

2013

M.Sc.

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.

Answer all questions.

(Special Paper)

(Agriculture Biotechnology)

Group — A

1. Answer any *five* questions from the following : 5×2
- (a) What are PUFAS? 2
 - (b) What role selectable markers play in molecular cloning? 2
 - (c) What is induced breeding? 2

(Turn Over)

- (d) What is poly culture of carps? 2
- (e) Why pond fertilization is necessary? 2
- (f) What is Test Marketing? 2
- (g) What is hybrid vigour? 2
- (h) What do you mean by feed conversion ratio? 2

Group — B

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

2. What is gene knockout? State the importance of molecular taxonomy? 2+3
3. Briefly describe the rack culture systems of oysters? What is seed oyster? 3
4. State the importance of minerals in fish nutrition. 5
5. Discuss in brief the water quality management of prawn. 5

Group — C

Answer any two questions from the following : 2×5

6. Describe the layouts and designs of different cage forms.
What is BOD ?

8+2

7. Give an account of scope, present status and future planning of aquaculture development in India.

10

8. State the factors affecting fish health. State the integrated Health Management approach.

4+6

9. (a) What is genomics? State the utilities of RES in transgenesis.

2+3

(b) Write short notes :

(i) Cryopreservation;

(ii) Androgenesis.

$2\frac{1}{2} \times 2$

~~(Special Paper)~~

(Bioprocess Technology)

Group — A

1. Answer any *five* questions from the following : 2×5
- (a) What do you mean by scale up ?
 - (b) What is Numberg's fermentation ?
 - (c) Write the name of two antifouling agent.
 - (d) What is reverse osmosis.
 - (e) What is FAO ? Where is its Head quarter situated ?
 - (f) Why enzymatic reactions and performe in a buffi solution ?
 - (g) What is the importance of a sparger ?
 - (h) What is CQ and RQ ?

Group — B

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

2. Briefly describe different regulatory constraints of bioprocesses.

5

3. Describe different techniques of whole microbial cell immobilization.

5

4. What are the various designs and working principles of airlift bioreactors? Give example of two bioprocesses where these bioreactors are used and justify their selection for these bioprocesses.

2+3

5. What is column chromatography? Describe the construct and working principle of ion exchange chromatography?

1+4

Group — C

Answer any two questions from the following : 10×2

6. What is the difference between the cell growth in batch and continuous culture? Explain the Kinetics of microbial growth.

3+7

7. Explain different physicochemical factors to be considered for developing medium for animal cell culture.

10

8. What is solid state Fermentation? Explain industrial application of solid state fermentation including the microorganism, substrate products.

3+7

9. How will you recover a volatile compound after microbial fermentation? Describe different types of centrifugation that are used in industrial fermentation.

4+6

(Special Paper)

(Medical Biotechnology)

Group — A

1. Answer any five questions from the following : 5×2
- (a) Why Edward Jenner and Louis Pasteur one famous?
 - (b) What is human anti-nurse antibody? What is its utility?
 - (c) What is a phage display technique?
 - (d) What is Warfarin?
 - (e) What is SNPs? What are their significances?
 - (f) What is the importance of pharmacogenomies?
 - (g) What are 'trademarks' and 'trade secrete'?
 - (h) What is acromegaly?

Group — B

Answer any two questions from the following : 2×5

2. What is 'parkinsonism'? What is its clinical manifestation? 5
3. What are the differences between vaccination and inoculation? Why 'booster' dosage is more effective? 5
4. Mention a metabolic disease/disorder and give the reason for the disease/disorder. 5
5. How recombinant genetic materials should be handled? How they can be transported? Mention the existing rules of its transportation across the country. 5

Group — C

Answer any two questions from the following : 10×2

6. (a) What is the difference between live attenuated and killed vaccines?
(b) What do you mean by 'Herd immunity'?
(c) Write the basic principle of vaccine development.

4+2+4

7. (a) What is 'growth inhibiting hormone'?

(b) What are the side effects of rGH?

(c) What is 'Prion' disease?

4+3+3

8. (a) What is the function of dihydrofolate reductase?

(b) What is antibody heterogeneity?

(c) Briefly discuss 'fully' human monoclonal antibody.

3+3+4

9. Briefly discuss the production protocol of any one recombinant coagulation factor? Mention its pharmacological efficacy and side effects?

5+3+2
