

L : ZOOLOGY**Q. 1 – Q. 10 carry one mark each.**

- Q.1 The term “paedomorphosis” refers to
- (A) Accelerated reproductive development as compared to somatic development
 - (B) A transient stage in the developmental event
 - (C) Two independent structures resembling each other, yet performing different functions
 - (D) A form of mimicry
- Q.2 Which one of the following statements is TRUE when determining the age of a fossil using carbon dating?
- (A) Carbon dating is based on carbon-13 to carbon-12 ratio in fossils
 - (B) Carbon dating is useful for determining the age of only fossils older than 100,000 years
 - (C) Older the fossil, lesser the carbon-14 to carbon-12 ratio
 - (D) Older the fossil, lesser the carbon-12 to carbon-14 ratio
- Q.3 Constitutive enzymes are
- (A) Induced by effector molecules
 - (B) Repressed by repressors
 - (C) Encoded by sequences that occur as part of an operon
 - (D) Always produced in the cell
- Q.4 Which one of the following is a function of intermediate filaments?
- (A) Chromosome movement during the cell division
 - (B) Cytoplasmic streaming
 - (C) Formation of tight junctions
 - (D) Anchorage of the nucleus
- Q.5 Which one of the following statements is FALSE with respect to phospholipids?
- (A) Phospholipids have amphipathic character
 - (B) Phospholipids form the lipid bilayer of the cell membrane
 - (C) Phospholipids form micelles in living systems
 - (D) Some phospholipid molecules may contain a double bond in hydrophobic tails
- Q.6 Which one of the following organs is INCORRECTLY paired with its function?
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| (A) Intestinal villi – absorption | (B) Epiglottis – closure of larynx |
| (C) Gall bladder – carbohydrate digestion | (D) Parietal cells – hydrochloric acid |
- Q.7 Where do B lymphocytes acquire immune competence?
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|------------|-----------------|-----------------|------------|
| (A) Thymus | (B) Bone Marrow | (C) Lymph nodes | (D) Spleen |
|------------|-----------------|-----------------|------------|
- Q.8 Which one of the following life cycle stages of *Plasmodium falciparum* is infectious?
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| (A) Sporozoite | (B) Cryptozoite | (C) Merozoite | (D) Trophozoite |
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- Q.9 What is the role of the notochord during organogenesis in a vertebrate embryo?
- (A) Signaling the development of placenta
 (B) Induction of neural plate formation
 (C) Stimulation of the umbilical chord formation
 (D) Suppression of the development of extra-embryonic membranes
- Q.10 The behavior of young ducks following their mother is known as
- (A) Imprinting (B) Innate behavior (C) Habituation (D) Mimicry

Q. 11 – Q. 20 carry two marks each.

- Q.11 Match the species names with class names
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| P. <i>Calotes versicolor</i> | i. Insecta |
| Q. <i>Periplaneta americana</i> | ii. Reptilia |
| R. <i>Glyphidrilus birmancus</i> | iii. Actinopterygii |
| S. <i>Clarias batracus</i> | iv. Clitellata |
- (A) P-ii; Q-i, R-iv; S-iii (B) P-i; Q-ii; R-iii; S-iv
 (C) P-ii; Q-i; R-iii; S-iv (D) P-iii; Q-i; R-ii; S-iv
- Q.12 A population of spotted deer found in a national forest is in Hardy-Weinberg equilibrium. For a particular genetic locus in this deer species, only two alleles *A* and *a* are possible. If the frequency of the *A* allele in this population is 0.6, and the frequency of the *a* allele is 0.4, what will be the frequency of the genotype *Aa*?
- (A) 0.24 (B) 0.48 (C) 0.96 (D) 1.6
- Q.13 In *Drosophila*, the gene for eye colour is present on the X chromosome. When a red-eyed female was mated with a white-eyed male, a total of 100 progeny were obtained – 50 females and 50 males. Of the 50 females, 25 were red-eyed, and 25 were white-eyed. How many of the male progeny were red-eyed?
- (A) 0 (B) 10 (C) 20 (D) 25
- Q.14 Defect in poly-A tail formation in eukaryotic mRNA leads to
- (A) Increased translation of the resulting mRNA
 (B) Decreased translation of the resulting mRNA
 (C) Premature transcription termination
 (D) Decreased mRNA stability
- Q.15 Assuming equal frequency for all 4 nucleotides (G, A, T, C), how many EcoRI recognition sites (GAATTC) are possible in a bacterial artificial chromosome of 100,000 base pairs?
- (A) 6 (B) 12 (C) 24 (D) 48
- Q.16 Choose the correct option that shows pairing of the organelle to its function
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| P. Smooth endoplasmic reticulum | i. Internalization of receptors |
| Q. Peroxisome | ii. Protein secretion |
| R. Golgi apparatus | iii. Membrane biogenesis |
| S. Endosome | iv. Breakdown of fatty acids |
- (A) P-i, Q-ii, R-iii, S-iv (B) P-i, Q-iii, R-ii, S-iv
 (C) P-iii, Q-iv, R-ii, S-i (D) P-ii, Q-iii, R-iv, S-i

