

(3 Hours)

[ Total Marks : 100

## Section - I

N.B. : All questions are compulsory.

28/4/12  
40 x 01 = 40 Marks

- 1) The setae of earthworms are \_\_\_\_\_.  
 (a) Siliceous (b) Chitinous  
 (c) Calcareous (d) Proteinous
- 2) Gastrovascular cavity without partition is found in \_\_\_\_\_.  
 (a) Scyphozoa (b) Hydrozoa  
 (c) Anthozoa (d) None
- 3) \_\_\_\_\_ are living jawless vertebrates.  
 (a) Gnathostomes (b) Placoderms  
 (c) Cyclostomes (d) Eutherians
- 4) \_\_\_\_\_ are called as glorified reptiles.  
 (a) Mammals (b) Birds  
 (c) Fishes (d) Chelonians
- 5) \_\_\_\_\_ is the most superior first cervical vertebra.  
 (a) Synsacrum (b) Lumbar  
 (c) Axis (d) Atlas
- 6) \_\_\_\_\_ is responsible for denaturation of proteins.  
 (a) Change in Temperature (b) Change in pH  
 (c) Change in Salt concentration (d) All
- 7) The theory of enzyme action and kinetics was given by \_\_\_\_\_.  
 (a) Michaelis and Haldane (b) Menten and Briggs  
 (c) Michaelis and Menten (d) Michaelis and Briggs
- 8) Enzymes having both regulatory as well as active sites are called \_\_\_\_\_.  
 (a) Anti-enzymes (b) Allosteric enzymes  
 (c) Isoenzymes (d) Inducible enzymes
- 9) Unsaturated fatty acids can be converted to corresponding fatty acids by \_\_\_\_\_.  
 (a) Hydration (b) Dehydration  
 (c) Hydrogenation (d) Dehydrogenation
- 10) \_\_\_\_\_ is the end product of Protein metabolism.  
 (a) Urea (b) Ammonia  
 (c) Uric acid (d) Citrullin

- 11) A gene that produces two proteins simultaneously from a long transcript by changing the end point of protein synthesis is known as \_\_\_\_\_.
- (a) Pseudogene (b) Lethal gene  
(c) Nested gene (d) Overlapping gene
- 12) The best stage for cytogenetic study is the \_\_\_\_\_.
- (a) Prophase (b) Metaphase  
(c) Anaphase (d) Telophase
- 13) Mendel's Law of independent assortment is based on the ratio \_\_\_\_\_.
- (a) 9:7 (b) 9:3:4  
(c) 9:3:3:1 (d) 1:1:1:1
- 14) A mechanism that can cause a gene to move from one linkage group to another is \_\_\_\_\_.
- (a) Translocation (b) Inversion  
(c) Crossing over (d) Duplication
- 15) In multiple alleles system, an individual possesses only \_\_\_\_\_.
- (a) One allele (b) Two alleles  
(c) Three alleles (d) More than three alleles
- 16) The theory of use and disuse of organ was given by \_\_\_\_\_.
- (a) Jean Baptiste de Lamarck (b) Alfred Russel Wallace  
(c) T. R. Malthus (d) Charles Darwin
- 17) The evolution of the horse began during the epoch \_\_\_\_\_.
- (a) Miocene (b) Eocene  
(c) Oligocene (d) Early Miocene
- 18) The adults of \_\_\_\_\_ are aerial but their naiads are aquatic.
- (a) Dragon fly (b) Cock roach  
(c) Grass hopper (d) Bug
- 19) \_\_\_\_\_ distillation is used for the purification of mixture in which the components are temperature or heat sensitive.
- (a) Steam (b) Fractional  
(c) Simple (d) Vacuum
- 20) \_\_\_\_\_ is a separation technique in which stationary bed is within tube.
- (a) Column chromatography (b) Paper chromatography  
(c) Thin layer chromatography (d) Gel chromatography
- 21) \_\_\_\_\_ can be used to separate ionic species by their charge and functional forces and hydrodynamic radius.
- (a) Vertical agarose gel electrophoresis  
(b) Vertical poly acrylamide gel electrophoresis  
(c) Capillary electrophoresis  
(d) Pulsed field gel electrophoresis

