Roll No. .....

Question Booklet Number

O. M. R. Serial No.

M. Sc. (Second Semester)
(NEP) EXAMINATION, 2025-26
ZOOLOGY
(Animal Physiology and Biochemistry)

Paper Code							
B	0	5	0	8	0	2	T

Questions Booklet Series
D

Time : 1:30 Hours] [*Maximum Marks : 75*

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.

2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.

3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।

2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।

3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page) **(शेष निर्देश अन्तिम पृष्ठ पर)**

(Only for Rough Work)

1. Which structure in the ear maintains dynamic equilibrium ?

(A) Cochlea

(B) Semicircular canals

(C) Eustachian tube

(D) Ossicles

2. The gap in the myelin sheath is called :

(A) Synapse

(B) Node of Ranvier

(C) Axon terminal

(D) Neurilemma

3. Glucagon is secreted by :

(A) Alpha cells of pancreas

(B) Beta cells of pancreas

(C) Delta cells of pancreas

(D) F-cells

4. The process of maintaining the body's salt and water balance is :

(A) Dialysis

(B) Osmoregulation

(C) Hydrolysis

(D) Thermogenesis

5. What is the function of the Iris?

(A) Regulates the size of the pupil

(B) Refracts light

(C) Protects the eye

(D) Sharpens the image

6. The "Comfort Zone" refers to the range of environmental temperature where :

(A) Body temperature rises

(B) Shivering occurs

(C) No energy is spent on thermoregulation

(D) Sweating is maximum

7. Which organ acts as both an exocrine and endocrine gland ?

(A) Liver

(B) Spleen

(C) Pancreas

(D) Thymus

8. Steroid hormones exert their action by :

(A) Binding to surface receptors

(B) Entering the nucleus and affecting gene expression

(C) Activating cAMP

(D) Opening ion channels

9. Acclimatization to high altitudes involves an increase in :

(A) Red blood cells

(B) White blood cells

(C) Platelets

(D) Plasma volume

10. Action potential is characterized by the rapid influx of :

(A) K^+

(B) Na^+

(C) Cl^-

(D) Mg^{2+}

11. The primary nitrogenous waste in humans is :

(A) Ammonia

(B) Uric acid

(C) Urea

(D) Creatinine

12. Which hormone is secreted by the Pineal gland ?

(A) Melatonin

(B) MSH

(C) Prolactin

(D) Aldosterone

13. The "Organ of Corti" is associated with :

(A) Vision

(B) Smell

(C) Hearing

(D) Equilibrium

14. Which part of the eye is responsible for color vision ?

(A) Rods

(B) Cones

(C) Iris

(D) Sclera

15. Saltatory conduction occurs in :

(A) Non-myelinated neurons

(B) Dendrites

(C) Muscle fibers

(D) Myelinated neurons

16. The maintenance of a constant internal body temperature is :

(A) Thermoregulation

(B) Homeostasis

(C) Acclimatization

(D) Metabolism

17. Which hormone regulates calcium levels in the blood ?

(A) Thyroxine

(B) Parathyroid Hormone (PTH)

(C) Cortisol

(D) Glucagon

18. Neurotransmitters are stored in :

(A) Dendrites

(B) Synaptic vesicles

(C) Myelin sheath

(D) Nucleus

19. The master gland of the endocrine system is the :

(A) Thyroid

(B) Adrenal

(C) Pituitary

(D) Pancreas

20. "Flight or Fight" response is mediated by :

(A) Insulin

(B) Epinephrine

(C) Thyroxine

(D) Melatonin

21. The resting membrane potential of a neuron is typically around :

(A) + 30 mV

(B) 0 mV

(C) – 70 mV

(D) – 100 mV

22. Which hormone increases water reabsorption in the collecting ducts ?

(A) Oxytocin

(B) Insulin

(C) Antidiuretic Hormone (ADH)

