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**TEST BOOKLET**

Sl. No.

1203

**Subject Code : 28**

**Subject : Zoology**

**LECTURERS FOR NON-GOVT. AIDED COLLEGES OF 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 23 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 answers. You have to select the correct answer which you want to mark (darken) on the **Answer Sheet (OMR Sheet)**. In any case choose **ONLY ONE** answer for each question. If more than one answer is darkened, it will be considered as 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 Answer Sheet.
5. All questions carry equal marks i.e. of one and half mark for each correct answer and 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 Answer Sheet as per the instructions in your Admit Card.
7. On completion of the examination, you should hand over the **original Answer Sheet (OMR Sheet)** issued to you to the Invigilator before leaving the Examination Hall. You are allowed to take with you the candidate's copy (carbon copy) of the **OMR Answer Sheet** along with the Test Booklet for your reference.

**Candidate's full signature**

**Invigilator's signature**

IW - 14/31

(Turn over)

2021

SEAL

1. Each of the following statements concerning **Giardia lamblia** is correct except :
  - (A) **G. lamblia** has both a trophozoite and cyst stage in its life cycle
  - (B) **G. lamblia** is transmitted by the fecal-oral route from both the human and animal sources
  - (C) **G. lamblia** causes hemolytic anemia
  - (D) **G. lamblia** can be diagnosed by the string test
  
2. Pigs or dogs are the sources of human infection by each of the following parasites except :
  - (A) **Echinococcus granulosus**
  - (B) **Taenia solium**
  - (C) **Ascaris lumbricoides**
  - (D) **Trichinella spiralis**
  
3. Which one of the following parasites does not cause lymphatic filariasis ?
  - (A) **Brugia malayi**
  - (B) **Brugia timori**
  - (C) **Wuchereria bancrofti**
  - (D) **Mansonella streptocera**
  
4. In which of the following hosts, the parasite enters, does not undergo any development or reproduction, but remains infective to the definitive host ?
  - (A) Definitive host
  - (B) Intermediate host
  - (C) Paratenic host
  - (D) Reservoir host
  
5. **Entamoeba histolytica**, an intestinal parasite resides in the isotonic environment of intestine and other tissues in human body and does not possess contractile vacuoles. If this parasite is placed in fresh water, it will :
  - (A) Survive for long time, until they re-enter the host environment
  - (B) Die due to hypoosmotic shock
  - (C) Not survive in water as they require high salt content
  - (D) Die due to hyperosmotic shock



6. Which of the following animals make use of their tube feet to perform respiration ?
- (A) Silverfish  
(B) Jellyfish  
(C) Cuttle fish  
(D) Star fish
7. What is the organ of Bojanus ?
- (A) Excretory organs of lamellidens  
(B) Excretory organs of Palaemon  
(C) Excretory organs of Echinoderms  
(D) Excretory organs of Arachnids
8. Animals belonging to the sub-phyla urochordata and cephalochordata are closer to phylum Echinodermata than other invertebrate phyla. Which one of the following reasons can account for this relatedness ?
- (A) Highly evolved nervous system  
(B) Radially symmetric body plan  
(C) Deuterostomic development  
(D) Well developed muscles
9. Which one of the following amphibian species exhibit parental care by developing their young ones (tadpoles) inside the stomach of the mother (the female parent) ?
- (A) **Rheobatrachus silus**  
(B) **Assa darlington**  
(C) **Rhinoderma darwinii**  
(D) **Alytes obstetricans**
10. Which of the following is not a flight adaptation in birds ?
- (A) Uncinate process of the thoracic ribs  
(B) Formation of the pygostyle  
(C) Fusion of pelvis with the lumbar and sacral vertebrae  
(D) Short, stout and peg like beak

