

28/4/13

- N.B. 1. Attempt all questions.
 2. Figures to the right indicate full marks.
 3. Completely darken [■] the most appropriate answer box in the answer sheet for Section I and use the supplements for Section II and III.
 4. Draw neat labeled diagrams wherever necessary.

Section I

I. Choose the most appropriate choice of the following

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01. A molecule that produces an immune response is
 a. Antibody b. Carcinogen
 c. Antigen d. Mutagen
02. Biopatents are
 a. Right to use products b. Right to use biological entities
 c. Right to use invention d. Right to use process
03. In callus culture, roots can be induced by the supply of
 a. Only Auxin b. Auxin and cytokinin in equal proportions
 c. Higher concentration of cytokinin and lower concentration of auxin d. Higher concentration of auxin and lower concentration of cytokinin
04. Which of the following is involved in body defense?
 a. Neutrophils b. Macrophages
 c. Lymphocytes d. All the above
05. Semi conservative DNA / Chromosome replication using ^{14}N was demonstrated by
 a. Messelson b. Messelson and Stahl
 c. Tylor d. Hershey and Chase.
06. Biological Nitrogen fixation is carried out by
 a. Non-Symbiotic Bacteria b. Symbiotic Bacteria
 c. Both d. None of these
07. Functional unit of gene that specifies synthesis of one polypeptide is
 a. Recon b. Codon
 c. Cistron d. Muton
08. Least abundant isotype in serum is
 a. IgG b. IgE
 c. IgA d. IgM
09. Chemically an antibody is ...
 a. Lipid b. Lipoprotein
 c. Protein d. Nucleoprotein
10. Pomato is somatic
 a. Poppy and Tomato b. Poppy and Potato
 c. Potato and tomato d. Poppy and tamarind
11. Father of immunology is
 a. Edward Jenner b. Ferdinand Kohn
 c. Robert Koch d. Lois Pasteur
12. Organ most damaged by alcohol is
 a. Cerebrum b. Cerebellum
 c. Heart d. Liver
13. Eco R1 is an
 a. Polymerase b. Restriction enzyme
 c. Ligase d. Gyrase
14. Virus free plants can be obtained through
 a. Root tip culture b. Meristem culture
 c. Leaf culture d. Stem culture

15. Protein helping in opening of DNA double helix in front of replication fork is
 - a. DNA Polymerase I
 - b. DNA topoisomerase
 - c. DNA gyrase
 - d. DNA ligase
16. A technique of using very small metal particles coated with desired gene in the gene transfer is called
 - a. Microinjection
 - b. Biolistics
 - c. Electroporation
 - d. Liposome
17. Variations observed during tissue culture of plants are known as
 - a. Somatic variations
 - b. Somaclonal variations
 - c. Clonal variations
 - d. Tissue culture variations
18. Mobility of DNA in Agarose gel Electrophoresis is based on its
 - a. Weight
 - b. Charge
 - c. Size
 - d. None of these
19. The function of RNA polymerase I is to transcribe
 - a. mRNAs
 - b. tRNAs
 - c. rRNAs
 - d. RNAs
20. Addiction of Tobacco is due to
 - a. Nicotine
 - b. Histamine
 - c. Caffeine
 - d. Cocaine
21. Reverse transcriptase is
 - a. RNA dependent RNA polymerase
 - b. DNA dependent RNA polymerase
 - c. DNA dependent DNA polymerase
 - d. RNA dependent DNA polymerase
22. Plants developed in vitro culture from pollen grains are
 - a. Male plants
 - b. Androgenic plants
 - c. Pollen plants
 - d. Sterile plants
23. The enzyme DNA polymerase can work in
 - a. 5' → 5' direction
 - b. 3' → 5' direction
 - c. Both the direction
 - d. 5' → 3' direction
24. Extra nuclear genetic material is found in
 - a. Mitochondria and Plastids
 - b. Plastid Nucleus
 - c. Mitochondria and Nucleus
 - d. Nucleus and Cytoplasm
25. A population with natality equal to mortality is ...
 - a. Decreasing
 - b. Growing
 - c. Increasing
 - d. Stable
26. 'Nif gene' for nitrogen fixation in cereal crops like wheat is introduced by cloning
 - a. *Bacillus thuringiensis*
 - b. *Rhizopus*
 - c. *Rhizobium meliloti*
 - d. *Rhizophora*
27. A set standards used to regulate own or community activity in relation to biological world is
 - a. Bipotency
 - b. Biethics
 - c. Biopiracy
 - d. Biowar
28. Glucose enters the Erythrocyte membrane via
 - a. Pores
 - b. Transporter
 - c. Channels
 - d. Active transport
29. DNA does not occur in
 - a. Ribosomes
 - b. Nucleus
 - c. Mitochondria
 - d. Plastids
30. Bt Cotton is
 - a. Mutated plant
 - b. Cloned plant
 - c. Transgenic plant
 - d. Hybrid plant

31. The distance between two successive nitrogenous base pairs is ...
 - a. 34 Å
 - b. 3.4 Å
 - c. 36 Å
 - d. 20 Å
32. Which of the following is not a tool of genetic engineering?
 - a. Enzymes
 - b. Vectors
 - c. GMO
 - d. Foreign DNA
33. The basic unit of a nucleic acid is
 - a. Pentose sugar
 - b. Nucleotide
 - c. Nucleoside
 - d. Nucleoid
34. The study of all the proteins coded by the genome is called
35. In forensic science which of the following is used?
 - a. DNA foot printing
 - b. DNA cloning
 - c. Bacterial cloning
 - d. DNA fingerprinting
36. The term Cistron, Muton and Recon were introduced by
37. The most common plasmid vector used in genetic engineering is
 - a. pBR 330
 - b. pBR 325
 - c. pBR 328
 - d. pBR 322
38. A free living nitrogen fixing *Cyanobacterium* which can also form symbiotic association with *Azolla* is
 - a. *Anabaena*
 - b. *Tolypothrix*
 - c. *Nostoc*
 - d. *Gleocapsa*
39. It is now possible to breed plants and animals with desired characters through
 - a. Chromosome engineering
 - b. Ikebana technique
 - c. Genetic engineering
 - d. Bonsai technique
40. Pyrimidine base present in RNA in place of thymine of DNA is
 - a. Cytosine
 - b. Adenine
 - c. Guanine
 - d. Uracil

Section II

II. Attempt **any Three** of the following

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1. Describe any two Secondary organs of Immune System.
2. Give various methods for immobilizing Enzymes.
3. Describe the various vectors used for the gene transfer into animal cells.
4. Write a note on bioremediation and phytoremediation.
5. Explain the role of biological membranes in transport of substances.

Section III

III. Attempt **any Two** of the following

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1. What are Monoclonal Antibodies? Explain their role in Biotherapeutics.
2. Give an account of various methods for gene transfer in animal cells.
3. What are different types of solid wastes? Explain Hazardous waste management.
4. Write a note on various components of nutrients of PTC media.