M.Sc. in Zoology

Zoology (2)

13P/216/4 Question Booklet No.....

(To be filled up by the candidate by blue/black ball-point pen)

Roll No. | | | | | | | | | |

Roll No.
(Write the digits in words) .....

Serial No. of OMR Answer Sheet .....

Day and Date ....
(Signature of Invigilator)

INSTRUCTIONS TO CANDIDATES

(Use only **blue/black ball-point pen** in the space above and on both sides of the Answer Sheet)

1. Within 10 minutes of the issue of the Question Booklet, check the Question Booklet to ensure that it contains all the pages in correct sequence and that no page/question is missing. In case of faulty Question Booklet bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall *except the Admit Card without its envelope.*
3. A separate Answer Sheet is given. *It should not be folded or mutilated. A second Answer Sheet shall not be provided. Only the Answer Sheet will be evaluated.*
4. Write your *Roll Number and Serial Number of the Answer Sheet by pen* in the space provided above.
5. **On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.**
6. No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and also Roll No. and OMR Sheet No. on the Question Booklet.
7. Any change in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfair means.
8. Each question in this Booklet is followed by four alternative answers. *For each question, you are to record the correct option on the Answer Sheet by darkening the appropriate circle* in the corresponding row of the Answer Sheet, by ball-point pen as mentioned in the guidelines given on the first page of the Answer Sheet.
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. *Note that the answer once filled in ink cannot be changed.* If you *do not wish to attempt* a question, leave all the circles in the corresponding row blank (such question will be awarded zero mark).
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit *only the OMR Answer Sheet* at the end of the Test.
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

[उपर्युक्त निर्देश हिन्दी में अन्तिम आवरण-पृष्ठ पर दिये गए हैं]

[No. of Printed Pages : 28+2

No. of Questions/प्रश्नों की संख्या : 150

Time/समय : 2 Hours/घण्टे **Full Marks/पूर्णांक :** 450

Note/नोट : (1) Attempt as many questions as you can. Each question carries **3** marks. **One** mark will be deducted for each incorrect answer. Zero mark will be awarded for each unattempted question.

अधिकाधिक प्रश्नों को हल करने का प्रयत्न करें। प्रत्येक प्रश्न **3** अंक का है। प्रत्येक गलत उत्तर के लिए **एक** अंक काटा जाएगा। प्रत्येक अनुत्तरित प्रश्न का प्राप्तांक शून्य होगा।

(2) If more than one alternative answers seem to be approximate to the correct answer, choose the closest one.

यदि एकाधिक वैकल्पिक उत्तर सही उत्तर के निकट प्रतीत हों, तो निकटतम सही उत्तर दें।

1. The Reynolds formula as expressed by Re = Plu/V, which describes the behaviour of body in water, whereas P is equal to density of fluid, l is some measurement of size of the body, u is equal to the relative velocity of the fluid over the body surface and V is the velocity of fluid, is applied for

(1) cylindrical body of an animal (2) dorsoventrally flattened on an animal

(3) asymmetrical body of an animal (4) irregularly shaped body

2. At least some invertebrate alternate regularly between being functional males and females as explained by Jerone Tichenor, 1974, which one is wrong?

(1) Barnacles (2) Flatworms (3) Oligochaetes (4) Sponges

3. Aquiferous system is present in which of the animal given below?

(1) Echinodermata
(2) Coelenterata
(3) Sponges
(4) Crustacean larvae

4. Acontia is a/an

(1) filament like structure
(2) part of gastrovascular body
(3) colonial Anthozoa
(4) other name of Solenia

5. Prohaptor and opisthaptor are the conditions which are present in phylum

(1) Protozoa
(2) Porifera
(3) Annelida
(4) Platyhelminthes

6. Root like foot found in

(1) Acanthamoeba
(2) Entamoeba
(3) Amoeba
(4) Dientamoeba

7. Which of the sequences is incorrect for leech?

(1) The prechitellar region is V-VIII
(2) Chitellar region is IX-XI
(3) Postchitellar or middle region is XII-XXXII
(4) Postchitellar region is XXVIII-XXXIV

