Registration No: | | | | | | | | | | |

Total Number of Pages : 02 **B.Tech.**

PBT5I103

5th Semester Regular Examination 2017-18
Industrial Microbiology and Enzyme Technology
BRANCH : BIOTECH
Time : 3 Hours
Max Marks : 100
Q.CODE : B190

Answer Question No.1 and 2 which are compulsory and any four from the rest.
The figures in the right hand margin indicate marks.

Q1 Answer the following questions: *multiple type or dash fill up type* **(2 x 10)**

a) Hydrophobic interactions occur in _____ type of enzyme immobilization process.

b) Weak control effected by each end-product, independently by
a) Co-operative feedback control,
b) Concerted or multivalent feedback control,
c) Cumulative feedback control,
d) Sequential feedback control

c) The yeasts producing citric acid are_____ and _____.

d) _____ in metabolic cycles are form of energy conversion with involving the transportation of e^- in carriers and substrates

e) Organism growth is limited by some components of the medium, is the characteristic of;
a) batch culture, b) continues culture
c) Fed-batch culture, d) All of the above

f) Growth of required type from mixed population has been carried out through;
a) Selective medium technique,
b) Enrichment medium techniques
c) Differential medium techniques
d) All of the above

g) The active microbial growth phase in which the primary metabolites are produced;
a) Trophophase, b) Logarithimic phase,
c) None of the above, d) All of the above

h) Protoplast fusion method is one of the relevant method for improvement of industrially important microorganisms because;
a) easily prepared with wall degrading enzymes in isotonic solutions,
b) regenerate and are then capable to grow as normal cell,
c) Either a or b,
d) All of the above

i) The frothing in the media inside bioreactor is due to
a) proteins in the medium,
b) metabolites produced due to microorganisms,
c) Either a or b,
d) All of the above

j) Ethylene diamine tetra acetic acid acts as _____ in microbial culture medium.

Q2 Answer the following questions: *Short answer type* **(2x10)**

a) Explain feedback repression.

b) Differentiate between conformational and kinetic stability.

c) What do you mean by denaturant? Explain the chemical denaturant with example

d) Define propionate fermentation.

e) What is the importance of reactions with metal centric carbon compounds?

f) Explain Monod equation for cessation of growth in depleted substrate concentration.

g) In detergent industry protease engineering plays a significant role. Explain it.

h) What are the significances of starter culture for industrial fermentation?
i) Define semi-solid fermentation with example.
j) Write down the significance of iodophase.

Q3 **a)** Discuss in detail the various steps involved in alcohol fermentation. **(10)**
b) What are the precautionary measures undertaken during fermentation? **(5)**

Q4 **a)** Give details on protein Engineering and its application. **(10)**
b) How enzyme stabilization carried out through genetic engineering? **(5)**

Q5 **a)** Explain in details Reaction environment rebuilding. **(10)**
b) Describe the processes through which the chemical modification is carried out in enzyme. **(5)**

Q6 **a)** Describe in details the product formation kinetics in continuous Fermentation. **(10)**
b) Differentiate between submerged fermentation and semi-solid fermentation. **(5)**

Q7 **a)** Briefly explain β-lactam antibiotics production from microbial sources. **(10)**
b) Write down the various industrial applications of enzymes. **(5)**

Q8 **a)** Define immobilization? Describe various methods involved in immobilization processes. **(10)**
b) Give details on immobilization matrices. **(5)**

Q9 **a)** Define mutagens. Give details on site directed mutagenesis. **(10)**
b) What are the various techniques used in development of strain? **(5)**