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TEST BOOKLET

Sl. No. : **0810**

Subject : ZOOLOGY

Post : Lab. Asst.-cum-Storekeepers

**WRITTEN EXAMINATION FOR RECRUITMENT OF NON-TEACHING POSTS
(JUNIOR ASSISTANTS, PHYSICAL EDUCATION TEACHERS(P.E.Ts) AND
LABORATORY ASSISTANT-CUM-STOREKEEPERS) IN GOVT. DEGREE
COLLEGES, ODISHA**

Time Allowed : 2 Hours

Maximum Marks: 150

: INSTRUCTIONS TO CANDIDATES :

1. **IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET CONTAINS 16 PAGES AND DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.**
2. You have to enter your **Roll No.** on the Test Booklet in the Box provided alongside. **DO NOT** write anything else on the Test Booklet.

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3. The Test Booklet contains **100** questions. Each question comprises four options. You have to select the correct answer which you want to mark (darken) on the OMR Answer Sheet. In any case, choose **ONLY ONE** answer for each question. If more than one answer is darkened, it will be considered wrong.
4. You have to mark (darken) all your answers only on the **OMR Answer Sheet using BLACK BALL POINT PEN** provided by the State Selection Board. You have to do rough work only in the space provided at the end of the Test Booklet. See instructions in the OMR Answer Sheet.
5. All questions carry equal marks. While **1.5** marks will be awarded for each correct answer, each wrong answer will result in negative marking of **0.50** mark.
6. Before you proceed to mark (darken) the answers in the OMR Answer Sheet to the questions in the Test Booklet, you have to fill in some particulars in the OMR Answer Sheet as per the instructions in your Admit Card.
7. On completion of the Examination, you should hand over the **original copy of OMR Answer Sheet** issued to you to the Invigilator before leaving the Examination Hall. You are allowed to take with you the candidate's copy (second copy) of the OMR Answer Sheet along with the Test Booklet for your reference.

Candidate's full signature

Invigilator's signature

P.T.O.

SEAL

1. How many paramercia are formed from each ex-conjugant?
 (A) Two (B) Four
 (C) Eight (D) Sixteen
2. The cells surrounding the osculum in Sycon is :
 (A) Archaeocytes (B) Choanocytes
 (C) Gland Cells (D) Myocytes
3. Aurelia belongs to order :
 (A) Coronatae (B) Semaestomae
 (C) Rhizostomae (D) Stauromedusae
4. Female genital opening of Hirudinaria is present in :
 (A) 1st annule of 10th segment (B) 1st annule of 11th segment
 (C) 2nd annule of 9th segment (D) 2nd annule of 11th segment
5. The second stage Ascaris larva leaves the liver and enters into :
 (A) Heart (B) Lungs
 (C) Intestine (D) Trachea
6. Statocysts in prawn present at the base of :
 (A) Antennules (B) Antenna
 (C) Mandibles (D) Maxilla
7. A series of sinuses present at the base of proboscis in acorn worms are called :
 (A) Blind Sinuses (B) Glomerulus
 (C) Sinitic (D) Ampulla
8. Heart is absent in :
 (A) Herdmania (B) Petromyzon
 (C) Branchiostoma (D) Balanoglossus
9. Lingulates or odd-toed mammals belong to the order :
 (A) Aritodactyla (B) Perissodactyla
 (C) Lagomorpha (D) Edentata

10. The lung fish *Lepidosiren* is found in :

(A) South America	(B) South Africa
(C) New Zealand	(D) Australia
11. Dicondylic skull along with ten pairs of cranial nerves is found in :

(A) Pisces	(B) Amphibia
(C) Reptilia	(D) Aves
12. Coelacanth (living fossil) belongs to :

(A) Elasmobranchi	(B) Holoccephali
(C) Sarcopterygii	(D) Actinopterygii
13. Only poisonous lizard of the world is :

(A) Draco	(B) Heloderma
(C) Sphenodon	(D) Varanus
14. Large size scales fully extended from side to side on the belly are characteristic of :

(A) Krait and Sea Snake	(B) Cobra and Python
(C) Rat Snake and Cobra	(D) Python and Krait
15. Which stomach is absent in camels?

