1 Mark Questions

1. Life appeared on earth
   (a) ≅ 5000 million years ago
   (b) ≅ 3500 million years ago
   (c) ≅ 1000 million years ago
   (d) ≅ 500 million years ago

2. Animals are classified into hierarchical groups. In which of the following, would you find the largest number of species?
   (a) Genus (b) Order
   (c) Class (d) Family

3. Human chromosome 1 to 22 are serially numbered
   (a) in ascending order of their length
   (b) in descending order of their length
   (c) relative position of the centromere from ends of the chromosome
   (d) in order of their position in the cell

4. Microfilaments are fine protein filaments often abundant in eukaryotic cells. They are made up of the protein
   (a) actin (b) albumin
   (c) globin (d) fibrin

5. The sub-cellular organelle not bound by a single membrane is
   (a) Golgi apparatus
   (b) lysosomes
   (c) endoplasmic reticulum
   (d) mitochondria

6. The storage carbohydrate in animal is
   (a) starch (b) cellulose
   (c) glycogen (d) glucose

7. The hormone testosterone is produced by
   (a) Leydig cells (b) spermatocyte
   (c) β-cells of Pancreas (d) melanocytes

8. The predominant antibody in saliva is
   (a) IgG (b) IgA
   (c) IgM (d) IgD

9. Secondary consumers in ecological parlance are organisms that
   (a) are omnivores (b) eat only carnivores
   (c) eat only herbivores (d) are herbivores

10. In the fish species, where internal fertilization occurs, the parental care is provided by
    (a) both parents (b) neither parents
    (c) father (d) mother

2 Marks Questions

11. Which pair of bases of nucleic acids differ from each other having a hydrogen or a methyl group in 5th position?
    (a) Adenine and guanine
    (b) Cytosine and thymine
    (c) Thymine and uracil
    (d) Uracil and cytosine

12. Which is the correct statement of the following pertaining to the mass of bases present in a double strandard DNA with 50% GC contents?
    (a) A = T (b) C > G
    (c) A > T (d) T > A

13. Nucleosomes contain a core and a linker region. The histones present in the core region and the histones present in the linker region are
    (a) core $(H_1, H_2A, H_2B, H_3)_2$, linker H_4
    (b) core $(H_2A, H_2B, H_3, H_4)_2$, linker H_1
    (c) core $(H_2B, H_3, H_4, H_1)_2$, linker H_2A
    (d) core $(H_4, H_2A, H_2B, H_1)_2$, linker H_3

14. Two species are considered phylogenetically closer because
    (a) there was very little difference between a protein they made
    (b) the base sequence in the messenger RNA they synthesized in a given time were similar
    (c) they made the same carbohydrate
    (d) the base sequence of their ribosomal RNA were very similar

15. The secretory IgA was electrophoresed on SDS-PAGE under reduced and denaturing condition. The number of polypeptide bands detected on the gel is (are)
(a) 2 (b) 3 (c) 4 (d) 5

16. The following are the primary lymphoid organs in mammals
(a) spleen and thymus gland
(b) bone marrow and thymus gland
(c) thymus gland and lymph node
(d) spleen and lymph node

17. Telomerase activity was monitored in the following cell types, the highest amount of telomerase activity was found in the combination of
(a) Embryonic and hematopoietic stem cells
(b) nerve cells and muscle cells
(c) erythrocytes and macrophages
(d) hepatocytes and eosinophiles

18. Apicoplast is a unique organelle in malarial parasite, which can be used as a specific drug target. The macromolecular transactions that take place in apicoplast are
(a) DNA replication, transcription, fatty acid biosynthesis, nucleotide biosynthesis
(b) DNA replication, transcription, translation, fatty acid biosynthesis
(c) translation, fatty acid biosynthesis, nucleotide biosynthesis, protein biosynthesis
(d) nucleotide biosynthesis, fatty acid biosynthesis, amino acid biosynthesis, carbohydrate biosynthesis

19. During oogenesis and spermeogenesis starting from single oocyte or single spermatocyte, the respective number of ovum and sperm generated are
(a) two ova and two sperms
(b) one ovum and four sperms
(c) four ova and four sperms
(d) four ova and one sperm

