

UNIVERSITY OF LUCKNOW

D.Pharm Entrance Examination

Biology Group — Model Test Paper Set 12

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

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SECTION A — Chemistry & Physics [50]

Chemistry

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

- (a) Afforestation (b) Neutralisation of acid in rain by adding lime
(c) Minimising use of fossil fuels (d) Uses of excess fertilisers

Answer: (d) Uses of excess fertilisers

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

- (a) Helium (b) CO
(c) CH₄ (d) Methane derivatives

Answer: (a) Helium

3. The pH of Acid rain is: Decrease :

- (a) Below 3.5 (b) Below 5.6
(c) Between 8-9 (d) Below 4.5

Answer: (b) Below 5.6

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

- (a) Pentulose (b) Ketohexose
(c) Arabinose (d) Ribose

Answer: (a) Pentulose

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

- (a) Internal rotation (b) Flipping
(c) Optical activity (d) Mutarotation

Answer: (d) Mutarotation

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

- (a) Tyrosine (b) Valine
(c) Arginine (d) Alanine

Answer: (c) Arginine

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

- (a) Fibroin (b) Collagen
(c) Keratin (d) Haemoglobin

Answer: (d) Haemoglobin

8. Amino acids at iso-electric point have: Debye-Hückel :

- (a) Unequal acid-base ionisation (b) No electrical conductivity
(c) High mobility (d) High solubility

Answer: (b) No electrical conductivity

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

- (a) Translation (b) Polymerisation

(c) Transcription (d) Replication

Answer: (c) Transcription

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

- (a) Guanine (b) Uracil
(c) Thymine (d) Cytosine

Answer: (b) Uracil

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

- (a) Base pairs (b) Deoxy ribose rings
(c) Major groove (d) Minor groove

Answer: (c) Major groove

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

- (a) Complete rubber (b) Trans rubber
(c) Cis rubber (d) Only at bonding sites

Answer: (b) Trans rubber

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

- (a) Urea (b) Polystyrene
(c) Formaldehyde (d) Cyanamide

Answer: (d) Cyanamide

14. Which of the following is not a fiber?

- (a) Myosin (b) Nylon
(c) Nylon 6, (d) Neoprene

Answer: (d) Neoprene

15. The word polymer is derived originally _____

- (a) Greek (b) French
(c) English (d) Swiss

Answer: (a) Greek

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

- (a) Bakelite (b) PVC
(c) Polyethylene (d) Melamine

Answer: (a) Bakelite

17. While it exist also as triethylaluminium along with $TiCl_4$. Here it exists in + 4 oxidation state. 4 146. Gabriel phthalimide reaction is used for preparation of: iesyeefj :

- (a) Primary amines (b) Quaternary amines
(c) Secondary amines (d) Tertiary amines

Answer: (a) Primary amines

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

- (a) Primary amines (b) Secondary amines
(c) Tertiary amines (d) Quaternary amines

Answer: (b) Secondary amines

19. The nitrogen in the Quaternary ammonium salt :

- (a) Tetrahedral (b) Linear
(c) Bent (d) Square planar

Answer: (a) Tetrahedral

20. Amines have:

- (a) High boiling points than non-polar compounds
- (b) High boiling points than COOH's
- (c) Non-polar nature
- (d) High boiling points than alcohols

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

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

- (a) Dimethyl amine
- (b) Ethyl-methyl amine
- (c) Isopentane
- (d) Butylamine

Answer: (d) Butylamine

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

- (a) Succinic acid
- (b) Malonic acid
- (c) Butyric acid
- (d) Glutamic acid

Answer: (c) Butyric acid

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

- (a) Glucose
- (b) Cellulose
- (c) Fructose
- (d) Sucrose

Answer: (a) Glucose

24. Which of the following has highest pKa values?

- (a) Difluoro acetic acid
- (b) Fluoroacetic acid
- (c) Trifluoro acetic acid
- (d) Acetic acid

Answer: (d) Acetic acid

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

- (a) Pivalic acid
- (b) Lauric acid
- (c) Valeric acid
- (d) Stearic acid

Answer: (c) Valeric acid

Physics

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

- (a) Wien displacement law
- (b) Kirchoff's law
- (c) Stefan's law
- (d) Jeans's law