(A) Omasum	(B) Abomasum
(C) Rumen	(D) Reticulum
16. The larva as common ancestral form of echinoderms, hemichordates and chordates is :

(A) Tornaria	(B) Trochophore
(C) Dipleurula	(D) Bipinnaria
17. The word meiosis had been coined by :

(A) Robertson and Moore	(B) Blackman
(C) Flemming	(D) Farmer and Moore
18. Which part of mitochondria is responsible for the degradation of many enzymes?

(A) Mitochondrial matrix	(B) Cristae
(C) Inner membrane	(D) Outer membrane

19. Human mitochondrial DNA encode for how many polypeptides?
 - (A) 15
 - (B) 13
 - (C) 12
 - (D) 11
20. Which type of glycosylation takes place in the Golgi complex?
 - (A) T-linked glycosylation
 - (B) N-linked glycosylation
 - (C) O-linked glycosylation
 - (D) G-glycosylation
21. The microscope that made it possible for biologists to study living cells and how they proliferate through cell division :
 - (A) SEM
 - (B) Phase contrast microscope
 - (C) Fractionation microscopy
 - (D) Compound microscope
22. Progression across G_1 / S boundary followed by entry into S-phase is promoted by the activation of which one of the following protein complexes :
 - (A) ColK₄ / CgClin D
 - (B) ColK₂ / Cyclin E
 - (C) ColK_{4,6} / Cyclin A
 - (D) Cdk₁ / Cyclin B
23. Gregor Johann Mendel was born in :
 - (A) 20 July, 1822
 - (B) 13 July, 1822
 - (C) 6 June, 1817
 - (D) 20 July, 1817
24. In geographically variable species of homiothermic animals, body size tends to be larger in the cooler region. This is termed as :
 - (A) Jordon's rule
 - (B) Bergmann's rule
 - (C) Allen's rule
 - (D) Rensch's rule
25. The process by which certain organisms regulate their own temperature by stealing heat from other organisms. This phenomenon is termed as :
 - (A) Heliothermy
 - (B) Thigmothermy
 - (C) Heterothermy
 - (D) Kleptothermy
26. The property of ecosystem to remain in a state of equilibrium is known as :
 - (A) Ecosystem resilience
 - (B) Ecosystem resistance
 - (C) Ecosystem homeostasis
 - (D) All of the above

27. The wet land convention was adopted in the Iranian city of Ramsar in :
 (A) 1971 (B) 1973
 (C) 1981 (D) 1979
28. The smallest artificial ecosystem in the world that has sustained for long period is :
 (A) Folsom pond (B) Folsom bottle
 (C) Folsom stream (D) Folsom river
29. In which of the following aspects do the components of the ecosystem are seen to function as a unit?
 (A) Community (B) Productivity
 (C) Speciation (D) Niche
30. Visible light comprises radiations of wave-lengths ranging from :
 (A) 390 mμ to 700 mμ (B) 40 mμ to 170 mμ
 (C) 470 mμ to 1200 mμ (D) 230 mμ to 450 mμ
31. Gastric secretion inhibition is brought about by :
 (A) Gastrin (B) Cholecystokin
 (C) Enterogastrone (D) Secretin
32. For a protein with 100 amino acids, how many possible sequences are there?
 (A) $(100)^{20}$ (B) $(2)^{100}$
 (C) $(100)^2$ (D) $(20)^{100}$
33. Amino acids with hydroxyl groups are :
 (A) Serine and Alakine (B) Alakine and Valine
 (C) Serine and Threonine (D) Valine and Isoleucine
34. Find out the incorrect statement regarding the structural components of starch :
 (A) Amylose is a straight chain polymer of D-glucose and constitutes about 20% of starch
 (B) Amylopectin is a branched-chain polymer of D-glucose and constitutes about 80% of starch
 (C) Amylose and amylopectin contains both alpha-1, 4-glycosidic and alpha-1, 6-glycosidic linkage
 (D) Amylose is soluble in water where as amylopectin is insoluble

