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B.Sc.(Biotech.)-III Year

Library
Institute of Applied Research
Gho.
Roll No.

3478(N)

B. Sc. (Biotech.) Examination, May 2016

Transcriptomics and Metabolomics

(B-306)

(New)

Time : Three Hours]

[Maximum Marks : 100

Note: Attempt Five questions in detail. Each question carries 20 marks.

1. What is metabolic engineering and how it can be used for overproduction of metabolites in plants? 20
2. What are ESTs ? How these ESTs are constructed ? Discuss the various limitations of EST data. 20

(2)

3. Write detailed notes on the following: 10 each
- (a) Insertional mutagenesis
 - (b) Transcript maps and functional maps.
4. Discuss the limitations in metabolic engineering due to technology in detail. 20
5. Write short notes on the following: 5 each
- (a) Transcriptome
 - (b) Dependent vs. independent pathways
 - (c) Metabolite control theory
 - (d) NMR.
6. What is transcript profiling? Discuss the methods available for transcript profiling in detail. 20
7. Discuss in detail the biosynthesis of carotenoids and alkaloids. 20
8. Comment upon transcriptomics and metabolomics in detail. 20

(3)

9. Write detailed notes on the following: 10 each

(a) Network rigidity

(b) Desensitizing feedback inhibition.

10. Write in detail about metabolic control analysis (MCA) and metabolic engineering. 20

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(Printed Pages 3)

(20517)

Roll No. 9351034

E.Sc. Bio-Tech.-III Year

NS-3478

E.Sc. Bio-Technology Examination, May 2017

Industrial Bio-Technology

(B-306)

(New)

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt any **five** questions.

1. Describe the followings:
 - (i) Selection of industrial microorganisms for Fermentation
 - (ii) Aeration of Fermentation culture media
 - (iii) Protein engineering
2. Describe in detail the different stages of downstream processing with the help of suitable Flow chart.

P.T.O.

3. Explain the followings :

- (i) Airlift bioreactor
- (ii) Fluidized-bed bioreactor
- (iii) Photo-Bioreactor

4. Describe the basic design of a bioreactor. Explain the heat-transfer and scale-up bioreactors and their advantages.

5. Describe the various physical, chemical and biological parameters of bioprocess Engineering in detail.

6. Explain the followings :

- (i) Product recovery
- (ii) Lactose Utilization
- (iii) Solid state fermentation

7. What do you understand by enzyme immobilization? Explain various methods of enzyme and cell immobilization and their applications in Industries.

NS-3478\2

8. Explain the commercial production of Insulin and Vitamin B-12 and their application.

9. Explain commercial production of penicillin and streptomycin and their applications.

10. What is fermentation? Explain the various stages of microbial growth curve with the help of suitable diagram.

NS-3478\3

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(20518)

Roll No. 159350266A

B. Sc. (Biotech.)-III Year

NS-3478

B. Sc. (Biotechnology) Examination, May 2018

Industrial Biotechnology

(B-306)

(New)

Time : Three Hours]

[Maximum Marks : 75

Note : Answer any *Five* questions. All questions carry equal marks.

1. Give an account of commercial production of Acetic acid and Lactic acid and their application. 15
2. Write notes on the following : $7\frac{1}{2} \times 2 = 15$
 - (a) Biosensors
 - (b) Food adulteration with reference to dairy products.

(2)

3. Describe the following : $7\frac{1}{2} \times 2 = 15$
(a) Selection of industrial microorganism for fermentation
(b) Metabolic Engineering.
4. What is Fermentation ? Explain the various stages of microbial growth curve with the help of suitable diagrams. 15
5. Describe in detail the commercial production of Insulin and Vitamin B₁₂ and their application. 15
6. Explain the following : $7\frac{1}{2} \times 2 = 15$
(a) Product recovery
(b) Lactose utilization.
7. What do you mean by enzyme immobilization ?
Describe the various methods of enzyme and cell immobilization and their application in industries. 15

NP-3478

(3)

8. Describe the basic design of a bioreactor. Explain the heat transfer and scale up bioreactors and their advantages. 15
9. Explain the following : $7\frac{1}{2} \times 2 = 15$
(a) Airlift Bioreactor
(b) Photobioreactor.
10. Explain the commercial production of Lipases and Proteases and their application in industry. 15

NP-3478-3-

(20518)

Roll No.

B. Sc.(Biotech.)-III Year

3478(N)

B. Sc. (Biotech.) Examination, May 2018

Transcriptomics and Metabolomics

[B-306 (Old) & B-310 (New)]

Time : Three Hours]

[Maximum Marks : 100

Note : Attempt *Five* questions in detail. Each question carries 20 marks.

1. What is transcriptome ? Describe the different methods of transcriptome analysis. 20
2. Describe in detail the applications of cloning and expression of foreign genes in metabolic engineering. 20
3. How can we redirect the metabolic flow to get the desired product ? Discuss the different methods of achieving this. 20

(2)

4. What is molecular breeding of biosynthetic pathways? Discuss carotenoid biosynthesis. 20
5. Write detailed notes on the following : 10 each
 - (a) NMR and metabolic profiling
 - (b) Metabolic engineering for PHAs.
6. What do you mean by metabolic engineering ? Discuss metabolomics and metabolic engineering in detail. 20
7. Write short notes on the following : 5 each
 - (a) Metabolic Control Analysis (MCA)
 - (b) Insertional mutagenesis
 - (c) EST contigs
 - (d) Mass Spectrometry (MS).
8. Describe in detail the limitations in metabolic engineering due to technology. 20
9. How metabolic engineering is used for over-production of metabolites in plants ? Discuss in detail. 20

3478(N)

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10. Write notes on the following : 10 each
 - (a) Metabolic engineering for alkaloid biosynthesis
 - (b) Transcript maps and functional maps.

3478(N)-3

A (Printed Pages 3)
(20620) Roll No.
B.Sc. (Biotech.) III Year

NS-3478 (CV)

**B.Sc. (Biotechnology) Examination,
June - 2020**

Industrial Biotechnology

(B-306)

Time : Two Hours] [Maximum Marks : 75

Note : Attempt any **four** questions. **All**
questions carry equal marks.

1. How are some certain microorganisms selected over others for industrial applications? Give examples.
2. Write short notes on any **two** :
 - (i) Xylanases
 - (ii) Proteases
 - (iii) Amylases

P.T.O.

3. Write about commercial production of antibiotics in details.
4. Elaborate on various types of Bioreactors. Also differentiate between fermentors and bioreactors.
5. Write about commercial production of :
 - (i) Vitamin B₁₂
 - (ii) Riboflavin
6. Elaborate on food adulteration with special reference to :
 - (i) Dairy products
 - (ii) Food grains
7. Describe about solid state fermentation in details.
8. Write a detailed note on stability analysis of bioreactors.

NS-3478 (CV)/2

9. Write short notes on :
 - (i) Fermentation Media Aeration
 - (ii) Batch v/s Continuous culture
10. Give an elaborate note on Photobioreactors highlighting their application and industrial significance.

NS-3478 (CV)/3