8. Flosculi is responsible for

(1) sensory organs

(2) attachment to host body

(3) photosensitive organs

(4) association with retrocerebral organ

9. Symmetry of Jellyfish is

(1) quadriradial

(2) bilateral symmetry

(3) radial symmetry

(4) asymmetrical

10. Plicate Ctenidia is present in

(1) Oyster (2) Loligo (3) Chiton (4) Snail

11. Which one of the following does not possess a notochord?

(1) *Balanoglossus*

(2) *Clarias batrachus*

(3) *Heteropneustes fossilis*

(4) *Rana tigrina*

12. Young Vorticella are

(1) flying organisms

(2) sessile organisms

(3) winged organisms

(4) free-living organisms

13. *Entamoeba histolytica* is transmitted into a new host through

(1) tick

(2) ingestion of contaminated food and drinking water

(3) mosquito

(4) blood transfusion

14. The most important characteristics of Arthropoda is

(1) jointed appendages

(2) presence of exoskeleton

(3) segmentation of body

(4) metamorphosis during development

15. Skeleton of Sycon is made up of

(1) spicules of calcium carbonate (2) silica

(3) fibers (4) connective tissue

16. What are the characteristics of the sponges that distinguish them from other animals?

(1) Choanocytes (2) Coelenteron cavity

(3) Hollow body (4) Single mouth

17. Filariasis is caused by

(1) *Ascaris* (2) *Taenia* (3) Whip worm (4) *Wuchereria*

18. Which one of the following is a genus of trematodes?

(1) *Nereis* (2) *Palaemon* (3) *Fusciola* (4) *Serratus*

19. Mode of transmission of *Loa loa* is by

(1) eating pork (2) deer fly bite

(3) eating raw vegetables (4) cyclops

20. Identify the respiratory organs of *Palaemon* from the following

(1) Integument (2) Gills (3) Trachea (4) Book lungs

21. In cockroach, Malpighian tubules are involved in

(1) digestion (2) reproduction (3) excretion (4) respiration

22. Which are not characters of Echinoderms?

(1) Tube feet (2) Ambulacral system

(3) Radula (4) Pedicellaria

23. Skeleton of Echinoderms is

(1) silcious (2) calcareous

(3) made up of tunicin (4) chitinous

24. If one is viewing an object under a light microscope in blue light (wavelength 450 nm) using a lens whose numerical aperture is 0·94, then what will be the limit of resolution of the microscope?

(1) ~ 100 nm (2) ~ 200 nm (3) ~ 300 nm (4) ~ 400 nm

25. Which category of proteins is synthesized on rough endoplasmic reticulum?

(1) All cytoplasmic and nuclear proteins

(2) Only secretary proteins

(3) Only lysosomal proteins

(4) Secretary, lysosomal and membrane proteins

26. Nuclear pore complex has

(1) a hexameric organization (2) a tetrameric organization

(3) an octameric organization (4) a pentameric organization

27. If a cell has 6 pairs of satellite chromosomes and they are organized in interphase nucleus in 2 different regions, then the nucleus will have

(1) 2 nucleoli (2) 3 nucleoli (3) 6 nucleoli (4) 12 nucleoli

28. Satellite chromosomes contain

(1) satellite DNA (2) NOR

(3) double minutes (4) LINES

29. A species of *Drosophila* has 3 pairs of metacentric chromosomes only. How many arms will be there in its polytene chromosomes?

(1) 3 arms (2) 5 arms (3) 6 arms (4) 12 arms

30. Colchicine arrests cell division

(1) at interphase by inhibiting centrosomal duplication

(2) at metaphase by inhibiting minus end of microtubules to grow

(3) at metaphase by inhibiting tubulin polymerization

(4) at anaphase by promoting plus end of microtubules to grow

31. A cell having 5 pairs of metacentric chromosomes undergoes meiosis. At anaphase II each pole of the cell will have

(1) 10 'V' shaped chromatids (2) 10 'I' shaped chromatids

(3) 5 'I' shaped chromatids (4) 5 'V' shaped chromatids

32. In *E.coli* induction of *lactose* operon occurs when allolactose binds to the

(1) operator (2) promoter (3) repressor (4) galactosidase

33. Sexduction involves transfer of genetic material between bacteria with the help of

(1) a phage
(2) an Hfr donor strain
(3) an F + donor strain
(4) an F' donor strain

34. An allele is considered to be dominant if it shows the phenotype

(1) only in hemizygous condition
(2) only in heterozygous combination
(3) only in homozygous combination
(4) in homozygous as well as heterozygous combination

35. In a couple, the husband has an X-linked recessive disease and wife is homozygous normal. If they seek advice of a genetic counsellor regarding having children, what advice will be the most appropriate out of the following?

