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0305E326

Candidate's Seat No :_____

M.Sc. (Sem.-II) Examination

407

Microbiology

May-2017

Time : 3 Hours] **[Max. Marks : 70**

Q : 1 Answer **any two** of the following. 14

a) What is K_La? Describe the factors affecting on it.

b) Enlist the different types of fermenters and discuss the air lift fermenters.

c) Describe the measurement and control of flow and pressure in fermentation.

d) Write a short note on 'Haet transfer'.

Q : 2 Answer **any two** of the following. 14

a) Discuss the role of PID control systems in fermentation technology.

b) Describe complex control system of cascade and feedforward control of a heat-exchange process using diagram.

c) What is batch culture? Describe its growth kinetics.

d) What is biosensor? Discuss any one biosensor in detail used in fermentation.

Q : 3 Answer **any two** of the following. 14

a) What is multiple sequence alignment? Discuss the types and methods of sequence alignment.

b) Describe various tree building methods with their advantages and disadvantages.

c) Write a detailed note on Heuristic approaches for global MSA with respective tool illustrations.

d) Discuss in brief all major databases working in protein domain analysis.

Q : 4 Answer **any two** of the following. 14

a) Discuss the milestones achieved in Human Genome Project.

b) Define rational drug design. Describe various approaches used for rational drug design.

c) What is comparative genomics? Discuss the online tools used for the same.

d) Define - network. Explain the various biological networks with appropriate diagrams.

Q : 5 Answer **any seven** in brief. 14

1) Volumetric oxygen transfer co-efficient
2) Carbon dioxide elctrode
3) AISI 317 stainless steel
4) Derivative control
5) Names of institutes involved in HGP
6) Next generation sequencing
7) FASTA
8) Phylogenic tree
9) Give full from: CINEMA, PAUP
10) Apomorphy

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Candidate's Seat No : _____

M.Sc. (Sem.-II) Examination

408

Microbiology

Time : 3 Hours] **May-2017** **[Max. Marks : 70**

Instructions : (1) All questions carry equal marks.

1 Answer any two : **14**

(a) Describe genome organization of pro karyotic cells.

(b) Describe the steps involved in initiation of DNA replication.

(c) Write a note on transcription.

(d) Discuss types of mutations found in bacteria.

2 Write any two : **14**

(a) What is operon? Discuss molecular aspects of lac operon.

(b) Describe regulatory aspects of arabinose operon.

(c) What is attenuated control? Write a brief note on tryptophan operon.

(d) Discuss molecular basis of lysogeny.

3 Answer any two : **14**

(a) Enlist enzymes used in rDNA technology and give a brief note on each of them.

(b) Describe basic stepwise procedure for genetic engineering.

(c) Discuss Maxam and Gilbert procedure for DNA sequencing.

(d) What is PCR? Describe procedure used for PCR along with its applications.

4 Write any two : **14**

(a) Explain expression of cloned genes with suitable examples.

(b) Describe various plasmid based vectors in detail.

(c) Discuss various techniques used for detection of cloned genes. Explain any one in detail.

(d) What is gene library? Describe procedures for their screening.

5 Answer any seven in brief : **14**

(1) DNA repair enzymes

(2) Cot value

(3) C value paradox

(4) C_{II} protein of λ phage

(5) Sigma factor

(6) Electroporation

(7) Micro array technique

(8) Northern blotting

(9) Expression vectors

(10) Linkers and adopters.

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0805E425

Candidate's Seat No :_____

M.Sc. (Sem.-II) Examination

409

Microbiology

Time : 3 Hours] **May-2017** **[Max. Marks : 70**

1. Answer the following (any two) (14)

(a) Describe preservation of industrially important cultures in detail

(b) What are the criteria for good medium ? Explain the influence of carbon source in fermentation medium

(c) Explain modification of antibiotic media with suitable examples.

(d) Write a note on strain improvement.

2. Write any two (14)

(a) Enlist the types of filters used for the supply of sterile air in the fermenter and describe any one with its pros and cons.

(b) Describe media sterilization using continuous method with its advantages.

(c) Write a brief note on inoculum development

(d) Describe various methods of aeration and its impacts on availability of dissolved oxygen.

3. Answer any two (14)

(a) Write a note on cell separation methods used in down stream processing.

(b) Describe various methods of cell disruption in brief

(c) Discuss solvent extraction methods used in down stream processing

(d) Describe the uses of chromatographic techniques in product recovery.

(P.T.O.)

EL125-2

1. Answer any two (14)

(a) Discuss the fundamental criteria used for scale-up

(b) Describe the scale up of aeration, agitation regimes in stirred tank fermenters

(c) Write a note on scale up of batch sterilization

(d) Explain scale up of inoculum for industrial fermentation with examples

2. Write any seven in one or two lines. (14)

(a) Screening of novel products

(b) precursor addition

(c) Depth filter

(d) HTST

(e) gel filtration chromatography

(f) Biological cell disruption

(g) Rotary Drum Vacuum filter

(h) Impeller tip seed and scale up

(i) process variables in scale up

(j) Mixed substrate

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1005E466

Candidate's Seat No :

M.Sc. (Sem.-II) Examination

410

Microbiology

May-2017

Time : 3 Hours] [Max. Marks : 70

All questions carry equal marks

Q.1 Answer the following (any Two) 14

(a) Explain the production of citric acid by fungi and its recovery.

(b) Discuss the factors affecting production of acetone butanol and and write a note on strain improvement.

(c) Discuss the production of ethanol using cellulosic biomass.

(d) Write a note on fermentative production of beer. Give the composition of beer.

Q.2 Answer the following (any Two) 14

(a) Describe the production and optimization of streptomycin .

(b) Name different types of vaccines and discuss the production of DNA vaccine.

(c) Give stepwise procedure for development of rDNA.

(d) Discuss the applications of nanotechnology in molecular biology.

Q.3 Answer the following(Any Two) 14

(a) Discuss the production aspects of Glutamic acid and its purification.

(b) Give the importance of auxotrophs in amino acid fermentation and discuss production of Trytophan.

(c) Write detailed note on industrial applications of amylases, mention types of amylase and its producers.

(d) Describe various methods, their advantages and disadvantages for production of Vitamin B2.

Q.4 Answer the following(Any Two) 14

(P.T.O)

E466-2

(a) Enlist different types of bioplastics. Discuss production of PHB.

(b) Explain the production of any one biopolymer with its applications.

(c) Discuss in detail the applications of Biosurfactant and name microorganisms involved.

(d) What are steroids? Discuss microbial transformation of any one in detail.

Q.5 Answer the following(Any Seven) 14

(a) % of acetic acid in vinegar.

(b)Uses of citric acid

(c)Distillers grain

(d) Grapes used in red wine

(e)Ropiness in beer

(f)Uses of Lysine

(g)Pseudocobalamins

(h) Ergot fungus