

1 Mark Questions

- In theories of evolution, the example that a giraffe stretching the neck to reach on higher branches has been used to explain the following
 - Use and disuse theory
 - The concept of inheritance of acquired characters
 - Intelligent design
 - Both (a) and (b)
- Which of the following statements is true for the systematic of the animal kingdom?
 - Systematics employs a hierarchical system of classification
 - Systematics can also be based on cladistic analysis
 - Systematics can infer phylogeny from molecular data
 - All of the above
- Most modern taxonomists group living organisms into how many kingdoms?
 - 2
 - 3
 - 4
 - 5
- In many terrestrial vertebrates, including humans, the sensory organ for hearing and equilibrium are closely associated within the inner ear. Which of the following parts in the inner ear represents to organ of equilibrium?
 - Tectorial membrane
 - Semi-circular canals
 - Tympanic membrane
 - Sacule
- Which combination of mechanisms best explain cross-continental migration of animals?
 - Orientation and navigation
 - Orientation and piloting
 - Navigation and piloting
 - Orientation, navigation and piloting
- Hemolin is
 - an antibody produced by sponges

- an antibody produced by annelids
- a member of the immunoglobulin super-family
- a cytotoxic molecule produced by nematodes

2 Marks Questions

- The fossil records suggest evolutionary trends. Choose the correct statement.
 - An evolutionary trend does not imply that evolution is goal oriented
 - An evolutionary trend implies that evolution is goal oriented
 - Fossil record can not be considered as indicators of evolutionary process
 - A fossilised specimen undergoes gradual change over time that 'mimics' the evolutionary process
- Which of the following statements identify the term 'biological magnification'?
 - Green house effect will have greater impact on tropical countries
 - Toxins become concentrated in successive trophic levels of food webs
 - Energy is lost at each level in a food chain
 - Primary producers are at the bottom of the food chain
- Honey bee returning to the hive from a food source performs a 'waggle dance'. It indicates the
 - distance between the beehive and the food source
 - direction of the food resource
 - the type of food available in the source
 - All of the above
- Choose the choice that correctly pairs the following groups.

Group I	Group II
A. Initial response to antigen	1. Coelomocyte
B. Cytokines	2. IgM
C. Passive immunity to foetus	3. IgG
D. Humoral immunity	4. T-cells
E. Phagocytosis	5. B-cells

Codes

	A	B	C	D	E
(a)	4	3	2	5	1
(b)	1	4	5	3	2
(c)	2	4	3	5	1
(d)	2	5	1	4	3

11. Which of the following is correctly paired?
 (a) Blastopore–Organiser
 (b) Regulative development–Syncytial specification
 (c) Vegetal pole–Mesoderm
 (d) Spiral cleavage–Chick embryo

12. Which of the following is seen in an adult frog?
 (a) Somite (b) Notochord
 (c) Branchial arches (d) None of these

13. Which of the following has all the pairs correct?

Group I	Group II
A. Ectoderm	1. Heart
B. Mesoderm	2. Stomach
C. Endoderm	3. Enteric neuron
D. Ectoderm	4. Skull
E. Mesoderm	5. Kidney

Codes

	A	B	C	D	E
(a)	3	2	1	4	5
(b)	3	1	2	4	5
(c)	2	4	5	1	3
(d)	2	1	5	3	4

14. Which combination of following statements is true?
 A. Hox genes have undergone multiple duplications during animal evolution.
 B. For some reptiles, sex is determined by environmental factor(s).
 C. Metamorphosis in amphibians is regulated by nuclear hormone receptor signalling.
 (a) A and B (b) A and C
 (c) B and C (d) A, B and C

15. The 5' untranslated region (5'UTR) is found
 (a) upstream of the promoter
 (b) within the first intron
 (c) within the first exon
 (d) immediately upstream of the splice acceptor site

16. A : T and G : C ratios in a newly discovered organism are 0.63 and 0.8, respectively. Genome of this organism is likely to have
 (a) single-stranded DNA (b) double-stranded DNA
 (c) single-stranded RNA (d) double-stranded RNA

17. During enzyme-catalysed reaction, a competitive inhibitor acts by
 (a) reducing activation energy
 (b) increasing activation energy
 (c) reducing effective substrate concentration
 (d) increasing effective substrate concentration

18. Which of the following pairs is not correct?
 (a) Reverse transcriptase — DNA synthesis
 (b) Primase — RNA synthesis
 (c) Acetyl transferase — Transcription
 (d) Reverse transcriptase — Transcription

19. In an organism with diploid chromosome number of 8, the cells at anaphase-II will display
 (a) four chromosomes
 (b) two chromosomes with four chromatids
 (c) four chromatids
 (d) eight sister chromatids

20. Symbiotic microbes that help the digestive process in ruminants live in a specialised part of the alimentary canal known as
 (a) liver (b) pharynx
 (c) stomach (d) caecum

21. In animals, respiration and circulatory systems are often functionally interlinked. Which animal group represents an exception?
 (a) Aquatic mammals (b) Fish
 (c) Terrestrial insects (d) Amphibians

22. Match the term with the correct description.

Group I	Group II
A. Gene flow	1. Source of new alleles
B. Natural selection	2. Changes in a population's allele frequencies due to chance alone
C. Mutations	3. Allele frequencies changes due immigration, emigration or both
D. Genetic drift	4. Outcome of differences in survival and reproduction among individuals that vary in forms shared traits

Codes

	A	B	C	D	A	B	C	D
(a)	3	4	1	2	(b)	4	3	2
(c)	2	1	4	3	(d)	2	4	3

Common Data for Questions 23 and 24

Many nematodes are parasites on animals. *Ascaris lumbricoides* is an example of nematode parasite on human. It infects more than 1 billion people in Africa and Asia. *Ascaris* passes through several stages of its life cycle inside the human body.

23. *Ascaris lumbricoides* enters the human host in which stage of its life cycle?
- (a) Egg (b) Larva
(c) Adult (d) Adult female
24. During its life cycle within the host, *Ascaris* migrates from
- (a) intestine of heart (b) intestine to brain
(c) lungs to throat (d) intestine to liver

Statement for Linked Answer Questions for 25 and 26

Synthetic progesterone and oestrogen are commonly used as birth control pills. Based on your understanding of hormonal regulation of reproduction, answer the following two questions.

25. These two hormones act by
- (a) negative feedback to stop the release GnRH
(b) positive feedback by increasing the release of LH and FSH hormones
(c) increasing the level of LH and decreasing the level of FSH
(d) decreasing the level of LH and increasing the level of FSH

26. During a menstrual cycle in human female, elevated levels of progesterone indicated that the process of ovulation is
- (a) yet to occur
(b) completed
(c) advanced
(d) delayed

Statement for Linked Answer Questions for 27 and 28

When an animal of the genotype AaBb was mated with another of the genotype aabb (test cross), the following progeny were observed

AaBb-980; aabb-976; Aabb-287 and aaBb-291

27. Based on your understanding of the law of independent assortment, what ratios of progeny phenotypes are expected in a test cross (AaBb × aabb)?
- (a) 1 : 1 : 1 : 1
(b) 2 : 2 : 1 : 1
(c) 1 : 2 : 1 : 2
(d) 1 : 1 : 2 : 2
28. Based on your answer to the previous question, which one of the following statements most accurately describes the test cross results mentioned above?
- (a) Genes A and B are on different chromosomes
(b) Genes A and B are probably on the same chromosome
(c) Inheritance of A is modified by B
(d) Genes A and B assort independently