35. The only carbohydrate which does not have any chiral carbon atom is :
 (A) Glyceraldehyde (B) Erythrose
 (C) Dihydroxyacetone (D) Ribulose
36. RNA as genetic material was first described by the virologist :
 (A) Fraenkel-Conrat (B) Sydney Brenner
 (C) Ignaz Semmelweis (D) Fanny Hesse
37. The first enzyme extracted from yeast cells in 1897 by Buchner is :
 (A) Urease (B) Zymase
 (C) Phosphatase (D) Amylase
38. Succinate thiokinase is example of which class of enzyme?
 (A) Lyases (B) Transferases
 (C) Oxido-reductase (D) Ligases
39. A person eating high carbohydrate diet than one consuming fat and protein, requires more :
 (A) Thiamine (B) Riboflavin
 (C) Vitamin K (D) Vitamin D
40. The chemical formula of cholesterol, a precursor of all steroids in our body is :
 (A) $C_{25}H_{46}O_2$ (B) $C_{27}H_{48}O_2$
 (C) $C_{27}H_{46}O$ (D) $C_{33}H_{36}N_4O$
41. The Keratin of hair and other exoskeletons show the following structure :
 (A) α -helix (B) β -pleated sheet
 (C) Tertiary structure (D) Primary structure
42. Nebenkern represents :
 (A) Acrosome of sperm (B) Centrioles of sperm
 (C) Mitochondrial spiral of sperm (D) Tail of sperm that forms of flagellum
43. During development of frog, the point of entry of sperm in the egg :
 (A) Forms grey crescent (B) Establishes axis of cleavage
 (C) Forms dorsal lip of blastopore (D) Forms the yolk plug

44. The membrane surrounding the secondary mammalian oocyte is :
 (A) Theca externa (B) Vitelline Membrane
 (C) Membrana granulosa (D) Zona pellucida
45. Which of the following protein is an amphibian chemoattractant?
 (A) Allurin (B) Bindin
 (C) Resact (D) Ovastacin
46. Amphibian oocytes remain for years in the diplotene stage of meiotic prophase. Resumption of meiosis is initiated by :
 (A) FSH (B) GH
 (C) Estrogen (D) Progesteron
47. The tadpole of frog feed mainly on :
 (A) Worms (B) Insects
 (C) Aquatic plants (D) Small fishes
48. Ontogenetically the yolk plug in gastrula forms :
 (A) Anterior side of frog (B) Posterior side of frog
 (C) Dorsal side of frog (D) Ventral side of frog
49. Who discovered the structure of immunoglobulin by treating it with beta-mercaptoethanol?
 (A) Edelman (B) Nisonoff
 (C) Porter (D) Whittakar
50. Name the class of immunoglobulin which takes part in hypersensitivity reaction :
 (A) Ig G (B) Ig A
 (C) Ig M (D) Ig E
51. Small molecules that elicit an immune response when bound to a carrier protein are called :
 (A) Adjuvant (B) Hapten
 (C) Mitogen (D) Immunogen
52. Activation of naive T-lymphocytes is best achieved by which antigen presenting cells?
 (A) Macrophages (B) Neutrophils
 (C) Mast Cells (D) Dendritic Cells