(1) 50% chance of having affected male child
(2) 50% chance of having affected female child
(3) Male as well as female child may be affected
(4) None of their male child will be affected

36. In *Drosophila* primary sex is determined by a cascade of gene activity involving *sxl*, *tra* and *dsx* genes. These genes are expressed in both sexes but their products differ due to

(1) use of different ORFs in the two sexes
(2) transcription slipage
(3) transplicing
(4) alternate splicing

37. While producing test-tube babies the gametes are allowed to fertilize

(1) *in vivo* and the embryo is grown in test tube

(2) *in vitro* and the embryo is grown in test tube

(3) *in vivo* and the embryo is transferred to the uterus of foster mother

(4) *in vitro* and the embryo is transferred to the uterus of foster mother

38. Replacement of defective gene with a normal gene in gene therapy occurs due to the natural phenomenon of

(1) transposition (2) integration (3) segregation (4) recombination

39. The frequency of double cross-over classes in the progeny of a 3-point test cross is

(1) always the lowest

(2) always the highest

(3) used to find the distance between the two markers from the middle one

(4) used to find the distance between the left and right marker

40. A mutation in which a purine is replaced by a pyrimidine or a pyrimidine is replaced by a purine is known as

(1) base substitution (2) transition

(3) transversion (4) frameshift mutation

41. Wobble or weak pairing occurs between

(1) 1st base of codon and 3rd base of anticodon

(2) 1st base of anticodon and 3rd base of codon

(3) 3rd base of codon and 3rd base of anticodon

(4) 2nd base of codon and 2nd base of anticodon

42. A trait in human was found to be varying continuously in the individuals of a population and was seen to have environmental influence also. Which of the following is not true for such traits?

(1) They are referred to as quantitative characteristics

(2) Multifactorial characteristics show a bell shaped distribution graph

(3) Polygenic traits are variable hence require statistical validation

(4) The homozygotes are more common and occupy central position in bell shaped graph

43. Which one of the following is an extra-chromosomal body in Paramecium?

(1) Kappa particles

(2) Lambda particles

(3) Plasmids

(4) Episomes

44. A man carrying a sex-linked gene on his Y-chromosome will transmit this gene to

(1) half of his male offspring

(2) half of his female offspring

(3) all his female offspring

(4) all his male offspring

45. Which of the following is crucial for the entry of cells into anaphase?

(1) Activation of MPF

(2) Formation of mitotic apparatus

(3) Repression of CDC25 gene

(4) Degradation of cyclins

46. Sorting of lysosomal proteins in a cell occurs in

(1) smooth endoplasmic reticulum

(2) rough endoplasmic reticulum

(3) *cis*-Golgi network

(4) *trans*-Golgi network

47. The Mitosis Promotion Factor is made up of

(1) a cyclin
(2) a phosphokinase
(3) a phosphotase
(4) a cyclin and a kinase

48. A nucleosome is made up of

(1) 146bp DNA plus histone octamer of H2A, H2B, H3 and H4
(2) 200bp DNA plus histone octamer of H2A, H2B, H3 and H4
(3) 200bp DNA plus histone octamer of H2A, H2B, H3, H4 and one H1
(4) 146bp DNA plus histone octamer of H2A, H2B, H3, H4 and one H1

49. In a two-point cross in *Drosophila* between a heterozygote parent (Aa Bb) with a double recessive homozygote (aa bb) two types of flies were born (AB and ab) in the ratio of 1 : 1. The genes A and B exhibit

(1) independent assortment
(2) epistasis
(3) complete linkage
(4) incomplete linkage

50. Treatment of metaphase chromosomes with a dilute solution of trypsin leads to

(1) C-banding (2) R-banding (3) G-banding (4) NOR-banding

51. At pachytene, if a cell has 2n chromosomes and 4C DNA, the gamete will have

(1) 2n and 2C (2) 1n and 1C (3) 2n and 1C (4) 1n and 2C

52. Human genome is made up of

(1) ~ 2500Mb DNA
(2) ~ 3300Mb DNA
(3) ~ 5000Mb DNA
(4) ~ 6500Mb DNA

53. Which of the following is common to DNA replication and transcription?

(1) Presence of a primer
(2) Sigma like factor
(3) 5' to 3' direction in synthesis
(4) dNTPs