(D) Adrenaline

23. The junction between two neurons is called a/an :

(A) Node of Ranvier

(B) Synapse

(C) Dendrite

(D) Axon hillock

24. Which mechanism allows the kidney to produce concentrated urine ?

(A) Simple filtration

(B) Counter-current mechanism

(C) Active secretion

(D) Osmosis

25. The functional unit of the kidney is the :

(A) Neuron

(B) Nephron

(C) Alveoli

(D) Osteon

26. The Bohr effect describes the relationship between :

(A) CO_2 and O_2 affinity of hemoglobin

(B) Temperature and heart rate

(C) Glucose and insulin

(D) pH and enzyme activity

27. Trypsinogen is activated by :

(A) Pepsin

(B) Enterokinase

(C) Steapsin

(D) Amylopsin

28. Which muscle type is non-striated and involuntary ?

(A) Skeletal

(B) Cardiac

(C) Smooth

(D) All of the above

29. The "Lub" sound of the heart is caused by :

(A) Closing of semilunar valves

(B) Opening of AV valves

(C) Closing of AV valves

(D) Filling of ventricles

30. The exchange of gases between the blood and the alveoli occurs via :

(A) Active transport

(B) Simple diffusion

(C) Osmosis

(D) Facilitated diffusion

31. Carbon dioxide is primarily transported in the blood as :

(A) Dissolved gas

(B) Carbaminohemoglobin

(C) Bicarbonate ions

(D) Carbonic acid

32. Chylomicrons are involved in the transport of :

(A) Amino acids

(B) Glucose

(C) Dietary lipids

(D) Iron

33. Which of the following is an anticoagulant naturally found in blood ?

(A) Heparin

(B) Histamine

(C) Serotonin

(D) Fibrin

34. The P-wave in an ECG represents :

(A) Ventricular depolarization

(B) Atrial depolarization

(C) Ventricular repolarization

(D) Atrial repolarization

35. T-tubules in muscle fibers help in :

(A) ATP synthesis

(B) Protein storage

(C) Rapid conduction of action potentials

(D) Myosin binding

36. Which cells secrete Hydrochloric Acid (HCl) in the stomach ?

(A) Chief cells

(B) G-cells

(C) Goblet cells

(D) Parietal (Oxyntic) cells

37. The sliding filament theory explains the mechanism of :

(A) Nerve impulse

(B) Blood clotting

(C) Muscle contraction

(D) Digestion

38. Which part of the brain contains the primary respiratory centers ?

(A) Cerebellum

(B) Thalamus

(C) Medulla Oblongata

(D) Hypothalamus

39. In the cardiac cycle, "systole" refers to :

(A) Relaxation

(B) Contraction

(C) Filling

(D) Pausing

40. Pepsinogen is converted to active pepsin by :

(A) Enterokinase

(B) HCl

(C) Bile

(D) Gastrin

41. The conversion of prothrombin to thrombin requires :

(A) Vitamin K

(B) Vitamin C

(C) Calcium ions

(D) Both (A) and (C)

42. The volume of air inspired or expired during a normal breath is :

(A) Residual Volume

(B) Vital Capacity

(C) Tidal Volume

(D) Total Lung Capacity

43. Which of the following is a "respiratory pigment" found in molluscs ?

(A) Hemoglobin

(B) Hemocyanin

(C) Hemerythrin

(D) Chlorocruorin

44. Bile salts are essential for the digestion of :

(A) Proteins

(B) Carbohydrates

(C) Lipids

(D) Nucleic acids

45. Structural and functional unit of a skeletal muscle is the :

(A) Sarcomere

(B) Myofibril

(C) Fascicle

(D) Myofilament

46. During muscle contraction, which ion is released from the sarcoplasmic reticulum ?

(A) Na+

(B) K+

(C) Ca^{2+}

(D) Mg^{2+}

47. The "pacemaker" of the heart is the :

(A) AV node

(B) Purkinje fibers

(C) SA node

(D) Bundle of His

48. Which protein is primarily responsible for oxygen transport in the blood ?

(A) Albumin

(B) Myoglobin

(C) Hemoglobin

(D) Fibrinogen

49. The process of blood cell formation is known as :

(A) Hemolysis

(B) Haemopoiesis

(C) Phagocytosis

(D) Coagulation

50. Which enzyme is responsible for the initial digestion of starches in the mouth ?

(A) Pepsin

(B) Salivary Amylase

(C) Trypsin

(D) Lipase

51. Nomenclature of enzymes usually ends with the suffix :

(A) -ose
(B) -ase
(C) -ine
(D) -ic

52. Hemoglobin, consisting of four subunits, exhibits :

(A) Primary structure
(B) Secondary structure
(C) Tertiary structure
(D) Quaternary structure

