d) Valence band, conduction band

Answer: (b) Conduction band, valence band

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

- (a) Weak acid vs weak base (b) Strong acid & weak acid vs weak base  
(c) Strong acid vs weak base (d) Strong acid vs strong base

Answer: (d) Strong acid vs strong base

4. Then, 2 Activity coefficient :

- (a) +2 (b) +3  
(c) +6 (d) +12

Answer: (c) +6

5. Calculate the limiting value of molar conductance when degree of ionisation is 2.02 and molar conductance is 4.04  $S\ m^2\ mole^{-1}$  :

- (a)  $S\ m^2\ mole^{-1}$  (b)  $2S\ m^2\ mole^{-1}$   
(c)  $2S\ m^2\ mole^{-1}$  (d)  $2S\ m^2\ mole^{-1}$

Answer: (d)  $2S\ m^2\ mole^{-1}$

6. The two phenomenon associated with Debye- Hu :

- (a) Mesomeric and relaxation effect (b) Mesomeric and asymmetric effect  
(c) Relaxation and asymmetric effect (d) Relaxation effect and electrophoretic effect

Answer: (d) Relaxation effect and electrophoretic effect

7. Which is the weak electrolyte among the below?

- (a) HI (b) HBr  
(c) HF (d) HCl

Answer: (c) HF

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

- (a) HF (b) HI  
(c) HCl (d) HBr

Answer: (a) HF

9. These both hybridization have octahedral geometry. 98. Shape of  $Mg[Th(NO_3)_6]$  is: 3 6 Mg[Th(NO<sub>3</sub>)<sub>6</sub>]

- (a) Icosahedral (b) Square antiprism  
(c) Pentagonal bipyramidal (d) Octahedral

**Answer: (a) Icosahedral**

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

- (a) Ni(CO)<sub>6</sub> (b) Mn(CO)<sub>5</sub>  
(c) Fe(CO) (d) Cr(CO)

**Answer: (b) Mn(CO)<sub>5</sub>**

**11. Cis isomer and trans isomers are examples of \_\_\_\_.**

- (a) Ionisation isomerism (b) Hydrated isomerism  
(c) Geometrical isomerism (d) Positional isomerism

**Answer: (c) Geometrical isomerism**

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

- (a) 1 Dq (b) 100 Dq  
(c) 1000 Dq (d) 10 Dq

**Answer: (d) 10 Dq**

**13. The structure of (NH<sub>3</sub>)<sub>4</sub>CrO is: 3 3 4 (NH<sub>3</sub>)<sub>4</sub>CrO :**

- (a) Octahedral (b) Trigonal bipyramidal  
(c) Pentagonal bipyramidal (d) Tetrahedral

**Answer: (c) Pentagonal bipyramidal**

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

- (a) [Cr(NH<sub>3</sub>)<sub>3</sub>Cl<sub>3</sub>]<sup>+</sup> (b) [Cr(NH<sub>3</sub>)<sub>4</sub>Cl]<sup>+</sup>  
(c) [Cr(NH<sub>3</sub>)<sub>2</sub>Cl<sub>2</sub>]<sup>2+</sup> (d) [Cr(NH<sub>3</sub>)<sub>3</sub>Cl]<sub>3</sub>

**Answer: (b) [Cr(NH<sub>3</sub>)<sub>4</sub>Cl]<sup>+</sup>**

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

- (a) [FeCl<sub>3</sub>] (b) [Mn(CN)<sub>4</sub>]<sup>4-</sup>  
(c) [Fe(bpy)<sub>3</sub>]<sup>3+</sup> (d) [Fe(CN)<sub>3</sub>]<sup>3-</sup>

**Answer: (a) [FeCl<sub>3</sub>]**

**16. In basic solution, Cl<sub>2</sub> disproportionates to?**

- (a) Cl<sup>-</sup> and ClO<sup>-</sup> (b) ClO<sup>-</sup> and Cl<sup>-</sup>  
(c) Both ClO<sup>-</sup> and Cl<sup>-</sup> (d) ClO<sup>-</sup>

