

Seat No.	
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PD - 13
Total No. of Pages : 10

SHIVAJI UNIVERSITY, KOLHAPUR
Ph.D. Entrance Examination, February-2024
Zoology
Subject Code: 58793

Day and Date : Tuesday, 06-02-2024

Total Marks : 100

Time : 1.00 p.m. to 3.00 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. Standard deviation is.....

- a. the square root of variance
- b. measured using the unit of the variable
- c. measured using the squared unit of the variable
- d. values generally comparable with the average value

2. Western blotting is the technique for the detection of

- a. specific DNA in a sample
- b. specific RNA in a sample
- c. specific protein in a sample.
- d. specific glycolipid in a sample

3. A water body with high values of Biological oxygen Demand (BOD) indicates it is.....
- a. highly polluted
 - b. highly clean
 - c. highly productive
 - d. none of these
4. Climax community is best recognized by
- a. community metabolism $P = R$
 - b. community metabolism $P > R$
 - c. community metabolism $P < R$
 - d. community metabolism $P \neq R$
5. A name of uncertain application either due to non availability of the original type and sufficient information, or because it is not possible to find out the taxon to which its type should be referred to
- a. Nomen novum
 - b. Nomen rejicundum
 - c. Nomen trivial
 - d. Nomen dubium
6. Which one of the following is not included under in-situ conservation?
- a. National park
 - b. Wild life Sanctuary
 - c. Zoological garden
 - d. Biosphere reserve
7. Transmission of action potential into the postsynaptic neuron is due to opening of present in the presynaptic neuron.
- a. voltage gated calcium ion channels
 - b. ligand gated sodium channels
 - c. voltage gated ion channels
 - d. sodium potassium ATPase pump
8. 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

9. Henderson-Hasselbalch equation is written as
- $pH = pKa + \log \frac{[Conjugate\ base]}{[conjugate\ acid]}$
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 - $pH = pKa \log \frac{[Conjugate\ acid]}{[conjugate\ base]}$
10. Which of the following enzyme is common in both glycolysis and gluconeogenesis?
- Phosphofructokinase-1
 - Glucokinase
 - Aldolase
 - Fructose bisphosphatase
11. Which one of the following stored grain pests has elongated snout?
- Rice moth
 - Rice weevil
 - Rust Red floor beetle
 - Pulse beetle
12. The 'surra disease' in cattle is transmitted by
- Horse Fly
 - Warble Fly
 - Sand Fly
 - Mosquito
13. Brown colour to the fecal matter is due to.....
- Uro bilinogen
 - Biliverdin
 - Bilirubin
 - Bile
14. In the respiration 760 mmlig stands for
- 11 ATM
 - 0.5 ATM
 - 1 ATM
 - 0.001ATM
15. Trichomonas lives in
- Urinogenital system
 - Digestive system
 - Excretory system
 - Endocrine system

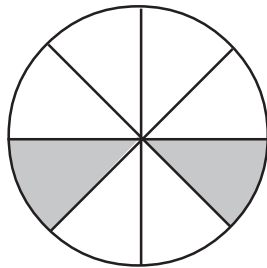
16. is a tapeworm causing parasitic infestations in dogs.
- a. E.granulosus
 - b. T.solium
 - c. T.saginata
 - d. Diphilobothrium
17. For the determination of N terminal amino acid peptide is reacted with
- a. Hydrazine
 - b. Sangers reagent
 - c. Edman's reagent
 - d. Dansyl chloride
18. EC number of enzyme alcohol dehydrogenase is
- a. 1.1.1.1
 - b. 2.2.2.2
 - c. 3.3.3.3
 - d. 4.4.4.4
19. If an infinitesimal large population contains 36% individuals with homozygous dominant genotype. The frequency of heterozygous individuals will be
- a. 0.48
 - b. 0.36
 - c. 0.16
 - d. 0.24
20. Which of the following statements is incorrect regarding SRY?
- a. SRY in the genital ridge cells induces the cells to secrete a chemotactic factor.
 - b. SRY permits the migration of mesonephric cells into the XY gonad.
 - c. In XX mice containing the SRY transgene, the mesonephric cells entered the gonads.
 - d. XY mouse with SRY knockout exhibited migration of mesonephric cells into the gonads.
21. What is true about Toxic action of Organochlorine insecticides?
- a. Organochlorines binds with Acetylcholine esterase.
 - b. Interferes with transmission of nerve respiratory system.

- c. OCs bind to Na channels in neurons increasing permeability to sodium.
 - d. None of the above.
22. Calculation of the LD50 is performed from
- a. A hormesis dose response curve
 - b. A graded dose response curve
 - c. A quantal dose response curve
 - d. A log-log dose response curve
23. Split ratio is considered during
- a. ICSI
 - b. passaging
 - c. study of carcinogenicity
 - d. contamination testing
24. Which of the following sentences about Capillary culture unit is not true?
- a. In CCU the cell population grows within the extracapillary space.
 - b. In the CCU the culture medium flows within the capillaries and its composition can be kept constant.
 - c. In CCU the cell population grows within the lumen of the capillary.
 - d. In CCU, nutrients and metabolites are exchanged by diffusion from the perfusate within the capillaries.
25. Fibroblast line of baby hamster kidney cells is used for testing the
- a. cytotoxicity
 - b. chemical carcinogenicity
 - c. malignancy
 - d. viability
26. What is a Research Design?
- a. A way of conducting research that is not grounded in theory.
 - b. The choice between using qualitative or quantitative methods.