54. Somatostatin inhibits the release of

(1) STH (2) TSH (3) FSH (4) LH

55. Which hormone from pars distalis is under inhibitory control of hypothalamus?

(1) FSH (2) LH (3) TSH (4) Prolactin

56. Cretinism is associated with

(1) thyroid gland (2) adrenal gland (3) pineal gland (4) gonads

57. Calcitonin acts antagonistically to

(1) parathormone (2) insulin (3) inhibin (4) relaxin

58. Secretion of which hormone is regulated by Renin-Angiotensin system?

(1) Aldosterone
(2) Testosterone
(3) Progesterone
(4) Dihydrotestosterone

59. Alloxan treatment destroys which cells in pancreatic islets, leading to diabetes mellitus?

(1) α-cells (2) D-cells (3) F-cells (4) β-cells

60. In males, LH regulates secretion of

(1) testosterone (2) aldosterone (3) corticosterone (4) progesterone

61. Androgen Binding Protein (ABP) is secreted by

(1) Leydig cells (2) Myoid cells (3) Sertoli cells (4) Sperm cells

62. In rat estrous cycle, ovulation occurs during

(1) proestrus (2) metestrus (3) diestrus (4) estrus

63. Fully-grown follicle in ovary is called

(1) Graafian follicle (2) Graffian follicle

(3) Grafian follicle (4) Grofen follicle

64. At the time of fertilization, a vertebrate oocyte contains

(1) no polar bodies

(2) one polar body

(3) two polar bodies

(4) often two polar bodies but sometimes one

65. Fast block to polyspermy is achieved by

(1) rotation of the cytoplasm to 30°

(2) egg activation

(3) changing electrical potential of egg membrane

(4) capacitation of sperm releasing enzymes

66. Cleavage divisions are

(1) mitotic divisions whereby large egg is divided numerous small nucleated cells

(2) mitotic divisions whereby a small egg gets transformed into a very large sized blastula

(3) meiotic divisions not increasing the size of the egg

(4) meiotic divisions shedding one polar body

67. The expansion of outer layer of cells covering the entire embryo during gastrulation of Xenopus or chick is called as

(1) epiboly (2) involution (3) evolution (4) spreading

68. In chick, the embryo proper is formed from

(1) hypoblast

(2) subgerminal layer between hypoblast and yolk

(3) epiblast + hypoblast

(4) epiblast

69. The tissues derived from mesoderm are

(1) eye, nerve cord, neural creast

(2) lung, liver, pancreas

(3) eye, liver, germ cells

(4) heart muscle, RBC, tubules of kidney

70. The dorsal lip of blastopore of an amphibian embryo acts as

(1) an organizer (2) Nieuwkoop centre

(3) an inducer (4) competent cells

71. The ability of a cell or tissue to respond to a specific induction signal is known as

(1) competence (2) equivalence group

(3) receptor (4) potency

72. If a gene mutation causes lumber vertebrae to get modified into thoracic vertebrae during embryonic development, such transformation is termed as

(1) homeotic transformation (2) heterotypic transformation

(3) transgenesis (4) transversion

73. Regeneration involving restructuring of the existing tissue with little growth is known as

(1) eimorphosis (2) morphallaxis

(3) compensatory regeneration (4) epigenesis

74. Virilization is caused due to

(1) excess progesterone (2) excess androgens

(3) excess estradiol (4) low androgens

75. The cavity inside the blastula is called the

(1) gastrula (2) blastocoel (3) animal pore (4) blastomere

76. Species threatened with extinction are called

(1) endangered species (2) endemic species

(3) vulnerable species (4) rare species

77. The most productive zone of a lake comprises the

(1) littoral zone
(2) limnetic zone
(3) profundal zone
(4) benthic zone

78. A junction zone between two or more diverse communities is known as

(1) niche (2) ecotone (3) habitat (4) biome

79. Honeybee workers signal about the distance and direction of the food source by means of the

(1) round dance
(2) waggle dance
(3) tremble dance
(4) All of the above three types of dances

80. The dominant male in a group of monkeys is called the

(1) Alpha male (2) Beta male (3) Gamma male (4) Delta male

81. A species-specific odour cue released by an animal that influences the behaviour of a conspecific is known as a/an

(1) releaser effect pheromone
(2) primer effect pheromone
(3) allomone
(4) kairomone