**Answer: (b) ClO<sup>-</sup> and Cl<sup>-</sup>**

**17. What does a bacteriostatic drug do?**

- (a) It does not react with bacteria (b) It increases the growth of bacteria  
(c) It kills 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) Zantac  
(c) Paracetamol (d) Both Paracetamol and Zantac

**Answer: (b) Zantac**

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

- (a) Hg (b) Both Zn and Cd  
(c) Cd (d) Zn

**Answer: (a) Hg**

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

- (a) Nb, Mo, Tc (b) Zr, V, Nb  
(c) Cr, Mo, Tc 88 YCT (d) V, Nb, Ta

Answer: (a) Nb, Mo, Tc

21. Which of the following is isoelectronic species?

- (a) Sn<sup>4+</sup> (b) Sn, Al 95+ 95+  
(c) Sn, Bi 95+ (d) Se, Bi

Answer: (c) Sn, Bi 95+

22. Pale blue coloured [Cu(H<sub>2</sub>O)<sub>6</sub>]<sup>2+</sup> ion reacts with 2.6 aqueous ammonia solution, to form which coloured ion?

- (a) Green coloured ion (b) Colourless  
(c) Pale blue coloured ion (d) Deep blue coloured ion

Answer: (d) Deep blue coloured ion

23. Thiocyanogen (SCN) is stable only at: 2 e f l e :

- (a) Very high temperature (b) High temperature  
(c) Room temperature (d) Low temperature

Answer: (d) Low temperature

24. The correct order of ionic radius of lanthanides :

- (a) Tb<sup>3+</sup> > Sm<sup>3+</sup> > Tm<sup>3+</sup> > Yb<sup>3+</sup> (b) Nd<sup>3+</sup> > Gd<sup>3+</sup> > Ho<sup>3+</sup> > Tm<sup>3+</sup>  
(c) Sm<sup>3+</sup> < Ho<sup>3+</sup> < Gd<sup>3+</sup> < Lu<sup>3+</sup> (d) Tb<sup>3+</sup> > Ho<sup>3+</sup> > Dy<sup>3+</sup> > Yb<sup>3+</sup>

Answer: (b) Nd<sup>3+</sup> > Gd<sup>3+</sup> > Ho<sup>3+</sup> > Tm<sup>3+</sup>

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

- (a) Saline content in water (b) COD in water  
(c) BOD in water (d) Amount of phosphates and carbonates in water

Answer: (c) BOD in water

Physics

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

- (a) 5.2m (b) 5.5m  
(c) 10m (d) 5m

Answer: (a) 5.2m

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

- (a) 3 (b) N  
(c) Infinite (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) 27.2 (b) 3.4  
(c) 6.8 (d) 54.4

Answer: (d) 54.4

29. At curie point, a ferromagnetic material becomes?

- (a) Non-magnetic (b) Diamagnetic  
(c) Paramagnetic (d) Strongly ferromagnetic

Answer: (c) 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) 6920 K (b) 5820 K  
(c) 6000 K (d) 5914 K

**Answer: (d) 5914 K**

**31. Transmission of heat by molecular collision is ?**

- (a) Radiation (b) Conduction  
(c) Scattering (d) Convection

**Answer: (b) Conduction**

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

- (a)  $2c$  (b) Zero  
(c) None of these (d)  $c$

**Answer: (d)  $c$**

**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) 7.5 cm (b) 15 cm  
(c) 60 cm (d) 120 cm

**Answer: (b) 15 cm**

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

- (a) density of liquid (b) coefficient of viscosity  
(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) Circle (b) Parabola  
(c) Straight line (d) Hyperbola

**Answer: (c) Straight line**

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

- (a) Conservation of angular momentum (b) None of these  
(c) Conservation of linear momentum (d) Conservation of energy

**Answer: (a) 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) 20N (b) 8N  
(c) 16N (d) 24N

**Answer: (c) 16N**

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

- (a) Moment of inertia (b) Internuclear distance  
(c) Force constant (d) Rotational frequencies