11. Whale is an air breather but can live under water for a long time because it possesses :
- (A) Large lungs
  - (B) Small lungs
  - (C) Blubber
  - (D) **Retia mirabilia**
12. Ductus caroticus a portion of the embryonic dorsal aorta located between points of junction with the third and fourth aortic arch arteries, usually disappears in early embryonic development except in one of the following group of animals. Select the correct one, where ductus caroticus persists in the adult :
- (A) Turtles
  - (B) Lizards
  - (C) Crocodiles
  - (D) Alligators
13. Which of the following is the only vegetarian aquatic mammal ?
- (A) Manatee
  - (B) Humpback whale
  - (C) Walrus
  - (D) Sea otter
14. Which one of the following is not an aquatic adaptation in marine mammals ?
- (A) Presence of a layer of blubber beneath epidermis
  - (B) Highly elastic and non-lobular lungs
  - (C) Hindlimbs are modified into flippers
  - (D) Presence of dorsal fin
15. The ureters of opisthonephric kidneys represent :
- (A) Wolffian ducts in male
  - (B) Mullerian ducts in female
  - (C) Wolffian duct in both the sexes
  - (D) Mullerian duct in both the sexes

16. In which of these animals green glands function as excretory organ ?
- (A) Spiders
  - (B) Moth
  - (C) Scorpions
  - (D) Prawn
17. Which of the following is the common ancestral larval form of echinoderms, hemichordates and chordates ?
- (A) Tomaria
  - (B) Dipleurula
  - (C) Bipinnaria
  - (D) Trochophore
18. Which one of the following statements about the origin of tetrapods is not true ?
- (A) It is universally accepted that the tetrapods have evolved from fishes
  - (B) The ancestral tetrapods have originated in a specialized situation during the carboniferous period
  - (C) The ancestral tetrapods lived in shallow marshy locations and already possessed lungs for respiration and lobed fins to support their bodies
  - (D) It is now believed that labyrinthodonts were ancestors of all tetrapods and they had evolved from crossoptenygian fishes
19. Which of the following is called as "sea squirt" ?
- (A) Herdmania
  - (B) Branchiostoma
  - (C) Balanoglossus
  - (D) Saccoglossus
20. Which one of the following statements about the heart is false ?
- (A) The mitral valve separates the left ventricle from the left atrium
  - (B) Blood travels through the bicuspid valve to the left atrium
  - (C) Both the aortic and pulmonary valves are semilunar valves
  - (D) The mitral valve is an atrioventricular valve

21. Which junction tether cytoskeletal filaments inside the cell ?
- (A) Anchoring junctions
  - (B) Occluding junctions
  - (C) Channel-forming junctions
  - (D) Signal-relaying junctions
22. Among the following cell structure – function pairs, identify the correctly paired one :
- (A) Microvilli – engulfment of foreign bodies
  - (B) Cytoskeleton – cell migration
  - (C) Peroxisomes – cellular respiration
  - (D) Nucleolus – mRNA transcription
23. The organelles that function to get rid the cell of toxic substances such as hydrogen peroxide or other metabolites are known as :
- (A) Lysosomes
  - (B) Peroxisomes
  - (C) Glyoxysomes
  - (D) Hydrogenosomes
24. Mitotic cyclin – CDK activity peaks in M phase. This is because :
- (A) Mitotic cyclin is synthesized only in M phase
  - (B) Threshold level of mitotic cyclin accumulates only in late  $G_2$
  - (C) Cyclin subunit is activated by phosphorylation only in M phase
  - (D) The kinase subunit is activated by dephosphorylation only in M phase
25. Which one of the following statements about meiosis is not true ?
- (A) Kinetochores of sister chromatids attach to the opposite poles in meiosis – I
  - (B) Kinetochores of sister chromatids attach to the opposite poles in meiosis – II
  - (C) Chiasma is formed in prophase – I
  - (D) Homologous chromosomes are segregated in meiosis – I

26. In male *Drosophila melanogaster*, homologous chromosomes pair and segregate during meiosis but crossing over does not occur. At which stage of meiosis does segregation of two alleles of a gene take place in these flies ?
- (A) Zygotene
  - (B) Diakinesis
  - (C) Anaphase – I
  - (D) Anaphase – II
27. Which of the following is an extracellular messenger of apoptosis ?
- (A) Serine
  - (B) Tumor necrosis factor
  - (C) Ribozyme
  - (D) Translation inhibitor
28. Where does microsatellite DNA present in the chromosome ?
- (A) Dispersed throughout the chromosome
  - (B) At the telomere end
  - (C) At the centromere
  - (D) Mainly at the metacentric region
29. 5-Bromouracil is a base analog that can cause mutation when incorporated into DNA. Which one of the following is the most likely change that 5-Bromouracil induces ?
- (A) T : A to C : G
  - (B) T : A to A : T
  - (C) G : C to T : A
  - (D) C : G to A : T
30. A chromosomal aberration leads to change in the order of genes in a genetic map but does not alter its linkage group. This is due to :
- (A) Translocation
  - (B) Recombination
  - (C) Transposition
  - (D) Inversion

