

Total No. of Printed Pages: 08

No. of Questions : 50

Dr. Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar
PET 2024 (9020) Doctor of Philosophy(Zoology)

(To be filled by the Candidate)

Candidate Seat Number
(As per Admit card)

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OMR Sheet Number

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Invigilator's signature with Date

Candidate's Seat No. in Words : _____

Name of the Center : _____

Paper Code & Name of Examination : 9020- Doctor of Philosophy(Zoology)

Date: 03/10/2024

PET 2024 - EXAMINATION

Time: One Hours

Total Marks: 100

Important Instructions for the candidate

- Write your seat number and OMR Sheet number on the question paper in the earmarked space
- This question paper carries Fifty (50) Multiple-choice type questions and each question carries 2 Marks
- At the commencement of examination, the question paper will be given to the student.
- Each question has four alternative responses marked (A) (B) (C) and (D). You have to darken the circle as indicated below on the correct response against each question
Example: where (C) is correct answer

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- Your responses to the answer are to be indicated in the OMR Sheet. If you mark at any place other than in the circle in the OMR Sheet it will not be evaluated.
- Rough work is to be done at the end of this question paper.
- You have to return OMR answer sheet and question paper to the invigilator at the end of examination compulsorily and must not carry with you outside the examination hall.
- Use only Black / Blue ball point pen
- Use of any type of calculator or log table etc. is prohibited.
- There is no negative marking for incorrect answers

विद्यार्थ्यांसाठी महत्त्वाच्या सूचना

- परीक्षार्थींनी आपला आसन क्रमांक या पृष्ठावरील वरच्या कोपऱ्यात तसेच आपणास दिलेल्या उत्तर पत्रिकेचा क्रमांक त्याखाली लिहावा.
- या प्रश्नपत्रिकेतील सर्व प्रश्न सोडवणे अनिवार्य आहे.
- परीक्षा सुरु झाल्यावर विद्यार्थ्यांला प्रश्नपत्रिका दिली जाईल.
- प्रत्येक प्रश्नासाठी (A) (B) (C) (D) अशी चार विकल्प उत्तरे दिली आहेत, त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळा निळा करावा.
उदा: जर (C) हे उत्तर योग्य असेल तर

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- या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे ओएमआर उत्तर पत्रिकेतच दर्शवावीत इतर ठिकाणी लिहिलेली उत्तरे तपासली जाणार नाहीत.
- प्रश्नपत्रिकाच्या शेवटी कोऱ्या जागेवरच कच्चे काम करावे
- परीक्षा संपल्यानंतर विद्यार्थ्यांनी मूळ ओ. एम. आर उत्तरपत्रिका पर्यवेक्षकाकडे परत करणे आवश्यक आहे तथापि प्रश्नपत्रिका व ओ. एम. आर. उत्तरपत्रिका आपल्याबरोबर नेण्यास विद्यार्थ्यांला परवानगी नाही.
- फक्त काळ्या किंवा निळ्या बॉलपेनचाच वापर करावा
- कॅल्क्युलेटर किंवा लॉग टेबल वापरण्यास परवानगी नाही
- चुकीच्या उत्तरासाठी गुण कपात केली जाणार नाही

- | Q. No. | Question |
|--------|---|
| 1. | The random variable of Chi square assumes only...
(A) Positive (B) Non negative
(C) Non positive value (D) Negative |
| 2. | The parameter of the Chi Square distribution is (are)...
(A) Degree of freedom (B) K-1
(C) K^2 (D) N |
| 3. | The degree of freedom for goodness of fit test are...
(A) n-1 (B) k-1
(C) n+k-1 (D) n-k-1 |
| 4. | F distribution is always...
(A) Symmetric (B) Skewed to the right
(C) Skewed to left (D) Non symmetric |
| 5. | The units of the F distribution denoted by F_1 are always...
(A) Non Positive (B) Positive
(C) Non negative (D) Negative |
| 6. | One way ANOVA test is always...
(A) Right tailed (B) Left tailed
(C) Two tailed (D) One tailed |
| 7. | For a one way ANOVA with K treatment and n observations in all samples taken together , the degree of freedom for the numerator are ...
(A) k-1 (B) n-k
(C) n-1 (D) n-2 |
| 8. | For a one way ANOVA with K treatment and n observations in all samples taken together , the degree of freedom for the denominator are ...
(A) k-1 (B) n-k
(C) n-1 (D) n-2 |
| 9. | Value of coefficient determination is always in the range of...
(A) 0 to 1 (B) -1 to 1
(C) -1 to 0 (D) 0-1 |
| 10. | The value of the correlation of coefficient is always in the range.....
(A) 0 to 1 (B) -1 to 1
(C) -1 to 0 (D) 1 |
| 11. | A test of hypothesis is always about.....
(A) A population parameter (B) A sample statistics
(C) A test statistics (D) Statistics |