**Answer: (c) Force constant**

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

- (a) 0.68 (b) 0.52  
(c) 0.74 (d) 0.48

**Answer: (c) 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) 1 Henry (b) 5 Henry
- (c) 10 Henry (d) 0.5 Henry

Answer: (d) 0.5 Henry

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

- (a) Manometer (b) Galvanometer
- (c) Polarimeter (d) Viscometer

Answer: (c) Polarimeter

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

- (a) Interference (b) Diffraction
- (c) Polarization (d) Refraction

Answer: (c) Polarization

43. Best way to demonstrate temporal coherence is ?

- (a) Fresnel biprism (b) Michelson interferometer
- (c) Fabry Parot interferometer (d) Newton's ring

Answer: (b) Michelson interferometer

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

- (a) One (b) Zero
- (c) Any number (d) Two

Answer: (d) 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) 600 Hz (b) 480 Hz
- (c) 500 Hz (d) 544 Hz

Answer: (d) 544 Hz

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

- (a) 1s (b) 4s
- (c) 0.5s (d) 2s

Answer: (d) 2s

47. The vibration of a string fixed at both ends are described by the equation  $y = 5 \sin \sin 100\pi t$  If the length of the string is 16 cm, the number of loops formed in vibration shall be ?

- (a) 4 (b) 8
- (c) 12 (d) 16

Answer: (b) 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) 16 m (b) 14 m
- (c) 64 m (d) 32 m

Answer: (a) 16 m

49. Vibrations of the diaphragm of a microphone are ?

- (a) resonant oscillations (b) forced oscillations

(c) Damped oscillations (d) free oscillation

**Answer: (b) forced oscillations**

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

- (a) Coulomb ensemble (b) Micro canonical ensemble  
(c) Grand canonical ensemble (d) Canonical ensemble

**Answer: (d) Canonical ensemble**

## **SECTION B — Biology [50]**

### **Zoology**

**51. Muscle contraction, Blood clotting and Bone formation is necessary in ?**

- (a) Ligament (b) Function  
(c) Nerve cells (d) Ca<sup>2+</sup>

**Answer: (d) Ca<sup>2+</sup>**

**52. Protein most abundant in human body is ?**

- (a) Unicellular (b) Fibroblasts  
(c) Gap junctions (d) Collagen

**Answer: (d) Collagen**

**53. Inter vertebral disc are composed of ?**

- (a) White fibrous cartilage (b) Unicellular gland  
(c) Tight junction (d) Ciliated epithelium

**Answer: (a) White fibrous cartilage**

**54. Tendon connect is ?**

- (a) 20th - 22nd segment (b) Muscle to bone  
(c) Cardiac muscles (d) At the base

**Answer: (b) Muscle to bone**

**55. \_\_\_\_\_ exerts greatest control over the response of body is ?**

- (a) Nervous tissue (b) Male reproductive system  
(c) Smooth muscles (d) Senseory

**Answer: (a) Nervous tissue**

**56. The connective tissue, mainly consists of yellow elastic fibres binds the bones together is known as ?**

- (a) Ligament (b) Nephridia  
(c) Bronchioles (d) Hormones

**Answer: (a) Ligament**

**57. Bone forming cells which secrete ossein protein are called as ?**

- (a) Morphology Earthworm (b) Male cockroach  
(c) Osteoblasts (d) Areolar tissue

**Answer: (c) Osteoblasts**

**58. Mucus cells (Goblet cells) is ?**

- (a) Cardiac muscle (b) Unicellular gland  
(c) 6 segments (d) Male reproductive system

**Answer: (b) Unicellular gland**

**59. The complexity in organ and organ systems displays certain discernable trend. This discernable trend is called ?**

- (a) Evolutionary trend (b) Conduction
- (c) Excretion (d) Nervous tissue

**Answer: (a) Evolutionary trend**

**60. Conventionally, the word anatomy refers to ?**

- (a) Mode of pouring of secretions (b) Both male and female cockroaches
- (c) Study of morphology of internal organs (d) Proximal convoluted tubule of nephron

**Answer: (c) Study of morphology of internal organs**

**61. In case of animals, the external appearance of the organ or parts of the body refers to ?**

- (a) Squamous, ciliated (b) Anal styles
- (c) Morphology Earthworm (d) Get moisture