53. A zymogen is :

(A) An active enzyme
(B) An inactive precursor of an enzyme
(C) A coenzyme
(D) A type of RNA

54. Which factor does NOT affect enzyme activity ?

(A) pH
(B) Temperature
(C) Substrate concentration
(D) Atmospheric nitrogen

55. Collagen is a type of :

(A) Globular protein
(B) Fibrous protein
(C) Enzyme
(D) Hormone

56. The "Induced Fit" model suggests that :

(A) The active site is rigid
(B) The active site changes shape to fit the substrate
(C) Substrates are destroyed by enzymes
(D) Enzymes work only in pairs

57. Prosthetic groups are :

(A) Loosely bound cofactors
(B) Tightly bound non-protein groups
(C) Active enzymes
(D) Inactive inhibitors

58. Terpenoids are derived from :

(A) Isoprene units
(B) Glucose
(C) Ammonia
(D) Fatty acids

59. Which amino acid is known for having a sulfur atom ?

(A) Glycine
(B) Cysteine
(C) Valine
(D) Lysine

60. Feedback inhibition is a type of :

(A) Irreversible inhibition

(B) Allosteric regulation

(C) Competitive inhibition

(D) Denaturation

61. The overall 3D shape of a single polypeptide chain is its :

(A) Primary structure

(B) Secondary structure

(C) Tertiary structure

(D) Quaternary structure

62. Alkaloids are generally :

(A) Basic nitrogenous compounds

(B) Acidic sugars

(C) Neutral lipids

(D) Simple gascs

63. Isoenzymes are enzymes that :

(A) Have the same structure but different functions

(B) Catalyze the same reaction but have different molecular forms

(C) Are inactive precursors

(D) Work only at high temperatures

64. Denaturation of proteins involves the loss of :

(A) Primary structure only

(B) Secondary, tertiary, and quaternary structure

(C) Peptide bonds

(D) Amino acid sequence

65. Ribozymes are :

(A) RNA molecules with catalytic activity

(B) DNA enzymes

(C) Protein complexes

(D) Digestive enzymes

66. The active site of an enzyme is :

(A) The entire surface

(B) A specific region where the substrate binds

(C) The part made of lipids

(D) Always at the C-terminus

67. Which of the following is a secondary metabolite ?

(A) Glucose

(B) ATP

(C) Alkaloids

(D) Alanine

68. An alpha-helix is an example of which protein structure ?

(A) Primary

(B) Secondary

(C) Tertiary

(D) Quaternary

69. The primary structure of a protein is held together by :

(A) Hydrogen bonds

(B) Peptide bonds

(C) Disulfide bridges

(D) Ionic bonds

70. Proteins are polymers of :

(A) Nucleotides

(B) Fatty acids

(C) Amino acids

(D) Monosaccharides

71. The K_m value (Michaelis constant) represents :

(A) Maximum velocity

(B) Substrate concentration at 1/2 V_{max}

(C) Total enzyme concentration

(D) Rate of reaction

72. An inhibitor that competes with the substrate for the active site is a/an :

(A) Non-competitive inhibitor

(B) Competitive inhibitor

(C) Uncompetitive inhibitor

(D) Allosteric inhibitor

73. Non-protein organic components required by enzymes for activity are :

(A) Apoenzymes

(B) Isozymes

(C) Holoenzymes

(D) Coenzymes

74. The "Lock and Key" model of enzyme action was proposed by :

(A) Emil Fischer

(B) Koshland

(C) Michaelis

(D) Menten

75. Enzymes increase the rate of reaction by lowering :

(A) Gibbs free energy

B) Activation energy

(C) Enthalpy

(D) Entropy

76. Excessive production of ketone bodies leads to :

(A) Alkalosis

(B) Ketosis/Acidosis

(C) Hyperglycemia

(D) Hemolysis

77. The TCA cycle (Krebs Cycle) occurs in the :

(A) Mitochondrial matrix

(B) Cytosol

(C) Lysosome

(D) ER

78. Gluconeogenesis is the synthesis of glucose from :

