Total No. of Questions : 7]

P644

SEAT No. :

[Total No. of Pages : 2

[5019]-31
T.Y. B.Sc.
BIOTECHNOLOGY
Bb - 331 : Microbial Biotechnology
(2008 Pattern) (Semester- III)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Question no. 1 is compulsory.***
2) ***Attempt any four of the remaining questions.***
3) ***Draw neat labelled diagrams wherever necessary.***
4) ***Figures to the right indicate full marks.***

Q1) Answer all questions in 2-4 lines. **[20]**

a) Define microbial growth rate. Give the units used to express it.

b) Give two different fermentation pathways and mention microbes used and end products formed.

c) Describe the heterotrophic types of metabolism.

d) Name two bacterial and two viral diseases of skin.

e) State the role of chlorination in tertiary treatment of sewage.

f) Microorganisms causes food intoxications and infections. Explain with examples.

g) Mention the role of GMOs in industry with suitable examples.

h) Enlist four advantages of normal flora of intestinal tract.

i) Write the method of sludge disposal.

j) What is the stormy fermentation of milk.

Q2) a) Describe the Entner - Duodoroff pathway and state its significance. **[10]**

b) Compare and contrast anabolism and catabolism. **[5]**

Q3) a) Describe lactose operon with suitable diagram. **[8]**

b) Write short note on specialized transduction. **[7]**

P.T.O.

Q4) a) Describe the normal flora of urinogenital tract. **[8]**

b) Explain in brief antibiotics acting on peptidoglycan layer of bacteria. **[7]**

Q5) a) Describe the use of chemical preservatives in food preservation process. **[8]**

b) Explain in brief flavour defects and sweet curdling of milk. **[7]**

Q6) a) What is MPN test? Explain its importance in assessment of potability of water. **[8]**

b) Write short note on activated sludge process. **[7]**

Q7) Write short note: **[15]**

a) Spirulina as SCP

b) Bacterial transformation

c) Microbial diseases of digestive system

Total No. of Questions : 8]

SEAT No. :

P645

[Total No. of Pages : 2

[5019]-32

T.Y. B.Sc. (Semester - III)

BIOTECHNOLOGY

Bb - 332 : Animal & Plant Development

(2008 Pattern)

Time : 3 Hours] *[Max. Marks : 80*

Instruction to the candidates:-

1) ***Answers to each section should be written in separate answer books.***

2) ***Q.No.1 and Q.No.5 are compulsory. From remaining questions attempt any two from each section.***

SECTION - I

(Animal Development)

Q1) Explain the terms with respect to animal development **[10]**

a) Stem cells

b) Oogonium

c) Teratoma

d) Differentiation

e) Inner cell mass

Q2) a) Describe the process of spermatogenesis. **[7]**

b) Describe the types and methods of animal cloning. Add a note on their application. **[8]**

Q3) a) Explain different Morphogenetic movements during the process of gastrulation in frog. **[7]**

b) Explain the role of maternal genes in patterning of drosophila. **[8]**

Q4) Write short notes on : **[15]**

a) Programmed cell death

b) Egg metabolic activation

c) Cell lineage

P.T.O.

SECTION - II

(Plant Development)

Q5) Explain the terms : **[5 × 2 = 10]**

a) De-differentiation
b) Microsporogenesis
c) Competence
d) Cell lineage
e) Chimera

Q6) a) What are phyto hormones? Give the role of auxins in plant development. **[7]**
b) Give a detailed account of organisation of the root apical meristem (RAM) **[8]**

Q7) a) Describe the various stages of embryonic development in dicotyledons. **[8]**
b) Arabidopsis thaliana is used as a model plant to study development. Justify. **[7]**

Q8) Write notes on: **[3 × 5 = 15]**

a) Organogenesis
b) Programmed cell death in plants
c) ABC model of floral patterning

Total No. of Questions : 7]

SEAT No. :