**Answer: (c) Morphology Earthworm**

**62. Segment of earthworm bearing mouth is ?**

- (a) Function (b) Peristomium
- (c) Senseory (d) Pheretima, Lumbricus

**Answer: (b) Peristomium**

**63. Pheretima posthuma lives within a burrow mainly to is ?**

- (a) White fibrous cartilage (b) Get moisture
- (c) Mushroom gland (d) Muscles and setae

**Answer: (b) Get moisture**

**64. Gizzard in Pheretima is an organ ?**

- (a) Male cockroach (b) For Crushing food
- (c) 7th segment (d) Supra-oesophageal ganglion

**Answer: (b) For Crushing food**

**65. Locomotion of earthworm involves is ?**

- (a) Unicellular gland (b) Muscles and setae
- (c) Get moisture (d) Lining of oesophagus

**Answer: (b) Muscles and setae**

**66. Median mid dorsal line present along the length of an earthworm ?**

- (a) Dorsal blood vessel (b) Spermathecal apertures 4 Cockroach
- (c) Biting and chewing type (d) Muscles and setae

**Answer: (a) Dorsal blood vessel**

**67. Excretory organs in earthworm are ?**

- (a) Mimicry (b) Nephridia
- (c) Foregut (d) Fibroblasts

**Answer: (b) Nephridia**

**68. The most common earthworm of India is ?**

- (a) Dorsal blood vessel (b) Morphology Earthworm
- (c) Supra-oesophageal ganglion (d) Pheretima, Lumbricus

**Answer: (d) Pheretima, Lumbricus**

**69. Anal styles are absent in females cockroach ?**

- (a) Tympanum (b) Touch
- (c) True (d) Frog

**Answer: (c) True**

**70. Male cockroach can be identified from the female by the presence of is ?**

- (a) Unicellular gland (b) Mimicry
- (c) 6 segments (d) Anal styles

**Answer: (d) Anal styles**

**71. Gizzard (proventriculus) in cockroach lies between is ?**

- (a) Crop and mesenteron (b) Male cockroach
- (c) Elastin, Collagen, Reticulin protein (d) Arthroal membrane

**Answer: (a) Crop and mesenteron**

**72. The mouth parts of cockroach are ?**

- (a) First, last and clitellar segments (b) Biting and chewing type
- (c) Compound eyes and mosaic vision (d) White fibrous cartilage

**Answer: (b) Biting and chewing type**

**73. The features is used to identify a male cockroach from a female cockroach ?**

- (a) Midgut and hindgut (b) Presence of caudal styles
- (c) Biting and chewing type (d) They belong to class Amphibia

**Answer: (b) Presence of caudal styles**

**74. Correct structures of Pheretima is ?**

- (a) Muscle to bone (b) For Crushing food
- (c) 14th, 15th and 16th (d) Clitellum - Secretes cocoon

**Answer: (d) Clitellum - Secretes cocoon**

**75. Tegmina in cockroach, arises from is ?**

- (a) Evolutionary trend (b) Mesothorax
- (c) Anal styles (d) Touch

**Answer: (b) Mesothorax**

## Botany

**76. The flowers are zygomorphic in ?**

- (a) Parthenocarpy (b) Fruit
- (c) Brassica (d) Gulmohar

**Answer: (d) Gulmohar**

**77. Flower is complete when it has ?**

- (a) Calyx, corolla, androecium and gynoecium (b) Calyx and Corolla 3 The Fruit
- (c) Epicarp, mesocarp, endocarp The Seed (d) Cucurbita, Opuntia The Leaf