Answer: (c) Stefan's law

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

- (a) Faraday's Law
- (b) Ampere's Law
- (c) Coulomb's Law
- (d) Bio-Savart Law

Answer: (d) Bio-Savart Law

28. Current through a capacitive element is called :

- (a) Displacement current
- (b) Transient current
- (c) Conduction current
- (d) Steady state current

Answer: (a) 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) 16
- (b) 12
- (c) 20
- (d) 18

Answer: (b) 12

30. The cell reaction of a secondary battery is ?

- (a) Endothermic (b) Irreversible
(c) Equilibrium (d) Reversible

Answer: (d) Reversible

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

- (a) equal to resistance of load (b) Zero
(c) None of the above (d) Infinite

Answer: (b) 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) 2N (b) 1N
(c) 3N (d) 4N

Answer: (d) 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) 24 s (b) 27 s
(c) 45 s (d) 37 s

Answer: (a) 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) 24 km (b) 8 km
(c) 16 km (d) 32 km

Answer: (c) 16 km

35. In Bohr model of the hydrogen atom, the 2.2×10^6 electron travels with speed m/s in a circle ($r = 5.3 \times 10^{-11}$ m) about the nucleus. The value of B at the nucleus due to electron's motion, is:

- (a) 30.0 T (b) 25.0 T
(c) 12.5 T (d) 40.0 T

Answer: (c) 12.5 T

36. The equation $-\mathbf{J} \cdot \mathbf{E} = +\nabla \cdot \mathbf{S}$ is called ∂t ?

- (a) Stoke's law (b) None of these
(c) Poynting theorem (d) Coulombs law

Answer: (c) 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) Purify a gas (b) Generate electricity
(c) Produce very low temperature (d) Demagnetize a magnet

Answer: (c) Produce very low temperature

39. Which of the following produces magnetic field?

- (a) Diamagnetic substance (b) Force
(c) Electric dipole (d) Time varying field

Answer: (d) Time varying field

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

- (a) zero
- (b) 0.667 gm
- (c) 1.667 gm
- (d) 1 gm

Answer: (c) 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) 2 per sec
- (b) 4 per sec
- (c) 8 per sec
- (d) 16 per sec

Answer: (a) 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 $3R$ will be ?

- (a) $8W$
- (b) $3W$
- (c) $9W$
- (d) $27W$

Answer: (a) $8W$

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) 20 cm/s
- (b) 10 cm/s
- (c) 40 cm/s
- (d) 5 cm/s

Answer: (a) 20 cm/s

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

- (a) $2 : 1$
- (b) $6 : 4$
- (c) $4 : 2$
- (d) $1 : 2$

Answer: (c) $4 : 2$

45. A capacitor of capacitance $6\ \mu\text{F}$ is charged upto 100 volt. The energy stored in the capacitor is- ?

- (a) $0.6\ \text{J}$
- (b) $0.03\ \text{J}$
- (c) $0.06\ \text{H}$
- (d) $0.3\ \text{J}$

Answer: (b) $0.03\ \text{J}$

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

- (a) magnetic forces
- (b) electrical forces
- (c) gravitational 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) 100 volts
- (b) 70 volts
- (c) 90 volts
- (d) 120 volts

Answer: (c) 90 volts

48. $\mathbf{J} = \sigma \mathbf{E}$, where \mathbf{J} is current density, σ is conductivity and \mathbf{E} is electric field, is ?

- (a) Maxwell's equation
- (b) Continuity equation
- (c) A form of Ohm's law
- (d) Ampere's law

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

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

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

(c) inverse of natural numbers (d) natural numbers

Answer: (a) square root of natural numbers

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

(a) 0.102 (b) 981.16

(c) 6 (d) 5893

Answer: (b) 981.16

SECTION B — Biology [50]