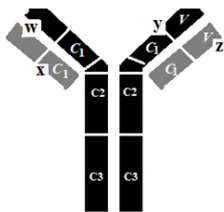
12. A type I of error is committed when.....
 (A) Null hypothesis is not rejected when it is actually false
 (B) A null hypothesis is rejected when it is actually true
 (C) An alternate hypothesis is rejected when it is actually true.
 (D) An alternate hypothesis is accepted when it is actually false
13. The value of $1-\beta$ gives the....
 (A) Probability of committing a type I error
 (B) Probability of committing a type II error
 (C) Power of the test
 (D) It denotes random value
14. A two tailed test is a test with
 (A) Two rejection regions
 (B) Two non rejection regions
 (C) Two test statistics
 (D) One test statistics
15. One tailed test
 (A) Has one rejection region
 (B) Has one non-rejection region
 (C) Both A and B
 (D) Has no rejection region
16. Which of the following is not required to apply the 't' distribution to make a test of hypothesis about μ ?
 (A) $n < 30$
 (B) Population normally distributed
 (C) σ is unknown
 (D) β is known
17. Which of the following summary measures is /are influenced by extreme value?
 i. Mean ii. Median iii. Mode iv. Range
 (A) i and ii only
 (B) ii and iv
 (C) i and iv
 (D) i and iii
18. The value of variance and standard deviation are.....
 (A) Never negative
 (B) Always positive
 (C) Never zero
 (D) Zero
19. Normal probability distribution is applied to
 (A) Continuous random variable
 (B) A discrete random variable
 (C) Any random variable
 (D) Nonrandom variable
20. The Z value for μ for normal distribution curve is always
 (A) Positive
 (B) Negative
 (C) Zero
 (D) Positive and Negative
21. The Southern blot technique....
 (A) Transfers DNA fragment from agarose gel to a Nitrocellulose filter
 (B) Requires that the DNA is radiolabeled prior to addition to the agarose gel
 (C) Requires that the DNA Fragment remains double stranded
 (D) Alters the position of the DNA fragment during the process.

22. Which of the following statement statements is / are TRUE?
 I. PAS staining is used to demonstrate glycogen in tissue sections.
 II. Naphthol AS-D Chloroacetate esterase staining is used to demonstrate immunological activity in tissue.
 III. Toluidine blue staining is used to differentiate between acidic and basic tissue components.
 (A) I and II (B) II and III
 (C) I and III (D) I, II and III
23. The identification of animals based on their physical characteristics often relies on :
 (A) Genetic analysis (B) Behavioral observation
 (C) Use of field guides and keys (D) Environmental sampling
24. Fractional distillation technique is used for...
 (A) Separation of mixture of volatile liquids
 (B) Separation of mixture of cellular organelle
 (C) Separation of phytochemicals from plant extracts
 (D) Separation of proteins by density gradient centrifugation
25. In a Cot curve, what does the Cot value represent ?
 (A) Concentration of DNA (B) Temperature of hybridization
 (C) Time required for DNA to reanneal (D) Concentration of RNA
26. Which of the following character/characters is/are found in Ctenophores?
 I. Bioluminescence
 II. Intracellular or Extracellular digestion
 III. Locomotion is with the help of Cilia.
 (A) I and II (B) II and III
 (C) I and III (D) All of the above
27. Identify the Egg of the *Anopheles* mosquito
 (A)  (B) 
 (C)  (D) 
28. Consider the following Pairs of *Unique body part* and associated *phylum*.
 Body part Phylum
 I. Radula - Coelenterata
 II. Osphradium - Molluska
 III. Spinnerets - Arthropoda
 IV. Aristotle's lantern - Echinodermata
 V. Tymbals - Annelida
 How many of the above pairs are CORRECT?
 (A) 2 (B) 3
 (C) 4 (D) 5

29. Consider the following statements.
 I. New alleles that confer higher fitness that tends to decrease in frequency over time.
 II. Purifying selection is responsible for elimination of new mutations which decreases the fitness of a carrier.
 III. According to neutral theory natural selection is not the only process which brings about change in allelic frequency.
 Which of the above statement/statements is TRUE?
 (A) I and II (B) I and III
 (C) II and III (D) All of the above
30. Neutral theory of evolution is proposed by
 (A) Charles Darwin (B) Ernst Mayer
 (C) Motoo Kimura (D) J.B.S.Haldane
31. Which species concept is based on “eidos” or general characters?
 (A) Evolutionary species concept (B) Nominalistic species concept
 (C) Biological species concept (D) Morphological species concept
32. Consider the following facts about conservation.
 I. ‘In-situ’ conservation means the conservation of organisms outside their habitat like Zoo.
 II. ‘Ex-situ’ conservation means the conservation of organisms inside their habitat like National parks.
 III. Artificial fertilization of gametes, storing and freezing of gametes and zygotes etc are means of ‘Ex-situ’ conservation of endangered animals.
 Which of the above statement is TRUE?
 (A) I Only (B) II Only
 (C) III Only (D) None of these
33. Identify the correctly matched pair/pairs.
- | Natural Source | Drug |
|--------------------|----------------------------------|
| I. Artemisia annua | – Anti-malarial drug |
| II. Anise flowers | - Anti- Swine flu drug |
| III. Cobra venom | - Blood pressure regulating drug |
- (A) Only I and II (B) II and III
 (C) I and III (D) All of the above
34. Consider the Assertion and Reason.
 Assertion (A) : In human beings, the females play a major role in determining the sex of the offspring.
 Reason (R) : Women have two ‘X’ chromosomes.
- (A) Both A and R is individually true and R is the correct explanation
 (B) Both A and R is individually true but R is NOT the correct explanation of A
 (C) A is true but R is false
 (D) A is false but R is true