31. Chirality of DNA is due to :
- (A) The bases
  - (B) Base stacking
  - (C) Deoxyribose
  - (D) Hydrogen bonds between bases
32. In eukaryotic chromatin organization, which one of the histones seals off the nucleosome at the location at which linker DNA enters and leaves the nucleosome ?
- (A)  $H_1$
  - (B)  $H_2A - H_2B$
  - (C)  $H_3$
  - (D)  $H_4$
33. The TATA box is found in the vicinity of the transcription start site. The role of this box is to :
- (A) Serve as a ribosome recruitment site
  - (B) Serve as RNA polymerase binding site
  - (C) Provide 3-D structural integrity to a DNA molecule
  - (D) Act as a terminator sequence
34. Which of the following is not the step involved during mRNA processing ?
- (A) 5' capping
  - (B) Splicing of introns
  - (C) Polyadenylation
  - (D) RNA silencing
35. In which of the following cases the first base of anticodon can not pair with two codons coding for same amino acid ?
- (A) When the first base of anticodon is A
  - (B) When the first base of anticodon is G
  - (C) When the first base of anticodon is Inosine
  - (D) When the first base of anticodon is U



36. Which of the following is an example of head-and-tail bacteriophage ?
- (A)  $M_{13}$
  - (B) Lambda phage
  - (C) Pbr 322
  - (D)  $M_{16}$
37. Which infection cycle is characterized by retention of the phage DNA molecule in the host bacterium for many thousands of cell division ?
- (A) Lysogenic cycle
  - (B) Lytic cycle
  - (C) Integrative phase
  - (D) Protein synthesis
38. At what stage in the control of gene expression does histone acetylation occur ?
- (A) Pre-transcription
  - (B) Post-transcription
  - (C) Pre-translation
  - (D) Post-translation
39. The region where bacterial genome resides is known as :
- (A) Nucleus
  - (B) Nucleosome
  - (C) Nucleoid
  - (D) Ribosome free region
40. The partial diploids formed as a result of sexual reproduction in bacteria is termed as :
- (A) Zygotes
  - (B) Haplozygotes
  - (C) Prozygotes
  - (D) Merozygotes
41. During the transport of carbon dioxide in the blood,  $\text{HCO}_3^-$  diffuses from erythrocytes to plasma and in turn effects the ionic equilibrium momentarily. In order to keep the ionic balance, an equal number of chloride ions pass into the erythrocytes from plasma. This process is known as :
- (A) Hamburger phenomenon
  - (B) Bicarbonate shift
  - (C) Ionic transport
  - (D) Bohr effect

42. During the process of blood coagulation which of the following factors are activated by thrombin ?
- (A) Factors XI, VIII and V
  - (B) Factors XI, IX and X
  - (C) Factors VIII, X and V
  - (D) Factors IX, VIII and X
43. Which one of the following cells in the renal corpuscle can influence glomerular filtration by its contraction ?
- (A) Podocytes
  - (B) Endothelial cells of glomerular capillaries
  - (C) Parietal epithelial cells of Bowman's Capsule
  - (D) Mesangial cells
44. The opening of axon membrane voltage-gated potassium channels is responsible for which part of the action potential ?
- (A) Depolarisation of the membrane
  - (B) Repolarisation of the membrane
  - (C) Contraction of the post synaptic muscle fibre
  - (D) Signalling vesicular release of neurotransmitters
45. Which one of the following neurotransmitters is secreted by the preganglionic neurons of sympathetic nervous system ?
- (A) Epinephrine
  - (B) Dopamine
  - (C) Acetylcholine
  - (D) Norepinephrine
46. Which one of the following amino acid change (mutation) would most adversely affect the structure of an  $\alpha$ -helix ?
- (A) A valine residue changed to an isoleucine residue
  - (B) A methionine residue changed to a proline residue
  - (C) An aspartic acid residue changed to a glutamic acid residue
  - (D) A histidine residue changed to an arginine residue