53. Agglutination reaction is more sensitive than precipitation for the detection of :
 (A) Antigens (B) Antibodies
 (C) Complement complex (D) Antigen-antibody complex
54. Hypervariable immunoglobulin domains that confine specific antibody binding is known as :
 (A) Hinge region (B) Epitopes
 (C) CDR (D) FRS
55. What is the clinical application of monoclonal antibodies?
 (A) Biosensors (B) Transplant rejection
 (C) Infectious disease (D) Purification of drugs
56. The most effective and efficient immunoglobulin is :
 (A) Ig M (B) Ig G
 (C) Ig A (D) Ig E
57. Which of the following is a surface feeder?
 (A) Catla Catla (B) Labeo rohita
 (C) Magur (D) Wallago attu
58. The salinity tolerance of *Macrobrachium rosenbergii* is :
 (A) 25-30 ppt (B) 30-40 ppt
 (C) 0-25 ppt (D) 40-50 ppt
59. Headquarter of the National Fisheries Development Board is located at :
 (A) Pune (B) Kochi
 (C) Chennai (D) Hyderabad
60. Eri silk is produced by :
 (A) *Antheraea mylitta* (B) *Philosamia ricini*
 (C) *Bombyx mandarina* (D) Both A and B
61. The species of honey bee not found in India is :
 (A) *Apis mellifera* (B) *Apis dorsata*
 (C) *Apis indica* (D) *Apis florea*

62. The life span of worker honey bees is about :
- (A) 15 days (B) 2 weeks
(C) 6 weeks (D) 39 weeks
63. How many moultings occur in larvae of *Bombyx mori* to attain the final instar stage?
- (A) Three (B) Four
(C) Five (D) Six
64. Which of the following is cat fish?
- (A) *Anabas testudineus* (B) *Channa punctatus*
(C) *Cirrhinus reba* (D) *Wallago attu*
65. Which of the following is suitable for fish farming?
- (A) Tilapias (B) Tuna
(C) Sardine (D) Eel
66. The pollination carried by honey bees is known as :
- (A) Canthrophyly (B) Myophily
(C) Mymecophily (D) Mellitophily
67. Honey bees donot have a photoreceptor for :
- (A) Green Colour (B) Blue Colour
(C) Red Colour (D) Ultraviolet Colour
68. The enzyme which operates through a particular type of ping-pong mechanism called covalent hydrolysis :
- (A) Trypsin (B) Chymotrypsin
(C) Pancreatic amylose (D) Remin

69. Vital Capacity (VC) of human lungs is :
- (A) $RV + ERV$ (B) $TV + IRV$
 (C) $IC + ERV$ (D) $IC + FRC$
70. Barophilic prokaryotes :
- (A) Grow slowly in highly alkaline frozen lakes at high altitude
 (B) Occurs in water containing high concentrations of barium hydroxide
 (C) Grow and multiply in deep sea sediments
 (D) Readily grow and divide in sea water enriched in soluble salt of Barium
71. What gives reddish brown colour with iodine?
- (A) Starch (B) Glycogen
 (C) Cellulose (D) Pectin
72. Saliva produced in the parotid gland gains access to the oral cavity through :
- (A) Stensen's duct (B) Wharton duct
 (C) Ducts of Rivinus (D) None of the above
73. Diapsid skull is found in :
- (A) Natrix, Draco, Turtle (B) Crocodile, Turtle, Seymouria
 (C) Sphenodon, Crocodile, Viper (D) Calotes, Cobra, Varanosaurus
74. Find out the incorrect statement from the following :
- (A) Cellulose has a linear structure
 (B) Insulin is a heteropolymer
 (C) Glycogen has a branched structure
 (D) Polysaccharide chains have a non-reducing left end

75. An irregularity or loss of rhythm of the heart beat is called :
- (A) Angina pectoris (B) Fibrillation
(C) Arrhythmia (D) Aneurysm
76. The Visual processing hub of our brain is :
- (A) Frontal lobe (B) Temporal lobe
(C) Parietal lobe (D) Occipital lobe
77. An increase in the concentration of plasma potassium in blood causes :
- (A) Secretion of aldosterone (B) Release of renin
(C) Secretion of ADH (D) Release of natriuretic hormone
78. Which muscles are active during inhalation and serve to move the ribs forwards and outwards, so enlarging the thorax?
- (A) External intercostal (B) Internal intercostal
(C) Adductor longus (D) Brachioradialis
79. Oxygen dissociation curve shifts to right by all of the following except :
- (A) Increase in $[H^+]$ (B) PCO_2
(C) Increase in temperature (D) Increase in pH of blood
80. In approximately how many minutes, the whole blood of the body is filtered through the kidneys?
- (A) 9–10 minutes (B) 7–8 minutes
(C) 4–5 minutes (D) 2–3 minutes
81. TSH, FSH and LH are derivatives of :
- (A) Amino acids (B) Glycoproteins
(C) Peptides (D) Steroids

