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PD - 11

Total No. of Pages : 12

Ph.d Entrance Examination March/April, 2026

ZOOLOGY

Subject Code : 58793

Day and Date : Tuesday, 06-10-2026

Total Marks : 100

Time : 04.00 p.m. to 06.00 p.m.

Instructions :

- 1) All questions are compulsory.
- 2) Each question carries 2 marks.
- 3) Answers should be marked in the given OMR answer sheet by darkening the appropriate option.
- 4) Use black ball point pen only for marking the circle. Do not make any stray mark on the OMR answer sheet.
- 5) Follow the instructions given on OMR Sheet.
- 6) Rough work shall be done on the sheet provided at the end of question paper.
- 7) Only non-programmable calculators are allowed.

1. Find the correct alternative by matching the pairs

- | | |
|--|---------------------------|
| i. Cofilin, profilin, ARS2/3 | p. microtubules |
| ii. dynein, kinesin, kinetochore | q. Intermediate filaments |
| iii. staggered, rope-like structure, keratin | r. axoneme |
| iv. Nexin, A tubule, B tubule, dynein | s. microfilaments |
| a. i-s ii-p iii-r iv-q | b. i-s ii-p iii-q iv-r |
| c. i-p ii-s iii-r iv-q | d. i-q ii-p iii-r iv-s |

2. Maturation promoting factor becomes active when
 - a. Cdc2 is associated with cyclin B and p21, Threonine 161 is phosphorylated and Tyrosine 15 is dephosphorylated.
 - b. Cdc2 is associated with cyclin B, Threonine 161 is dephosphorylated and Tyrosine 15 is phosphorylated.
 - c. Cdc2 is associated with cyclin B, Threonine 161 is phosphorylated and Tyrosine 15 is dephosphorylated.
 - d. Cdc2 is associated with cyclin B, Threonine 161 and Tyrosine 15 are phosphorylated.

3. seal the plasma membrane of two cells and do not allow the food particles/bacteria/ drugs to enter into the submucosa through the intercellular space.
 - a. Gap junctions
 - b. Tight junctions
 - c. Desmosomes
 - d. Adherens junctions

4. Spike disease in sandalwood is caused by Phytoplasma, it is
 - a. Phloem-inhabiting fungi
 - b. Phloem-inhabiting virus
 - c. Phloem-inhabiting bacteria
 - d. Phloem-inhabiting worm

5. Which of the following is called Indian screw worm?
 - a. Horsefly
 - b. Blowfly
 - c. Housefly
 - d. warble fly

6. Maximum amount of honey yield is collected by
 - a. Apis mellifera
 - b. Apis florea
 - c. Apis indica
 - d. Apis dorsata

7. is the conversion of alanine to glucose.
- a. Glycolysis
 - b. Oxidative decarboxylation
 - c. Specific dynamic action
 - d. Gluconeogenesis
8. During titration of a weak acid, pH after midpoint of titration is
- a. less than the pKa of weak acid
 - b. equal to pKa of weak acid
 - c. more than the pKa of weak acid
 - d. not predicted at all.
9. The conversion of acetyl CoA to malonyl CoA is catalyzed by
- a. Acetyl CoA carboxylase
 - b. malonyl CoA synthase
 - c. Acetyl CoA decarboxylase
 - d. malonyl CoA decarboxylase
10. Stellate reticuloendothelial cells are morphological feature of
- a. Intestine
 - b. Salivary Gland
 - c. Liver
 - d. Pancreas
11. Pneumotaxic area in pons is related to control mechanism
- a. digestion
 - b. respiration
 - c. bleeding
 - d. ingestion
12. Which of the following is not a function of kidney?
- a. Regulation of Acid-Base Balance.
 - b. Regulation of Erythrocyte Production.
 - c. Regulation of Arterial Pressure
 - d. Production of urea