20. A male rabbit was hyperimmunized with sheep red blood cells and produced high titer antibody (1:20,000). The plasma cells of this animal revealed hypermutation of the antibody genes. The animal was crossed with a normal female and a litter containing one male and one female offspring was obtained in F_1 generation. The F_1 rabbits, when four months old were bled and their serum titer for sheep red blood cells are monitored. The titers that were obtained in the F_1 rabbits are
(a) F_1 male (1:20,000) and F_1 female (0)
(b) F_1 male (1:10,000) and F_1 female (1:10,000)
(c) F_1 male (0) and F_1 female (1:20,000)
(d) F_1 male (0) and F_1 female (0)

21. In order for the blood to flow from right ventricle to left atrium in mammalian heart, it must flow through
(a) Right ventricle → Pulmonary arteries → Lungs → Pulmonary veins → Left atrium
(b) Right ventricle → Pulmonary veins → Lungs → Pulmonary arteries → Left atrium
(c) Right ventricle → Right atrium → Lungs → Pulmonary veins → Left atrium
(d) Right ventricle → Systemic aorta → Lungs → Pulmonary veins → Left atrium

22. Long limbs are adapted for running. Choose the correct order for the relative length of the limbs in animals evolved for the gaits listed below
(a) Plantigrade > Digitigrade > Unguligrade
(b) Unguligrade > Digitigrade > Plantigrade
(c) Digitigrade > Unguligrade > Plantigrade
(d) Digitigrade > Plantigrade > Unguligrade

23. A man found to be suffering from a disorder linked to sex chromosome. All the sons and daughters did not suffer from the disease. This is because the man's
(a) father was a carrier of the disease trait
(b) paternal grandmother was a carrier of the disease trait
(c) paternal grandfather was a carrier of the disease trait
(d) mother was a carrier of the disease trait

24. The net order of primary productivity in terms of accumulation of accumulation of drug organic matter per m^2 per year for various terrestrial communities is
(a) Tropical forest > Temperate forest > Boreal forest > Cultivated land
(b) Cultivated land > Boreal forest > Temperate forest > Tropical forest
(c) Temperate forest > Tropical forest > Cultivated land > Boreal forest
(d) Cultivated land > Tropical forest > Temperate forest > Boreal forest

25. When new male lions take over a pride, they often engage in infanticide. The reason attributed for the same is
(a) the females of the pride are brought to oestrous by killing of suckling infants
(b) the infants interfere with hunting
(c) they hate the former males of the pride and, therefore kill their infants
(d) to prove their dominance in the pride

26. The cross over frequency (Cross Over Value = COV) for a four gene loci (P Q R S) on a chromosome are P – Q = 30; Q – R = 25; Q – S = 15; R – S = 10 and P – R = 5

The sequence in which they occur is

(a) PQRS or SRQP
(b) SQRP or PRQS
(c) RSPQ or QPSR
(d) PRSQ or QSRP

27. In a population, the frequency of a recessive allele is 10%. The heterozygotes genotypes (Aa) frequency in the population in per cent is

(a) 10% (b) 81%
(c) 18% (d) 90%

28. Experiments carried out has shown that rohu and catla, two common edible fresh water fish have the equal chance of being caught in the net. In a small lake, 100 tagged rohu were released. Next day, a fisherman caught 10 tagged rohu, 12 untagged rohu and 8 catla in his net. The fish population remaining in the lake is

(a) 120 rohu and 80 catla
(b) 220 rohu and 80 catla
(c) 198 rohu and 72 catla
(d) 108 rohu and 72 catla

29. Reverse transcriptase is

(a) RNA dependent DNA polymerase and DNA dependent DNA polymerase
(b) RNA dependent RNA polymerase and DNA dependent RNA polymerase
(c) DNA dependent DNA polymerase and DNA dependent RNA polymerase
(d) RNA dependent DNA polymerase and RNA dependent RNA polymerase

30. The two scientists who were awarded the Nobel Prize in physiology or medicine for their studies in the area of animal behaviour are

(a) B Benaceraf and Karl von Frisch
(b) K Lorenz and S Tonegawa
(c) Karl von Frisch and K Lorenz
(d) B Benaceraf and S Tonegawa