35. A lungfish lives in a muddy wetland. Instead of ammonia, It excretes its nitrogenous wastes in the form of Urea. Why?
- (A) It requires less energy to produce Urea.
 - (B) It requires less water to excrete Urea.
 - (C) It requires less temperature to synthesize urea.
 - (D) It requires dry skin to excrete urea.
36. Which of the following statements are CORRECT?
- I. When choice of mate is on the basis of Phenotype and genotype then such behaviour is called as random mating.
 - II. Non-random mating may lead to extinction of the species.
 - III. Random mating favors evolution.
- (A) I only
 - (B) II only
 - (C) I and III
 - (D) I, II and III
37. Loss of function mutations (involving a single allele) that affect the production on an enzyme are usually autosomal
- (A) Dominant
 - (B) Recessive
 - (C) Both a and b
 - (D) Co-dominant
38. In Fluid mosaic model of Plasma membrane core of the membrane is
- I. Hydrophobic
 - II. Hydrophilic
 - III. Polar
 - IV. Non-polar
- (A) I and IV
 - (B) II and IV
 - (C) I and III
 - (D) II and III
39. Consider the following statements about Proteins.
- I. Proteins are made up of amino acids.
 - II. Intake of some amino acids is must for our body and such amino acids are called essential amino acids.
 - III. Some amino acids are prepared by our body and such amino acids are called as essential amino acids.
- Which of the above statement is CORRECT?
- (A) I and II
 - (B) I and III
 - (C) II and III
 - (D) All of the above
40. During impulse transmission the wave of depolarization, and repolarization is seen. The term 'Repolarization' signifies ...
- (A) Entry of Na⁺ ions
 - (B) Entry of K⁺ ions
 - (C) Moving out of Na⁺ ions
 - (D) Moving out of K⁺ ions
41. Primitive streak formed during the development of chick embryo is ...
- (A) Region which forms endoderm in gastrula
 - (B) Region from where endoderm moves inside to form gastrula
 - (C) Region which forms ectoderm in the gastrula
 - (D) Region similar to blastopore of frog embryo

42. Which of the following proteins of the Adherens junction show calcium independent homophilic interaction?
 (A) Cadherins and Nectins (B) Cadherins only
 (C) Nectins only (D) Myosin
43. *Idli* batter contains rice and dal in the proportion of 3:1. If you want to serve idli to the diabetic person which of the following option you will choose?
 I. Increase the particle size of rice .
 II. Increase the particle size of dal.
 (A) I and II (B) I only
 (C) II only (D) Can't say
44. Which of the following statement is TRUE about Leucine Rich Region (LRR) of the TLRs?
 I. Leucine rich domain is present on the N Terminus
 II. Convex surface of the Leucine rich domain is responsible for interacting with the ligands.
 III. LRR is highly conserved region of the TLRs.
 (A) I only (B) I and II
 (C) I and III (D) All of the above
45. Clathrin coated pits are associated with ...
 (A) Phagocytosis (B) Pinocytosis
 (C) Receptor mediated endocytosis (D) Exocytosis
46. Which of the following cell type shows NETosis?
 (A) NK cells (B) Neutrophils
 (C) Mast cells (D) Macrophages
47. Transferring a small number of cells from an older tissue culture vessel into a new vessel is called
 (A) blebbing (B) batch culture
 (C) replenishing (D) Passaging
48. Consider the following diagram of Antibody. w, x, y and z are the positions on the antibody. Which is the most appropriate position where antigen will bind to antibody?



- (A) w (B) x
 (C) y (D) Z

49. Why "Latin" language is used for binomial nomenclature?
- I. It is the most explicit language to describe the organism.
 - II. It is a dead language.
 - III. It was widely spoken at that point of time.
- (A) I only (B) I and II
(C) II and III (D) I and III
50. Identify the group of primary consumers.
- (A) Tiger, Bison, Deer and Panda
 - (B) Panda, Honey bee, Deer and Sea cow
 - (C) Honey bee, Cockroach, Cat and Dog
 - (D) Camel, Leopard, Elephant and Chimpanzee