82. Abiotic environment does not include

(1) air (2) water (3) autotrophs (4) soil

83. The re-establishment of the integrity of natural systems that have been damaged by human activity is called

(1) Ecotoxicology
(2) Conservation Biology
(3) Landscape Ecology
(4) Restoration Ecology

84. Systematic and scientific study of the behaviour of animals, including human, is called

(1) Chronobiology
(2) Biogeography
(3) Ethology
(4) Ethnography

85. Which one of the following is an example of innate behaviour?

(1) Instinct
(2) Habituation
(3) Learning
(4) Trial-and-error learning

86. The 'royal jelly' of honeybee is secreted by the pharyngeal glands of

(1) worker bees
(2) drones
(3) queen
(4) Both queen and workers

87. Fishes suffering from 'yellow grub' disease have

(1) protozoan infection
(2) fluke infection
(3) fungal infection
(4) viral infection

88. An exotic breed of cow is

(1) Ongole
(2) Holstein-Friesian
(3) Halliker
(4) Deoni

89. Related species which are reproductively isolated but morphologically similar are called

(1) allopatric (2) sympatric (3) sibling (4) incipient

90. Several genera resembling one another in their major morphological, anatomical and reproductive characters are placed together in

(1) species (2) genus (3) order (4) family

91. Titration of α-lysine yielded $pK_1 = 3{\cdot}0$, $pK_2 = 9{\cdot}0$ and $pK_R = 6{\cdot}0$. The pI value of this amino acid would be

(1) 4·5 (2) 6·0 (3) 6·5 (4) 7·5

92. Ramchandran plot is used to describe

(1) enzyme kinetics
(2) oxygen saturation curve of Hb
(3) protein structure
(4) DNA denaturation kinetics

93. Structurally abzyme is a/an

(1) protein
(2) RNA
(3) Ribonucleoproteins
(4) spliced intron

94. In the presence of an inhibitor, if K_m of an enzyme remains unchanged, the inhibitor would be characterized as a/an

(1) competitive inhibitor
(2) non-competitive inhibitor
(3) uncompetitive inhibitor
(4) mixed type inhibitor

95. Chitin is a

(1) homopolysaccharide (2) heteropolysaccharide

(3) proteoglycan (4) glycoprotein

96. Chemiosmotic hypothesis is related to

(1) transport of ATP across the membrane

(2) ATP synthesis during glycolysis

(3) mitochondrial ATP synthesis

(4) ATP hydrolysis

97. TCA cycle starts with the carboxylation of

(1) acetyl CoA (2) citrate (3) *cis*-aconitate (4) oxaloacetate

98. Which one of the following catalyzes ATP producing step during glycolytic pathway?

(1) 1,3-Bisphosphate glycerate kinase

(2) Phosphofructokinase

(3) Hexokinase

(4) Fructose-1,6-bisphosphatase

99. In a charged tRNA, amino acid is joined to the

(1) 5' end (2) 3' end (3) TψC loop (4) D-loop

100. What would be the sequence of the mRNA for a gene sequence of 5'-GCGGTTCCGT-3' ?

(1) 5'-GCGGTTCCGT-3' (2) 5'-CGCCAAGGCA-3'

(3) 5'-ACGGAACCGC-3' (4) 5'-GCGGUUCCGU-3'

101. Which one of the following is critical for the recognition of promoter of a gene by prokaryotic RNA polymerase?

(1) Rho factor
(2) Sigma factor
(3) β-subunit of RNA polymerase
(4) ω-subunit of RNA polymerase

102. 5'-3' exonuclease activity is shown by

(1) DNA polymerase I
(2) DNA polymerase II
(3) DNA polymerase III
(4) RNA polymerase II

103. During initiation of protein synthesis, the initiator charged t-RNA gets placed at

(1) 'A' site of ribosomes
(2) 'P' site of ribosomes
(3) extreme 5'-end of mRNA
(4) extreme 3'-end of an rRNA

104. Aspirin is used as an anti-inflammatory drug because it inhibits

(1) synthesis of prostaglandins
(2) aggregation of blood platelets
(3) actions of proinflammatory proteins
(4) blood flow at the affected site