P646

[Total No. of Pages : 2

[5019]-33
T.Y. B.Sc.
BIOTECHNOLOGY
Bb - 333 : Biodiversity & Systematics
(2008 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to candidates:-

1) ***Question No.1 is compulsory.***
2) ***Attempt any four questions from Q.2 to Q.7.***
3) ***Figures to the right indicate marks.***
4) ***Draw neat and labelled diagrams wherever necessary.***

Q1) Answer in one-two lines. **[10 × 2 = 20]**

a) What is migration?

b) Define systematics.

c) Define species diversity concept.

d) Give key characteristics of Savana Biome.

e) What is Altruism?

f) Give examples of Biodiversity 'Hot spots' present in Asia.

g) Explain importance of Red Data Book (IUCN).

h) Define clade.

i) What is 'Serotaxonomy'?

j) Give examples of endemic species in Western Ghats of India.

Q2) a) Describe in brief the steps involved in bioprospecting of microbial diversity in the field of medicine / pharmaceuticals. **[7]**

b) Give an account of conservation strategies of Biodiversity. **[8]**

Q3) a) Write an explanatory note on : Growth forms of population. **[7]**

b) Describe intraspecific and interspecific interactions giving appropriate examples. **[8]**

P.T.O.

Q4) a) Define Biodiversity. Explain its types and give importance of Biodiversity in functioning of Biosphere. **[8]**

b) State Milestones in environmental legislation in India. Add a note on contribution of NGOs in conservation efforts. **[7]**

Q5) a) Describe the methods used to measure biodiversity and explain any two of the biological indices. **[8]**

b) Explain the terms : Habits, Habitat and Niche. Give explanation by providing relevant examples. **[7]**

Q6) a) Explain Biosystematics. Give its advantages over traditional systematics. **[7]**

b) Justify : 'Molecular Taxonomy has changed the face of classical taxonomy'. **[8]**

Q7) Write a short note on any three of the following. **[3 × 5 = 15]**

a) Territoriality in animals

b) Biogeography of India

c) Cytology in systematics

d) Biological clocks.

Total No. of Questions : 7]

P647

SEAT No. :

[Total No. of Pages : 2

[5019]-41

T.Y.B.Sc.

Biotechnology

Bb - 341 : Large Scale Manufacturing Process

(2008 Pattern) (Semester - IV)

Time : 3 Hours] *[Max. Marks : 80*

Instruction to the candidates:-

1) ***Question No.1 is compulsory.***
2) ***Answer any four from the remaining.***
3) ***Neat labelled diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

Q1) Answer the following in 2-4 lines. **[10 × 2 = 20]**

a) Define Bioprocess engineering.

b) What are fixed pore filters?

c) Give the significance of baffles in a fermenter.

d) Name any four carbon sources commonly used in fermentation media.

e) Define solid state fermentation. Give two advantages of SSF.

f) What are On-line and off-line sensors?

g) What is the importance of SOP?

h) What are the advantages of single cell proteins?

i) Give the importance of solvent extraction in product recovery.

j) What are fixed costs?

Q2) a) Discuss with the help of flow diagram. The large scale production and recovery of any one antibiotic. **[10]**

b) Draw a well labelled diagram of double drum drier. **[5]**

Q3) a) Define immobilized enzymes. Discuss in detail:

i) Adsorption and

ii) Entrapment method of enzyme immobilization. **[8]**

b) Discuss different methods used for temperature measurement during fermentation. **[7]**

P.T.O.