Zoology

51. Labial palp is a organ ?

(a) Senseory (b) Ribosomes

(c) Protein synthesis (d) Peristomium

Answer: (a) Senseory

52. Triangular head of cockroach is formed by fusion of ?

(a) Muscles and setae (b) Crop and mesenteron

(c) 6 segments (d) Nephridia

Answer: (c) 6 segments

53. Abdomen of cockroach consists of how many segments is ?

(a) Senseory (b) Touch

(c) True (d) Ten

Answer: (d) Ten

54. In female cockroach, which segment of sternum is boat shaped ?

(a) Nactatins membrane (b) Arthroal membrane

(c) Dorsal blood vessel (d) 7th segment

Answer: (d) 7th segment

55. Anal styles present in ?

(a) Male cockroach (b) Pheretima, Lumbricus

(c) Nephridia (d) Collagen

Answer: (a) Male cockroach

56. In cockroach, crop and gizzards are the parts of ?

(a) Mushroom gland (b) Centrosomes

(c) Foregut (d) Golgi apparatus

Answer: (c) Foregut

57. Malphigian tubules are present at the junction of ?

(a) Contractile vacuoles (b) Male cockroach

(c) Unicellular gland (d) Midgut and hindgut

Answer: (d) Midgut and hindgut

58. In cockroach, fat body, nephrocytes and urecose glands helps in is ?

(a) Contractile vacuoles (b) Excretion

(c) Mitochondrion (d) Ligament

Answer: (b) Excretion

59. In cockroach, sperms are nourished by ?

- (a) Foregut (b) Evolutionary trend
(c) Mushroom gland (d) *Periplaneta americana*

Answer: (c) Mushroom gland

60. Ovaries are present in cockroach ?

- (a) Golgi apparatus (b) Get moisture
(c) Chitin (d) 2 large

Answer: (d) 2 large

61. Wings extend beyond the tip of the abdomen in is ?

- (a) Tergites (b) Muscles and setae
(c) Male cockroach (d) Mesothorax

Answer: (c) Male cockroach

62. Dorsally placed sclerites in cockroach are termed as ?

- (a) Mimicry (b) Centrosomes
(c) Male cockroach (d) Tergites

Answer: (d) Tergites

63. Sclerites in cockroach are joined together by ?

- (a) Aleuroplasts (b) Arthroial membrane
(c) Mushroom gland (d) Chromoplast

Answer: (b) Arthroial membrane

64. In cockroach, brain is represented by ?

- (a) Supra-oesophageal ganglion (b) Male cockroach
(c) Midgut and hindgut (d) Muscles and setae

Answer: (a) Supra-oesophageal ganglion

65. Zoological name of cockroach is ?

- (a) *Periplaneta americana* (b) 7th segment
(c) Supra-oesophageal ganglion (d) Chloroplast

Answer: (a) *Periplaneta americana*

66. A pair of spermathecae is found in cockroach in ?

- (a) First, last and clitellar segments (b) Both male and female cockroaches
(c) 6th abdominal segment of female (d) First digit of the forelimbs

Answer: (c) 6th abdominal segment of female

67. If head of cockroach is removed, will happen ?

- (a) Nucleolus (b) Sound producing vocal sacs, Copulatory pad
(c) It may live for few days (d) Both male and female cockroaches

Answer: (c) It may live for few days

68. The sensory papillae in frogs are associated with ?

- (a) Tympanum (b) SER
(c) Male cockroach (d) Touch

Answer: (d) Touch

69. That methods are utilized by frogs for protection ?

- (a) Mimicry (b) Janus green
(c) 7th segment (d) Mesothorax

Answer: (a) Mimicry

70. That structures protects the eyes of the frog in water is ?

- (a) Male cockroach (b) Golgi apparatus
- (c) Nactatins membrane (d) Aleuroplasts

Answer: (c) Nactatins membrane

71. The chief nitrogenous waste material present in the urine of frog ?

- (a) Urea (b) Mimicry
- (c) Excretion (d) 7th segment

Answer: (a) Urea

72. Frog receive sound signals is ?

- (a) Nactatins membrane (b) Centrosomes
- (c) Chloroplast (d) Tympanum

Answer: (d) Tympanum

73. Rana tigrina is zoological name of ?

- (a) Frog (b) Fimbriae
- (c) Excretion (d) Tergites

Answer: (a) Frog

74. Cell organelle is known as protein factory ?

- (a) Frog (b) Male cockroach
- (c) Ribosome (d) Rudolf Virchow

Answer: (c) Ribosome

75. Small bristle like fibres sprouting out of the bacterial cell is ?

- (a) Golgi apparatus (b) Fimbriae
- (c) Cell membrane (d) Cristae

Answer: (b) Fimbriae

Botany

76. The flower with actinomorphic symmetry, five fused sepals, five united petals, epipetalous stamens, swollen placenta with many ovules and endospermic seed is ?

