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M.E. / M.TECH. DEGREE EXAMINATIONS, DEC 2019

First Semester

BY18101 – Bioprocess Technology*(Biotechnology)***(Regulation 2018)****Time: Three Hours****Maximum : 100 Marks**

Answer ALL questions

PART A - (10 X 2 = 20 Marks)

	CO	RBT
1. Define yield coefficient.	1	R
2. Calculate the degree of reduction of glucose and ethanol.	1	AP
3. Give an example of unstructured model.	2	U
4. What are the advantages of a factorial design?	2	R
5. Growth medium is different from production medium- Justify	3	U
6. What are primary and secondary metabolites?	3	R
7. What are inline sensors?	4	U
8. What is the role of a draft tube?	4	U
9. What are the different types of renewable energy sources?	5	R
10. List the types of feedstocks used in the biofuel production.	5	R

PART B - (5 X16 = 80 Marks)

11. (a) Write in detail about the systematic analysis of black box stoichiometries. (16) 1 AP
- (OR)**
- (b) Discuss in detail the various types of yield coefficients and their significance. (16) 1 AN
12. (a) Discuss the statistical tools in the process of optimization. Elaborate on the tools used in design of experiments. (16) 2 E
- (OR)**
- (b) Explain simple unstructured kinetic models for microbial growth and growth of filamentous organisms. (16) 2 AN

13. (a) Describe the process of the Oxygen consumption and heat evolution (16) 3 AP
in aerobic cultures.

(OR)

- (b) Discuss briefly the energetic analysis of microbial growth and (16) 3 AN
product formation.

14. (a) What are the parameters to be controlled and monitored in a (16) 4 AP
bioreactor? Describe in detail.

(OR)

- (b) Construct a stirred tank reactor. Specify its dimensions. Sketch all (16) 4 E
the necessary parts appropriately.

15. (a) Explain in detail about the microbial strains, media design and (16) 5 E
process optimization techniques in the production of Recombinant
Insulin.

(OR)

- (b) Explain the process of algal oil extraction, transesterification for (16) 5 E
biodiesel production with a neat flow diagram.