105. Cosmid is a

(1) cloning vector
(2) shuttle vector
(3) recombinant DNA
(4) c-DNA

106. Due to increased level of 2,3-*bis*-phosphoglycerate in RBC, the affinity of oxygen with haemoglobin is

(1) decreased (2) increased (3) unaffected (4) abolished

107. A donor having blood group AB cannot donate his/her blood to the receipient who has blood group O because

(1) donor has antibodies

(2) donor has antigens

(3) recipient has antigens

(4) antibodies will be formed in recipient

108. The source of energy for muscle during marathon running is

(1) ATP (2) creatine phosphate

(3) blood glucose (4) protein

109. During conduction of nerve impulse, the action potential is developed by

(1) inward movement of Na^+ and outward movement of K^+

(2) inward movement of K^+ and outward movement of Na^+

(3) inward movement of Na^+ and K^+

(4) outward movement of Na^+ and K^+

110. The photosensitive component in the photopigments is

(1) 11-*cis*-retinenal (2) 11-*cis*-retinenol

(3) all-*trans* retinenal (4) opsin

111. Nebulin is associated with the structure of

(1) thin filament (2) thick filament (3) Z lines (4) tendons

112. The major form of gastrin that regulates the gastric juice secretion is

(1) G 4 (2) G 45 (3) G 17 (4) G 34

113. Rigor mortis occurs in dead animal because

(1) ATP, which is necessary for the formation of cross bridges, is not being formed

(2) ATP, which is necessary for the detachment of cross bridges, is not being formed

(3) ATP, which is necessary for the formation of cross bridges, continues to be formed

(4) deterioration of muscle proteins prevents detachment of cross bridges

114. Glucose is absorbed through luminal brush borders by secondary active transport mechanism requiring

(1) GLUT 5 (2) SGLT 1 (3) SGLT 2 (4) GLUT 2

115. During cardiac cycle

(1) the volume of blood leaving the left side of the heart is greater than that leaving the right side

(2) the pressure of blood leaving the right side of the heart is greater than that leaving the left side

(3) the duration of systole is greater than that of the diastole

(4) the duration of the diastole is greater than that of systole

116. According to the Frank-Starling mechanism of the heart

(1) the left ventricle ejects a larger volume of blood with each systole than the right ventricle

(2) the intrinsic rate of the heart's pacemaker is 100 beats/min

(3) cardiac output increases with increased heart rate

(4) stroke volume increases with increased venous return

117. Inhalation/inspiration occurs as a result of

(1) an upward movement of the diagram

(2) movement of the ribs closer together due to contraction of the inspiratory intercostals muscles

(3) a downward movement of the diaphragm

(4) Both (1) and (2)

118. The chemical nature of the blood group substances on RBC membrane is

(1) proteins

(2) glycoproteins

(3) glycosphingolipids

(4) carbohydrates

119. Coumerins inhibit blood coagulation by

(1) stimulating antithrombin III

(2) inhibiting thrombin

(3) inhibiting vit. K-dependent carboxylation of clotting factors

(4) stimulating thrombin

120. What is the clearance of a substance when its concentration in the plasma is 10 mg/dL, its concentration in the urine is 100 mg/dL and urine flow is 2 ml/min?

