

M.Sc.

2016

4th Semester Examination

BIOTECHNOLOGY

PAPER—BIT-401

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

(Pharmaceutical Biotechnology)

Group — A

1. Answer any five questions from the following : 5×2

- (i) What safety measures be taken in the purification of cell expressed proteins ?

(Turn Over)

- (ii) How does cytokines differ from hormones ?
- (iii) Define biospecific antibody.
- (iv) What are SNPs ? How does it differ from mutation ?
- (v) What do you mean by neutropaenia ?
- (vi) What is 'bioartificial molecular delivery' system ?
- (vii) How does IL-2 involve in T-cell Proliferation ?
- (viii) What is glycosylation ? State its significance.

Group — B

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

2. (a) Briefly discuss about heterogeneity and chemical modification of Protein therapeutics.
- (b) Brief discuss the different routes of administration for delivery of protein drugs.
- (c) Write down the different approaches for purification of recombinant therapeutic proteins.
- (d) Discuss the advantages and disadvantages of Prokaryotic system used for expression of recombinant proteins.

Group — C

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

3. (a) What do you mean personalized medicine ? How it is related genotype ? 5+5
- (b) Describe briefly the different cultivation systems and cultivation media used in the production of biotech products. 5+5
- (c) (i) Discuss briefly the clinical aspects of hematopoietic growth factors.
- (ii) Distinguish between active and passive targeting of protein drugs.
- (iii) How does bovine insulin differ from human insulin ? 6+2+2
- (d) Write short notes on : 5+5
- (i) Functional genomics and its importance.
- (ii) Interferon- γ .
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Special Paper
(Agricultural Biotechnology)

Group — A

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

1. (a) Mention the contribution of Norman Borlough in Agricultural Sciences.
- (b) What do you mean by 'mutation breeding'? Name two crop plants those has been improved by this technique.
- (c) What do you mean by 'bioconversions'? Give example.
- (d) What is bioaugmentation and biomagnification.
- (e) Name two bacterial agents that can destroy mosquito.
- (f) Write down the need for genetic manipulation of forest trees.
- (g) What is biopharmaceuticals? Cite two examples with function.
- (h) What is IPR related to biological subjects?

2. Answer any *two* questions : 2×5

- (a) What do you mean by monogenic trait? How cotton is improved by biotechnological approaches? 1+4

- (b) Discuss the approaches of biocontrol of phyto-pathogenic fungi. 5
- (c) Discuss the procedure employed in plant varietal development. 5
- (d) Why organic vegetables are good for health? 5
3. Answer any *two* questions : 2×10
- (a) What is CRIJAF? Name two Jute variety released from this station. Discuss the integrative breeding approaches and biotechnological approaches for Jute improvement in India. 1+2+7
- (b) Enumerate briefly the mass cultivation of Rhizobium and its use as biofertilizers. Discuss in brief the lignin degradation mechanism in fungi. 6+4
- (c) Explain the techniques employed in plant cell culture for the production of Secondary metabolites. Discuss different strategies for improvement of secondary metabolite production. 6+4
- (d) Write notes on : 5+5
- (i) Biocontrol of weed plant.
- (ii) Vermicompost.

Special Paper
(Food Biotechnology)

Group — A

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

1. (a) Define cold sterilization.
- (b) Write the full forms of FSSAI & HACCP.
- (c) State about the acid-base balance on nutrition.
- (d) State the difference between GM food and organic food.
- (e) Explain how salt acts as preservative of food.
- (f) Why fish is not spoiled if kept at -90°C ?
- (g) What is phosphatase test? Why it is performed?
- (h) Name the natural antimicrobial components present in milk.

Group — B

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

2. State the principle of food preservation. Describe the types of spoilages in canned food. 2+3

3. What should be important characteristics of micro organism used in food processing industries ? What is oil rancidity ? 3+2
4. Define spoilage. Enlist the causes of spoilage in dairy products. 3+2
5. Why curd is more nutritious than milk ? 5

Group — C

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

6. Describe the terms probiotics & prebiotics with examples. Write briefly about the fermented milk products. 2+2+6
7. Distinguish between food fortification and food adulteration. Describe the advantages and disadvantages of dehydration and high temperature in food preservation. 4+6
8. What is artificial sweetener ? Discuss the reasons for loss in quality on freezing and dehydration of food. Give a flow chart for the preparation of any food beverage. 2+5+3

9. Write notes on :

(i) Edible film.

(ii) Food Laws & Standards.

5+5

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