Q4) a) Define Delfactor. Discuss the principle and working of continuous sterilizer with suitable diagram. **[8]**

b) Discuss giving examples the role of inducer in fermentation media. **[7]**

Q5) a) Discuss in detail different types of centrifuges used in product recovery. **[8]**

b) Give the principle and application of AMES test. **[7]**

Q6) a) Define K_{La} and discuss the effect of air flow rates and agitation rates on K_{La}. **[8]**

b) Draw a well labelled diagram of a typical batch fermenter. **[7]**

Q7) Write short notes on (any three) of the following : **[3 × 5 = 15]**

a) Biotransformation

b) Scale up

c) Air lift fermenter

d) Factors affecting pricing of a product

Total No. of Questions : 8]

P648

SEAT No. :

[Total No. of Pages : 2

[5019]-42

T.Y. B.Sc.

BIOTECHNOLOGY

Bb - 342 : Biotechnology in Agriculture and Health

(2008 Pattern) (Semester - IV)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:-

1) ***Answer to each section should be written in separate answer book.***
2) ***Question No.1 and 5 are compulsory.***
3) ***From remaining questions, attempt any two from each section.***

SECTION - I

(Agriculture)

Q1) Define or explain the following terms. **[10]**

a) Cybrids
b) Metabolic engineering
c) Transgenics
d) RFLP
e) Micropropagation

Q2) a) What is cryopreservation? Explain in detail steps involved in it. **[7]**

b) Give an account of methods of gene transfer in plants. **[8]**

Q3) a) Comment on importance of risk assessment while introducing GM products. **[7]**

b) What are haploids? Explain in detail its production and applications. **[8]**

Q4) Write short notes on (any 3) : **[15]**

a) Green house and Green home cultivation
b) Production of secondary metabolites
c) Ti plasmids
d) GM food

P.T.O.

SECTION - II

(Health)

Q5) Attempt **[10]**

a) Define-Organ culture

b) Micromanipulation

c) Explain - Invitro fertilization

d) Enlist types of vaccines

e) What is scaling up?

Q6) a) Give the principle and working of biosensor. **[8]**

b) Give the advantages and disadvantages of serum free media. **[7]**

Q7) a) Explain in detail-Hybridoma Technology. **[8]**

b) Mention the significance of PCR in disease diagnosis. **[7]**

Q8) Write short notes. **[15]**

a) Human genome mapping.

b) Mention the role of any four recombinant products for human health.

c) Molecular markers in disease diagnosis.

Total No. of Questions : 7]

P649

SEAT No. :

[Total No. of Pages : 2

[5019]-43

T.Y.B.Sc. (Biotechnology)

Bb - 343 : Recombinant DNA Technology

(2008 Pattern) (Semester - IV)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:-

1) ***Question No. 1 is compulsory.***
2) ***Attempt any four of the remaining questions.***
3) ***Draw neat and labelled diagrams wherever necessary.***
4) ***Figures to the right indicate full marks.***

Q1) Answer in 3-4 lines **[10 × 2 = 20]**

a) Define : ligase

b) Write any two important discoveries in the field of genetic Engineering.

c) Define : shuttle vectors.

d) What is meant by plasmid curing?

e) Define : transformation efficiency.

f) Give the role of chloroform and isoamyl alcohol in DNA isolation.

g) How to determine purity of DNA?

h) Write the importance of taq polymerase in RDT.

i) Draw the structure of dd NTP.

j) Write the use of oligo-dT column.

Q2) Describe any one method to isolate, purify and quantify DNA. **[15]**

Q3) a) Write a note on targeted gene manipulation. **[7]**

b) Give an account of different types of Restriction endonucleases. **[8]**

Q4) a) Write a note on eukaryotic transfection. **[7]**

b) Draw a neat labelled diagram depicting pUC plasmid and add a note on its importance as a clonning vehicle. **[8]**

P.T.O.

Q5) a) Define cDNA library. Describe any one method to generate cDNA library. **[7]**

b) Write a note on genome mapping. **[8]**

Q6) a) Comment on different approaches to screen transformants. **[7]**

b) Write a note on Northern blotting technique. **[8]**

Q7) Write short notes on **[3 × 5 = 15]**

a) Recombinant DNA technology guidelines.

b) RT-PCR technique.

c) Linkers and adapters.