82. Which of the following hormone has the shortest plasma half-life?
- (A) Corticosterone (B) Aldosterone
(C) Norepinephrine (D) Renin
83. Match the following :
- (a) Gull's disease (i) Corpus luteum
(b) Cushing syndrome (ii) Myxoedema
(c) Progesterone (iii) Catecholamines
(d) Adrenalin (iv) Cortisol
- (A) a-iii, b-ii, c-i, d-iv (B) a-ii, b-iv, c-i, d-iii
(C) a-iv, b-ii, c-i, d-iv (D) a-i, b-iii, c-i, d-iv
84. Which hormone causes the contraction of labor?
- (A) Prolactin (B) Estrogen
(C) Progesterone (D) Oxytocin
85. The third larval stage of *Fasciola hepatica* is :
- (A) Sporocyst (B) Redia
(C) Cercaria (D) Miracidium
86. How many teeth are found in a row of radula in *Pila*?
- (A) Seven (B) Five
(C) Nine (D) Eleven
87. Main function of pedicellariae in *Asterias* is :
- (A) Digestion (B) Excretion
(C) Respiration (D) Removal of debris

88. Which of the following is called an invert sugar?
- (A) Lactose (B) Maltose
(C) Sucrose (D) Arabinose
89. Name the type of linkage between nitrogenous base and pentose sugar in a nucleotide :
- (A) Glycosidic bond (B) Diester bond
(C) Peptide bond (D) Ionic bond
90. Fritz Lipmann shared the 1953 Nobel Prize for his discovery of :
- (A) NAD (B) Coenzyme A
(C) ATP (D) Allosteric enzymes
91. Tail feathers of pigeons are called as :
- (A) Remiges (B) Contours
(C) Retrices (D) Filoplumes
92. A plant of genotype AaBbCc is selfed. Phenotypic ratio of F₂ generation would be :
- (A) 3 : 1 (B) 9 : 3 : 3 : 1
(C) 9 : 3 : 4 (D) 27 : 9 : 9 : 3 : 9 : 3 : 3 : 1
93. Who proved that DNA is the basic genetic material?
- (A) Griffith (B) Boveri and Sutton
(C) Hershey and Chase (D) Watson and Crick
94. The enzyme inhibition in which K_m increase and V_{max} remains Constant is
- (A) Competitive (B) Uncompetitive
(C) Non-Competitive (D) Mixed type

95. Lipids are stored in the body mainly in the form of :
- (A) Phospholipids (B) Glycolipids
(C) Triglycerides (D) Fatty acids
96. A bean shaped nucleus is Characteristic of :
- (A) Lymphocytes (B) Phagocytes
(C) Basophils (D) Monocytes
97. Glucose uptake in the intestine is an example of a secondary active transport by a :
- (A) Uniporter (B) Symporter
(C) Antiporter (D) Multiporter
98. The receptors of protein hormones and medullary hormones are present on :
- (A) Cytoplasm (B) Nucleus
(C) Endoplasmic reticulum (D) Cell membrane
99. Sea squirt is the common name of :
- (A) Herdmania (B) Balanoglossus
(C) Branchiostoma (D) Ambystoma
100. Insect exoskeletons are made of a carbohydrate known as :
- (A) Glycogen (B) Chitin
(C) Peptidoglycan (D) Fucans

SPACE FOR ROUGH WORK

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SEAL