**Answer: (a) Calyx, corolla, androecium and gynoecium**

**78. A bract is a modified ?**

- (a) Hypogynous (b) Cactus
- (c) Leaf (d) Distal

**Answer: (c) Leaf**

**79. Flower can be divided into two equal radial halves in any radial plane passing through the centre is ?**

- (a) Monocot embryo (b) Pisum
- (c) Axillary bud (d) Mustard

**Answer: (d) Mustard**

**80. Plays a vital role in attracting insects for pollination is ?**

- (a) Mustard (b) Axillary bud

(c) Hypogynous (d) Petals

**Answer: (d) Petals**

**81. When gynoecium is present above all parts of flower this condition is called ?**

(a) Perigynous (b) Hypogynous

(c) Endospermic (d) China rose

**Answer: (b) Hypogynous**

**82. When ovules develops on the inner wall of the ovary, the type of placentation is ?**

(a) Parietal (b) Mesocarp

(c) Dianthus (d) Phyllotaxy

**Answer: (a) Parietal**

**83. Flowers are zygomorphic in ?**

(a) Calotropis (b) Papilionaceae

(c) Gulmohar (d) Micropyle

**Answer: (c) Gulmohar**

**84. The reproductive unit in the angiosperms is ?**

(a) Flower (b) Pisum

(c) Fabaceae (d) Tegmen

**Answer: (a) Flower**

**85. Axile placentation shown by is ?**

(a) Marginal (b) China rose

(c) Orchids (d) Tegmen

**Answer: (b) China rose**

**86. Normally, the anthers are ?**

(a) Orchid (b) Gulmohar

(c) Bilobed (d) Perigynous

**Answer: (c) Bilobed**

**87. In lily, ..... stamens are present ?**

(a) Gulmohar (b) Hypogynous

(c) Epiphyllous (d) Castor

**Answer: (c) Epiphyllous**

**88. Symmetry of Datura flowers is similar to that of ?**

(a) Chilli (b) Leguminosae

(c) China rose (d) Epigynous

**Answer: (a) Chilli**

**89. Epigynous flowers are also known as flowers with ?**

(a) Leguminosae (b) Inferior ovary

(c) Epigynous (d) China rose

**Answer: (b) Inferior ovary**

**90. In a flower, with a whorl, sepals or petals touch each other at margins without overlapping such flower is of ?**

(a) Micropyle (b) Dianthus

(c) Castor (d) Calotropis

**Answer: (d) Calotropis**

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**91. Accessory organs are ?**

- (a) Calyx and Corolla 3 The Fruit (b) G Description of Some Important Families  
(c) Arranged on the flowering axis (d) Calyx, corolla, androecium and gynoecium

**Answer: (a) Calyx and Corolla 3 The Fruit**

**92. Fibrous layer of coconut is ?**

- (a) Mesocarp (b) China rose  
(c) Fruit (d) Aestivation

**Answer: (a) Mesocarp**

**93. Non-endospermic seeds are found in ?**

- (a) Bean, Pea (b) Hypogynous  
(c) Bilobed (d) Mustard

**Answer: (a) Bean, Pea**

**94. Monocotyledonous seeds possess a single cotyledon which is represented by ?**

- (a) Dianthus (b) Scutellum  
(c) Fabaceae (d) Endospermic

**Answer: (b) Scutellum**

**95. Coleorhiza and coleoptile are the protective sheaths covering ..... and ..... respectively ?**

- (a) Papilionoideae (b) Solanaceae  
(c) Brassica (d) Radicle, plumule

**Answer: (d) Radicle, plumule**

**96. .... is a mature or ripened ovary, developed after fertilization ?**

- (a) Parthenocarpy (b) Fabaceae  
(c) Distal (d) Fruit

**Answer: (d) Fruit**

**97. Formation of fruit without fertilization is ?**

- (a) Calotropis (b) Endospermic  
(c) Epiphyllous (d) Parthenocarpy

**Answer: (d) Parthenocarpy**

**98. Fruit of coconut is ?**

- (a) Mustard (b) Thalamus  
(c) Fruit (d) Drupe

**Answer: (d) Drupe**

**99. Drupes are called stony fruits as they have ?**

- (a) Inferior ovary (b) Solanum  
(c) Hard endocarp (d) Gulmohar

**Answer: (c) Hard endocarp**

**100. In mango the pericarp is well differentiated into an outer thin 'X', a middle fleshy edible 'Y' and an inner stony hard 'Z'. Identify X, Y and Z ?**

- (a) Epicarp, mesocarp, endocarp The Seed (b) Calyx, corolla, androecium and gynoecium  
(c) Are based on evolutionary relationship (d) Calyx and Corolla 3 The Fruit

**Answer: (a) Epicarp, mesocarp, endocarp The Seed**

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