- (a) Aestivation (b) Linnaeus
- (c) Nicotiana (d) Hypogynous

Answer: (c) Nicotiana

77. A small pore on seed coat is ?

- (a) Hypogynous (b) Four kingdoms
- (c) Monera (d) Micropyle

Answer: (d) Micropyle

78. The dicot with endospermic seed is ?

- (a) Tegmen (b) Hard endocarp
- (c) Fabaceae (d) Castor

Answer: (d) Castor

79. The inner layer of the seed coat is called ?

- (a) Tegmen (b) Leguminosae
- (c) Monera (d) Parthenocarpy

Answer: (a) Tegmen

80. ____ plant has endospermic seed ?

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- (a) Castor (b) Brassica
(c) Fabaceae (d) Orchid

Answer: (a) Castor

81. The placenta is attached to the developing seed near the ?

- (a) Solanaceae (b) Hilum
(c) Dye (d) Castor

Answer: (b) Hilum

82. Endosperm, a product of double fertilisation in angiosperms is absent in the seeds of ?

- (a) Tegmen (b) Orchids
(c) Leguminosae (d) Chilli

Answer: (b) Orchids

83. A typical monocot seed doesn't have ?

- (a) Aestivation (b) Dye
(c) Copeland (d) Bract

Answer: (d) Bract

84. Cereals, castor and coconut possesses seeds is ?

- (a) Monera (b) Thalamus
(c) Scutellum (d) Endospermic

Answer: (d) Endospermic

85. Non-endospermic monocot is ?

- (a) Four kingdoms (b) Monocot embryo
(c) Orchid (d) Fabaceae

Answer: (c) Orchid

86. Scutellum is a part of ?

- (a) Four kingdoms (b) Monocot embryo
(c) Gulmohar (d) Basipetal order Aestivation

Answer: (b) Monocot embryo

87. In cereals like wheat, rice, etc, seeds are with cotyledon ?

- (a) Endospermic (b) Monera
(c) Fabaceae (d) Solanaceae

Answer: (a) Endospermic

88. In _____ placentation, the placenta forms a ridge along the ventral suture of the ovary is ?

- (a) Aestivation (b) Calyx
(c) Marginal (d) Orchid

Answer: (c) Marginal

89. The four whorls of a flower are arranged on the ?

- (a) Chilli (b) Endospermic
(c) Gulmohar (d) Thalamus

Answer: (d) Thalamus

90. stamens in flower is ?

- (a) Fabaceae (b) P A
(c) Micropyle (d) Scutellum

Answer: (b) P A

91. In floral formula, (K) denotes is ?

- (a) Parietal (b) Calyx
- (c) Monera (d) Mustard

Answer: (b) Calyx

92. An aspect of flower shown in floral formula but not in floral diagram is ?

- (a) Mycoplasma 17 gical Classification (b) Four kingdoms
- (c) Gut of cow (d) Position of ovary

Answer: (d) Position of ovary

93. In a flower, a superior ovary is represented by ?

- (a) Presence and absence of red blood (b) G Description of Some Important Families
- (c) Are based on evolutionary relationship (d) Calyx and Corolla 3 The Fruit

Answer: (b) G Description of Some Important Families

94. The term 'polyadelphous' is related to ?

- (a) Monocot embryo (b) Fabaceae
- (c) Chemosynthetic bacteria (d) Androecium

Answer: (d) Androecium

95. Marginal placentation is generally found in Family ?

- (a) Fabaceae (b) Leguminosae
- (c) Papilionaceae (d) Gulmohar

Answer: (b) Leguminosae

96. Floral family has (9) + 1 arrangement of anthers in the androecium ?

- (a) Thalamus (b) Mesocarp
- (c) Scutellum (d) Fabaceae

Answer: (d) Fabaceae

97. A plant has a butterfly shaped flower with five petals, one standard, two wings and two keel. The plant belongs to the family ?

- (a) Papilionaceae (b) Gulmohar
- (c) Epiphyllous (d) Slime moulds

Answer: (a) Papilionaceae

98. Persistent calyx is the characteristic feature of plants belonging to family ?

- (a) Fruit (b) Solanaceae
- (c) Flower (d) Thalamus

Answer: (b) Solanaceae

99. Cymose inflorescence is present in ?

- (a) Orchid (b) Slime moulds
- (c) Calotropis (d) Solanum

Answer: (d) Solanum

100. Vexillary aestivation is characteristic of the family ?

- (a) Thalamus (b) Fabaceae
- (c) Castor (d) Copeland

Answer: (b) Fabaceae