- c. The style in which you present your research findings e.g. a graph.
 - d. A framework for every stage of the collection and analysis of data.
27. Which one of the following belongs to the category of good research ethics"?
- a. Publishing the same paper in two research journals without telling the editors.
 - b. Conducting a review of the literature that acknowledges the contributions of other people in the relevant field or relevant prior work.
 - c. Trimming outliers from a data set without discussing your reasons, in a research paper.
 - d. Including a colleague as an author on a research paper in return for a favour even though the colleague did not make a serious contribution to the paper
28. A null hypothesis is
- a. when there is no difference between the variables
 - b. the same as research hypothesis
 - c. subjective in nature
 - d. when there is difference between the variables
29. Sampling error decreases with the
- a. decrease in sample size b. increase in sample size
 - c. process of randomization d. process of analysis
30. The depth of any research can be judged by
- a. title of the research.
 - b. objectives of the research.
 - c. total expenditure on the research.
 - d. duration of the research
31. The frequency distribution of a research data which is symmetrical in shape similar to a normal distribution but center peak is much higher, is
- a. Skewed b. Mesokurtic
 - c. Leptokurtic d. Platykurtic


32. Identify the correct sequence of research steps:
- a. Selection of topic, review of literature, data collection, interpretation of findings
 - b. Review of literature, selection of topic, data collection, and interpretation of findings
 - c. Selection of topic, data collection, review of literature, interpretation of findings
 - d. Selection of topic, review of literature, interpretation of findings, data collection
33. Superiority of intellect depends upon its power of concentration on one theme in the same way as a concave mirror collects all the rays that strike upon it into one point. What type of reasoning is entailed in the above statement?
- a. Analogical
 - b. Mathematical
 - c. Deductive
 - d. All of the above
34. Hypothesis cannot be stated in
- a. Null and question forms
 - b. Declarative terms
 - c. General terms
 - d. Directional terms
35. Bibliography given in a research report
- a. Helps those interested in further research
 - b. vast knowledge of the researche
 - c. Makes the report authentic
 - d. All of the above
36. "www" stands for
- a. work with
 - b. word wide web
 - c. world wide web
 - d. worth while web

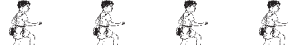


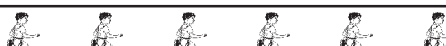

37. Find out the percentage of shaded part in the given diagram?



- a. 2%
- b. 25%
- c. 33%
- d. 16%

38. Observe the diagram and find out how many times are the kabbadi players more than the basket ball players?

(scale: 1  = 25 students)

Types of Game	Number of students
Football	
Cricket	
Basket ball	
Kabaddi	
Kho-Kho	

- a. 50
- b. 3
- c. 150
- d. 5

39. Which is the largest unit of storage among the following?

- a. Terabyte
- b. Megabyte
- c. Kilobyte
- d. Gigabyte

40. The most common type of gel used for electrophoresis of DNA is

- a. agar
- b. agarose
- c. acrylamide
- d. all of the above

41. What is the role of SDS in SDS-PAGE?
- protein denaturation and imparting net negative charge
 - imparting overall negative charge to the protein
 - imparting equal mass to all proteins
 - protein unfolding and imparting net positive charge
42. Which of the following centrifugation is used for the separation of cell organelles from cell lysate?
- differential centrifugation
 - isopycnic centrifugation
 - rate zonal centrifugation.
 - any of these
43. In 500g, what does g represent in accordance to centrifugation?
- Gravitational force
 - Centrifugal force is 500 times greater than earthly gravitational force
 - Centrifugal force is 500 times less than earthly gravitational force
 - Centrifugal force is 500 times same as that of earthly gravitational force
44. Which of the following is used as a spraying agent in paper chromatography?
- 0.1 N HCl
 - Ninhydrin
 - 0.05M NaCl
 - 0.01 M CuSO₄
45. In a noncompetitive immunoassay reaction format, a very high concentration of analyte antigen in the unknown sample might produce a falsely:
- decreased result because the high concentration of antigen binds both the capture and labeled antibody, reducing the number of complexes formed.
 - increased result because the rate of the forward reaction of antigen-antibody binding is too fast, leading to a high equilibrium constant.
 - decreased result because of the free excess antigen-binding all antibody sites and not allowing any unlabeled antigen to bind.
 - increased result because the second labeled antibody will be able to react with the substrate by itself since excess antigen will interfere with any binding.

46. In a precipitin reaction, an excess of antigen over an antibody will lead to:
- all antigen sites bound with an antibody and no precipitate formation.
 - all antibody sites bound by antigen with no formation of precipitate.
 - cross-linking of antigen and an antibody with maximal precipitate formation.
 - a lack of reaction between an antibody and antigen, and no precipitate.
47. Resolving power of a microscope depends upon
- The focal length and aperture of the eye lens
 - The focal length and objective of the eye lens
 - The apertures of the objective and the eye lens
 - The wavelength of light illuminating the object
48. Which of the following microscopes is best suited for observing unstained live cell specimens without staining?
- stereomicroscope
 - phase contrast microscope
 - scanning electron microscope
 - transmission electron microscope
49. Salting out process involves
- precipitation of proteins using ammonium sulfate
 - precipitation of proteins using copper sulfate
 - precipitation of proteins using potassium chloride
 - precipitation of proteins using sodium chloride
50. Which of the following detergents is commonly used to release the integral proteins from the membrane?
- | | |
|----------------|-----------------------|
| a. urea | b. dimethyl sulfoxide |
| c. triton X100 | d. cyanogen bromide |