- 22) A single stranded DNA molecule which is complementary to mRNA molecule and is synthesized from it by the action of reverse transcriptase is \_\_\_\_\_.
- (a) Genomic DNA (b) cDNA  
(c) Clone (d) Exon
- 23) DNA chips or biochips are \_\_\_\_\_.
- (a) Single stranded DNA chain (b) Double stranded DNA chain  
(c) Both a and b (d) None of the above
- 24) Enzyme TPA present in blood is used for \_\_\_\_\_.
- (a) Dissolving blood clots (b) Maintaining plasma contents  
(c) Clearing turbidity of juices (d) Stimulating thromboplastin production
- 25) Enzyme immobilization is \_\_\_\_\_.
- (a) Conversion of active enzyme into inactive form  
(b) Provide enzyme with protective covering  
(c) Changing soluble enzyme into insoluble state  
(d) None of these
- 26) To optimize the bioreactor system which one of the following condition is least important for anaerobic fermentation?
- (a) Culture agitation to maintain oxygen supply  
(b) Restriction of the entry of contaminating organism  
(c) Control of parameters like pH and temperature  
(d) Maintenance of constant culture volume
- 27) Polyacrylamide gel electrophoresis is used for DNA sequencing because it \_\_\_\_\_.
- (a) Can separate different DNAs  
(b) Can resolve DNA into small fragments  
(c) Can break DNA into small fragments  
(d) Can separate purines and pyrimidines
- 28) A column packed with sieved particles is used in which of the following technique to separate smaller and larger protein molecules?
- (a) Affinity chromatography (b) Gel electrophoresis  
(c) Molecular exclusion chromatography (d) All the above
- 29) The most commonly used technique to detect the presence of HIV is \_\_\_\_\_.
- (a) FIA (b) RIA  
(c) ELISA (d) HPLC

30) A Vector should have which of the following properties

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|--------------------------------|------------------------------------|
| (a) Small size                 | (b) Multiple origin of replication |
| (c) Multiple restriction sites | (d) All of the above               |

31) A cosmid is a \_\_\_\_\_.

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|--------------------|----------------------------------|
| (a) Circular DNA   | (b) Plasmid with unique cos site |
| (c) Larger plasmid | (d) Smaller plasmid              |

32) PCR is exclusively used for \_\_\_\_\_.

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|------------------------|-----------------------|
| (a) DNA identification | (b) DNA recombination |
| (c) DNA amplification  | (d) DNA repair        |

33) The unique feature of the enzyme Taq polymerase used in PCR is \_\_\_\_\_.

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|----------------------------|---------------------------|
| (a) High speed             | (b) High fidelity         |
| (c) High thermal stability | (d) Low thermal stability |

34) Recombinant DNA technology helped in \_\_\_\_\_.

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|--|
| (a) Understanding molecular basis of disease     |
| (b) Understanding location of particular disease |
| (c) Understanding and diagnosis of many diseases |
| (d) All of these.                                |

35) Antibody diversity is generated by \_\_\_\_\_.

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|------------------------------------|
| (a) Protein splicing               |
| (b) Somatic mutation               |
| (c) Allelic exclusion              |
| (d) Interchromosomal recombination |

36) Which one of the following statement is incorrect?

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| (a) The DNA of the mitochondrion is rich in G:C ratio.        |
| (b) Ribosomes are produced in nucleolus.                      |
| (c) RBC and mature sperm contain 80S ribosomes.               |
| (d) Size of the nucleus depends on the number of chromosomes. |

37) Sponges are \_\_\_\_\_.

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|--------------------|-----------------|
| (a) Herbivorous    | (b) Carnivorous |
| (c) Sanguinivorous | (d) Omnivorous  |

38) Cystecercus is the larval stage of \_\_\_\_\_.

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|-----------------|------------|
| (a) Asterias    | (b) Obelia |
| (c) Ancylostoma | (d) Teania |

39) The high solubility of amino acids in water is due to \_\_\_\_\_.

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|----------------------------|---------------------------------------|
| (a) Presence of side chain | (b) Dipolar ion structure             |
| (c) Unipolarity            | (d) Hydrophilic nature of amino group |

40) The slowest acting known enzyme \_\_\_\_\_.

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|--------------|------------------|
| (a) Lysozyme | (b) Carbohydrase |
| (c) Amylase  | (d) Lactase      |

### Section - II

- Attempt any three (03) questions out of five (05) 03 x 10 = 30 marks

- Q. 1 Explain the embryonic development of neurocranium.
- Q. 2 Explain the haplodiploidy in honey bees.
- Q. 3 Describe in brief the albinism and Cystinuria.
- Q. 4 Explain the Pulsed field electrophoresis.
- Q. 5 Explain the working and application of PCR?

### Section - III

- Attempt any two (02) questions out of four (04) 02 x 15 = 30 marks

- Q. 1 Write a phylogeny, salient features and classification of Mollusca.
- Q. 2 Describe the mechanism of enzyme action with reference to
- Fischer's Lock and Key Theory,
  - Koshland's Induced fit Model
- Q. 3 Give an account of structural features of eukaryotic chromosomes.
- Q. 4 Explain different methods of DNA sequencing?