13. Which of the following is not the example of horizontal gene transfer in bacteria?
- a. uptake of DNA segment through fertility pilus
 - b. uptake of fragment of DNA directly from the surrounding
 - c. transfer of genetic material by binary fission
 - d. transfer of DNA via bacteriophage
14. Which of the following statement is correct?
- a. TSIX is expressed by X chromatin undergoing inactivation, whereas the X chromatin that remains active expresses XIST.
 - b. XIST is expressed by X chromatin undergoing inactivation, whereas the X chromatin that remains active expresses TSIX.
 - c. X chromatin undergoing heterochromatinization does not show DNA methylation.
 - d. Majority of the genes on active X chromatin exhibit DNA methylation.
15. "In Born Errors of Metabolism" was written by
- a. J. D. Watson
 - b. E. P. Martin and Hugo de Vries
 - c. A. E. Garrod
 - d. H J Muller and A D Tautom
16. An enzyme exhibit more than one catalytic activity is called
- a. multienzyme
 - b. holoenzyme
 - c. isoenzyme
 - d. apoenzyme
17. The forces that are involved in maintaining the secondary structure of proteins/ enzymes are
- a. Hydrogen bonds
 - b. Electrostatic forces
 - c. Van der Waals forces
 - d. Hydrophobic forces

18. In uncompetitive inhibition in Lineweaver Burk Plot
- a. K_m altered
 - b. V_{max} altered
 - c. both K_m and V_{max} altered
 - d. both K_m and V_{max} unaltered
19. What do phase-contrast have?
- a. increase contrast between the specimens and their surroundings without staining.
 - b. makes specimens appear bright on a dark background.
 - c. makes specimens appear dark on a bright background.
 - d. makes specimens fluoresce.
20. Phenol red is commonly used as an indicator in cell culture media, and it is red at pH 7.4 and becomes orange at pH
- a. 7.0
 - b. 6.5
 - c. 7.6
 - d. 7.8
21. Assisted zona hatching is carried out when
- a. spermatozoa are unable to digest zona pellucida
 - b. spermatozoa are not recognizing ZP2 protein
 - c. blastocyst fails to exit out from zona pellucida
 - d. all of the above
22. Which of the following food additives have E-number from 100-199?
- a. Food colors
 - b. Preservatives
 - c. Antioxidants
 - d. Anticaking agents

23. The hepatic portal venous system first delivers toxic substances absorbed from the gastrointestinal tract to the
- a. kidney
 - b. liver
 - c. lungs
 - d. brain
24. The study of malformations induced by toxic agents during development between conception and birth is called toxicology.
- a. Developmental
 - b. Teratotoxicology
 - c. Genetic
 - d. Toxicoepidemiology
25. A researcher was working on the secretory pathway. In a subcellular fraction he found that it is enriched with proteins having oligosaccharide containing two N acetyl glucosamine and eight mannose residues, this suggests that....
- a. these proteins are ready to enter the Golgi apparatus
 - b. these proteins have just entered in the lumen of RER post-translationally.
 - c. these proteins are destined to lysosomes.
 - d. these proteins are residents of RER.
26. Which centrifugation used to separate biological particles of similar size but different density?
- a. Density gradients
 - b. Differential
 - c. Both a and b
 - d. None of the above
27. If denser biological buffer system is present in a centrifugal field, the particle will
- a. Move faster
 - b. Move slower
 - c. Not move
 - d. remain static

28. For concentration of viruses in the sample, which of the following centrifuge will you use?
- a. Desktop
 - b. High speed
 - c. Microfuge
 - d. Ultracentrifuge
29. Fluorochrome fluorescein isothiocyanate emit
- a. blue light
 - b. red light
 - c. green light
 - d. visible light
30. Which of the following is NOT used in electron microscope?
- a. electron beams.
 - b. magnetic fields
 - c. electron beams and magnetic fields
 - d. light waves
31. In single radial diffusion concentration of antigen is equal to
- a. Precipitin ring diameter
 - b. Square of precipitin ring diameter
 - c. Log of Precipitin ring diameter
 - d. Square of Log of Precipitin ring diameter
32. Frederick Zernike was awarded Noble prize in Physics in the year 1953 for the discovery of microscope
- a. Compound
 - b. Fluorescence
 - c. Phase contrast
 - d. Electron