(1) 2 ml/min (2) 20 ml/min (3) 10 ml/min (4) 200 ml/min

121. The fossil of *Archaeopteryx* was found in the rocks deposited in

(1) Jurassic period (2) Triassic period

(3) Cretaceous period (4) Permian period

122. The raw material of evolution is provided by

(1) genetic drift (2) migration

(3) mutation and recombination (4) selection

123. Gene flow between different Mendelian populations is prevented by

(1) reproductive isolation (2) adaptive colouration

(3) hybridization (4) sympatry

124. The phenomenon of industrial melanism was demonstrated for the first time in

(1) mosquito (2) housefly (3) peppered moth (4) butterfly

125. Binomial square rule was proposed by

(1) Hardy and Weinberg (2) Hardy

(3) Weinberg (4) Haldane

126. As long as a population remains in genetic equilibrium

(1) it does not evolve

(2) it undergoes evolutionary changes

(3) it accumulates mutations

(4) it may give rise to a new species

127. Gametic isolation is an example of

(1) pre-mating isolation

(2) post-zygotic isolation

(3) ethological isolation

(4) post-mating and pre-zygotic isolation

128. The binomial system of classification was developed by

(1) Darwin (2) Malthus (3) Linnaeus (4) Wallace

129. Which of the following is early gnathostome?

(1) Osteostracian (2) Heterostracian

(3) Anaspidan (4) Arthrodiran

130. In which of the following tunicates, the tunic is not persistent?

(1) Larvacea (2) Enterogona (3) Doliolida (4) Salpida

131. Which of the following are the dominant Cenozoic fishes?

(1) Chondrostei (2) Holostei

(3) Teleostei (4) Coelacanthiformes

132. Which of the following lack secondary palate?

(1) Amphibians (2) Reptiles (3) Birds (4) Mammals

133. Carpometacarpus is absent in

(1) Odontognathae (2) Archaeornithes

(3) Palaeognathae (4) Neognathae

134. Which of the following may respire through skin?

(1) Dipnoi (2) Catfish (3) Eel (4) Amia

135. A true air circulation in the lung is the characteristics of

(1) amphibians (2) reptiles (3) birds (4) mammals

136. Respiratory exchange in bird's lung takes place

(1) around primary bronchi (2) around secondary bronchi

(3) around parabronchi (4) around pseudobronchi

137. Which of the gut part is absent in chimaeras?

(1) Pharynx (2) Oesophagus (3) Stomach (4) Intestine

138. Ductus caroticus is found in

(1) Amphibia (2) reptile (3) bird (4) mammal

139. Renal portal system is present in

(1) Monotreme (2) Metatheria (3) Insectivora (4) Lemuroidea

140. Which of the following vertebrates have taste buds in their skin?

(1) Fish (2) Reptiles (3) Birds (4) Mammals

141. Which of the following accessory inspiratory muscles helps in deep laboured respiration?

(1) Anterior abdominal wall muscle (2) Scalene muscle

(3) External intercostal muscle (4) Internal intercostal muscle

142. In marsupials, uterus is

(1) duplex type (2) bipartite type

(3) bicornuate type (4) simplex type

143. Zygomatic arch in reptilian skull is bounded by the

(1) postorbital, quadrate and jugal bones

(2) postorbital, squamosal and jugal bones

(3) squamosal, quadrate and jugal bones

(4) postorbital, squamosal and quadrate bones

144. In developing amniotic testis, connecting tubules connect

(1) seminiferous tubules and central canal

(2) kidney tubules and archinephric duct

(3) lateral kidney tubules and archinephric duct

(4) central canal and lateral kidney canal

145. Nedamental gland is found in the oviduct of

(1) elasmobranch

(2) reptile

(3) bird

(4) monotreme

146. Kidney of hagfish larvae is

(1) holonephros (2) Mesonephros (3) metanephros (4) aglomerular

147. Sense corpuscles are absent in

(1) fish (2) Amphibia (3) bird (4) mammals

148. Hearing in many teleost is due to

(1) basilar pailla

(2) macula neglecta

(3) basilar membrane

(4) organ of corti

149. During the evolution of vertebrate brain, neopallium appeared for the first time in

(1) Amphibia

(2) primitive reptiles

(3) advanced reptiles

(4) birds

150. Cranial kinesis is lost in

(1) early amphibians

✓(2) modern amphibians

(3) reptiles

(4) birds

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अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण-पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली या काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 10 मिनट के अन्दर ही देख लें कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष-निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर लें।

2. परीक्षा भवन में *लिफाफा रहित प्रवेश-पत्र के अतिरिक्त*, लिखा या सादा कोई भी खुला कागज साथ में न लायें।

3. उत्तर-पत्र अलग से दिया गया है। ***इसे न तो मोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा, केवल उत्तर पत्र का ही मूल्यांकन किया जायेगा।***

4. अपना *अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन* से निर्धारित स्थान पर लिखें।

5. उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें. जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।

6. ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्न-पुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्न पुस्तिका पर अनुक्रमांक सं० और ओ० एम० आर० पत्र सं० की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।

7. उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।

8. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। ***प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिये आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।***

9. प्रत्येक प्रश्न के उत्तर के लिये केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।

10. ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का *उत्तर नहीं देना चाहते हैं*, तो सम्बन्धित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।

11. रफ कार्य के लिये प्रश्न पुस्तिका के मुखपृष्ठ के अन्दर वाले पृष्ठ तथा अंतिम पृष्ठ का प्रयोग करें।

12. परीक्षा के उपरान्त केवल ***ओ०एम०आर० उत्तर-पत्र*** परीक्षा भवन में जमा कर दें।

13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।

14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की, भागी होगा/होगी।