

M.Sc.

2016

4th Semester Examination

BIOTECHNOLOGY

PAPER—BIT-402

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Special Paper

(Medical Biotechnology)

Group — A

Answer any *five* questions from the following : 5×2

1. (a) What is Venous Thrombosis ?

(Turn Over)

- (b) What is Chimeric DNA? What is its utility?
- (c) What is NREM sleep?
- (d) Why vaccination schedule varies for different vaccines?
- (e) Briefly define tissue plasminogen activator. What are their functions?
- (f) What is β -thalassemia?
- (g) What are the processes used to increase the stability of recombinant protein?
- (h) Define Copyright and Trademark.

Group — B

Answer any *two* questions from the following : 2×5

- 2. State the role of hypothalamus on GH Secretion. Mention the molecular weight of GH. 4+1
- 3. Write briefly on the production of monoclonal Ab. When the use of polyclonal Ab is better than monoclonal Ab? 4+1
- 4. Mention 3 common proteases inhibitors with their target amino acids and working concentration. 5

5. How mutation in gene responsible for sickle cell anemia could be detected? 5

Group — C

Answer any *two* questions from the following : 2×10

6. What is DNA vaccine? Briefly outline of its preparation, advantages and disadvantages. 2+4+2+2
7. What is Von Willebrand Factors Complex? Discuss its preparation from plasma. Briefly define malnutrition associated diabetes. 7+3
8. Differentiate excipients and preservatives. How the recombinant hepatitis B vaccines are produced? Give a brief outline of it. 4+6
9. (a) Write the structure and function of insulin. How it is activated?
- (b) Mention the different storage conditions of antibodies and antibody-enzyme conjugates. 6+4
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Special Paper
(Bioprocess Technology)

Group — A

Answer any *five* questions from the following : 2×5

1. (a) What do you mean by early and late mixing in bioreactor ?
- (b) Define the roles of chelators in fermentation media.
- (c) What is scaling up of bioreactors ?
- (d) Explain the principle behind ammonium sulphate precipitates of protein.
- (e) Write down the disadvantages of enzyme immobilization.
- (f) How will you improve an industrial strain ?
- (g) What is molecular pharming ?
- (h) Write down the full form of ATCC, NCTC, NCYC, JCM.

Group — B

Answer any *two* questions from the following : 2×5

2. (a) State the growth kinetics of a filamentous microbes in batch culture. 5

- (b) Explain the factors to be considered for developing medium for animal cell culture. 5
- (c) Describe the design of a photobioreactor and its importance in biotechnological process. 3+2
- (d) Explain the 'in situ product removal as a tool for bio-processing'. 5

Group — C

Answer any *two* questions from the following : 2×10

3. (a) What is meant by Solid State Fermentation ? Explain the industrial application of SSF, indicating the microorganism, substrate and product. 3+7
- (b) What is biomass transfer ? Explain what is meant by the term 'barriers to oxygen transfer in aerobic fermentation'. What are the various design and working principal of airlift bioreactor ? 2+4+4
- (c) What are the basic criteria for recovery process ? Write down any two methods of physico-mechanical and two chemical methods for cell disruption. 2+4+4
- (d) Write notes on : 5+5
- (i) Affinity chromatography.
- (ii) Neutracentrals.

Special Paper
(Aquaculture Biotechnology)

Group — A

Answer any *five* questions from the following : 2×5

1. (a) What is Cold Water fishes? Write scientific name of two cold water fishes having aquaculture importance.
- (b) What is chain marketing of fishery products?
- (c) What are the precautions to be taken during pearl oyster surgery?
- (d) Compare among the barrage pond and contour pond.
- (e) Define BOD and Coli index.
- (f) State the function of hetero cyst?
- (g) What are the criteria to be considered for construction of an ideal hatchery.
- (h) Define feed conversion ratio.

Group — B

Answer any *two* questions from the following : 5×2

2. (a) What are micro algae? Describe the techniques of Sea-weed farming. 1+4

- (b) Briefly describe the constraints of Shrimp farming in Asian countries.
- (c) What are the criteria to be considered for construction of aqua-farm ?
- (d) Briefly discuss the water quality management of any one brackish-water farm.

Group — C

Answer any *two* questions from the following : 2×10

3. (a) What do you know by pond fertilization? Why proteins are needed for the growth of fish? Give an account of live field in aquaculture. 2+2+6
- (b) Define hatchery. How many types of hatchery operated in India? Briefly elucidate the brooder management, larval rearing and transportation of feeds of any one Indian Major Carps. 2+2+(3×2)
- (c) What is transgenic fish? How would you prepare a transgenic fish? Mention the advantage and disadvantage of transgenic fishes. 2+5+3

(d) Write notes on :

(i) Predator and weed control.

(ii) Intensification of aquaculture.