33. The entire set up in electron microscope is placed in a vacuum tube, because.....
- a. electron moves straight only in vacuum
 - b. it increases magnification
 - c. it nullifies errors
 - d. all the above
34. The level at which the species are characterized and named is called as
- a. delta taxonomy
 - b. gamma taxonomy
 - c. beta taxonomy
 - d. alpha taxonomy
35. The system based exclusively upon face value of observed characters without direct reference to phylogeny is called as
- a. Phenetic classification
 - b. Natural classification
 - c. Cladistic classification
 - d. Evolutionary classification
36. Which of the following is most commonly used measure of central tendency?
- a. Chi-square test
 - b. Standard deviation
 - c. Spearman's Rank Correlation
 - d. Arithmetic mean.
37. Which of the following relation you would observe in positively skewed data?
- a. Mean > Median > Mode
 - b. Mean < Median < Mode
 - c. Mean > Median < Mode
 - d. Mean Median = Mode

38. If the null hypothesis is rejected, which of the following is true?
- a. The null hypothesis is definitely false.
 - b. The null hypothesis is likely false.
 - c. The alternative hypothesis is proven true.
 - d. The null hypothesis cannot be tested anymore.
39. In Two Tailed Test of significance, alternative hypothesis can be said as
- a. $H_a: \mu > \text{some value}$
 - b. $H_1: \mu < \text{some value}$
 - c. $H_a: \mu = \text{some value}$
 - d. $H_a: \mu$ is either greater or less than
40. The Pearson rank correlation measures
- a. the degree of linear relationship.
 - b. the degree to which the relationship is consistently one directional.
 - c. the degree of the relationship without regard to the form of the relationship.
 - d. the degree of curvilinear relationship.
41. The primary objective of research is to
- a. Increase the volume of information
 - b. Avoid experimentation
 - c. Discover new knowledge or verify existing knowledge
 - d. Support personal opinions
42. Research motivation refers to
- a. Financial expenditure on research
 - b. Factors that encourage a researcher to undertake research
 - c. Number of publications produced
 - d. Selection of statistical software

43. Research conducted to solve a specific practical problem is known as
- a. Applied research
 - b. Historical research
 - c. Basic research
 - d. Exploratory research
44. A researcher observes that a particular insect population increases after rainfall and proposes that rainfall influences reproduction. The proposed explanation is a:
- a. Theory
 - b. Hypothesis
 - c. Law
 - d. Conclusion
45. A researcher wants to understand the experiences of farmers adopting organic pest management. Which approach is most appropriate?
- a. Quantitative only
 - b. Experimental only
 - c. Mathematical modelling only
 - d. Qualitative
46. A researcher first observes several species showing similar responses to temperature and then proposes a general principle. This illustrates
- a. Deductive reasoning
 - b. Inductive reasoning
 - c. Circular reasoning
 - d. Random reasoning
47. A good research design should be
- a. Valid, reliable and economical
 - b. Unsystematic and expensive
 - c. Subjective and ambiguous
 - d. Completely inflexible in all circumstances

48. A research problem should ideally be
- a. Vague and broad
 - c. Based on assumptions only
 - b. Impossible to measure
 - d. Specific, clear and researchable
49. A case study design involves
- a. Intensive investigation of a particular case or unit
 - b. Studying only large populations
 - c. Manipulating every variable
 - d. Avoiding detailed information
50. The major purpose of replication in research design is to
- a. Reduce sample size
 - b. Guarantee significance
 - c. Estimate experimental error and improve reliability
 - d. Eliminate statistical analysis



- Rough Work -