(A) Glycogen

(B) Starch

(C) Non-carbohydrate precursors

(D) Lactose

79. A "Coupled Reaction" is one where :

(A) Two proteins bind

(B) An exergonic reaction drives an endergonic one

(C) Two cells fuse

(D) An enzyme is inhibited

80. The linkage between two monosaccharides is a :

(A) Peptide bond

(B) Glycosidic bond

(C) Phosphodiester bond

(D) Hydrogen bond

81. Unsaturated fatty acids are usually ..... at room temperature.

(A) Solid

(B) Liquid

(C) Gaseous

(D) Crystalline

82. Lecithin is an example of a :

(A) Carbohydrate

(B) Protein

(C) Phospholipid

(D) Wax

83. Which molecule acts as the final clectron acceptor in the Electron Transport Chain ?

(A) CO_2

(B) H_2O

(C) O_2

(D) NAD+

84. Buffers are substances that :

(A) Increase pH rapidly

(B) Decrease pH rapidly

(C) Resist changes in pH

(D) Neutralize all acids

85. Bioenergetics is the study of :

(A) Life cycles

(B) Energy transformations in living organisms

(C) Biodiversity

(D) Population growth

86. The breakdown of glycogen is called :

(A) Glycogenesis

(B) Glycogenolysis

(C) Gluconeogenesis

(D) Glycolysis

87. Glycogen is a polymer of :

(A) Fructose

(B) Galactose

(C) Glucose

(D) Amino acids

88. The main storage form of lipids in animals is :

(A) Phospholipids

(B) Triglycerides

(C) Cholesterol

(D) Glycolipids

89. Saturated fatty acids contain :

(A) Only single bonds

(B) One double bond

(C) Many double bonds

(D) Triple bonds

90. Which of the following is a "Ketone body" ?

(A) Acetone

(B) Acetoacetate

(C) β-hydroxybutyrate

(D) All of the above

91. Ketone bodies are synthesized primarily in the :

(A) Brain

(B) Muscles

(C) Liver

(D) Kidneys

92. The "Carnitine Shuttle" is required for :

(A) Transport of glucose

(B) Transport of long-chain fatty acids into mitochondria

(C) Protein synthesis

(D) Urea cycle

93. Fatty acids are broken down into Acetyl-CoA via :

(A) Alpha-oxidation

(B) Beta-oxidation

(C) Gamma-oxidation

(D) Glycolysis

94. Which of the following is a polysaccharide ?

(A) Glucose

(B) Sucrose

(C) Cellulose

(D) Fructose

95. Oxidative phosphorylation takes place in the :

(A) Outer mitochondrial membrane

(B) Inner mitochondrial membrane

(C) Matrix

(D) Cytoplasm

96. How many ATP molecules are net gained in glycolysis ?

(A) 2

(B) 4

(C) 36

(D) 38

97. The end product of aerobic glycolysis is :

(A) Lactate

(B) Pyruvate

(C) Ethanol

(D) Acetyl-CoA

98. Glycolysis occurs in the :

(A) Mitochondria

(B) Nucleus

(C) Cytosol

(D) Ribosome

99. The universal energy currency of the cell is :

(A) DNA

(B) ATP

(C) NADP

(D) Glucose

100. The pH of a neutral solution at 25°C is :

(A) 0

(B) 5

(C) 7

(D) 14

(Only for Rough Work)

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the correct answer and mark the same in the OMR Answer-Sheet as per the direction :

Example :

Question :

Q. 1 (A) ● (C) (D)
Q. 2 (A) (B) ● (D)
Q. 3 (A) ● (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.
8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.
9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. : On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर—A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से सही उत्तर छाँटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ● (C) (D)
प्रश्न 2 (A) (B) ● (D)
प्रश्न 3 (A) ● (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निगेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण : प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।