M.Sc (Biotechnology)

CHANDGAD - III (C.B.C.S.) (2012 Course) : SUMMER - 2016

Sem- III

Subject : Environmental Biotechnology

Day : Monday

Date : 04/04/2016

28486

Time : 02.00 PM TO 05.00 PM

Max Marks : 60 Total Pages : 1

N. B. :

1) **Q. No. 1** and **Q. No.5** are **COMPULSORY**.
2) Attempt **ANY TWO** remaining questions from Section – **I** and Section – **II** each.
3) Answers to both the sections should be written in the **SEPARATE** answer books.
4) Figures to the **RIGHT** indicate full marks.

SECTION - I

Q. 1 Answer **ANY FIVE** of the following questions in brief: **(10)**

a) Define the term xenobioties.
b) Enlist various types of reactors used in wastewater treatment.
c) Discuss the significance of biofilm kinetics in waste water treatment.
d) What are the sources of air pollution?
e) Describe the effects of noise pollution on physiology of human.
f) Mention the significance of non – biological components of environment.

Q. 2 Answer the following questions: **(10)**

a) Write an account on biotechnological approaches for reducing environmental impact of pesticides.
b) Discuss the conventional methods of primary and secondary treatment of sewage.

Q. 3 Explain the following: **(10)**

a) Drinking water standards used in India.
b) Microbial degradation of pesticides.

Q. 4 Write short notes on **ANY TWO** of the following: **(10)**

a) Aerobic Biofilms
b) Vermicomposting
c) Activated sludge treatment

SECTION - II

Q. 5 Answer the following: **(10)**

a) Explain the role of biotechnology in environment management with suitable examples.
b) Describe the process of Bioremediation and Biostimulation.

Q. 6 Answer **ANY TWO** of the following: **(10)**

a) Differentiate hazardous and non – hazardous waste with respect to type, source and effects.
b) What are carbon credits? Write its significance.
c) Define acid rain. Write about the causes and effects of acid rain.

Q. 7 Write short notes on **ANY TWO** of the following: **(10)**

a) Green house effects
b) Bioaugmentation

Q.8 Answer the following: **(10)**

a) Discuss various advancements in aerobic and ananobic treatments with suitable examples.
b) Define desalination. Mention various techniques used in this process. Add a note on byproducts and industrial applications of desalination.

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Subject : Plant Biotechnology

Day : Tuesday
Date : 05/04/2016

28487

Time : 02.00 PM TO 05.00 PM
Max Marks : 60 Total Pages : 1

N.B.:

1) **Q. No. 1** and **Q. No. 5** are **COMPULSORY**.
2) Answer any **TWO** from Questions **2, 3** and **4** and from **6, 7, & 8.**
3) Figures to the right indicate **FULL** marks.
4) Answers to both the sections should be written in **SEPARATE** answer book.

SECTION-I

Q.1 Explain any **FIVE** of the following questions in brief. **(10)**

a) Pure line selection.
b) Define plant Biodiversity.
c) Objectives of modern plant breeding.
d) Back cross method of breeding
e) Principle of marker assisted breeding
f) Biodiversity hotspots in India

Q.2 Answer the following: **(10)**

a) Explain in brief chemical printing of biodiversity.
b) Explain production and evaluation of hybrid varieties.

Q.3 Explain the following: **(10)**

a) Differentiate between systems and methods of breeding in self and cross pollinated crops.
b) Explain the bioprospecting of plant biodiversity for product development.

Q.4 Write short notes on any **TWO** of the following **(10)**

a) Gene frequencies
b) Conservation strategies of biodiversity
c) Breeding methods in cross pollinated crops.

SECTION-II

Q.5 Answer the following questions : **(10)**

a) What is the importance of plant tissue culture?
b) What is the future prospects of plant genetic engineering.

Q.6 Answer any **TWO** of the following questions: **(10)**

a) Describe embryo culture and embryo rescue technology.
b) Explain transgenic plants resistant to insect pests.
c) Elaborate the technique of endosperm culture for production of seedless plants.

Q.7 Write short notes **(10)**

a) Metabolic engineering for secondary metabolite production.
b) Differentiate between Ti and Ri plasmid based vectors.

Q.8 Answer any TWO of the following: **(10)**

a) Give diagrammatic representation of micro propagation via axillary shoot profanation.
b) Describe the technique of double haploid plant production.
c) Describe various methods for the production and secondary metabolism.

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Subject : Animal Tissue Culture

Day : Wednesday
Date : 06/04/2016

28488

Time : 02.00 PM TO 05.00 PM
Max Marks : 60 Total Pages : 1

N.B.;

1) Q. No. 1 & Q. No. 5 are **COMPULSORY**. Out of the remaining attempt any **TWO** questions from Section – I and any **TWO** questions from Section – II.
2) Answers to both the sections should be written in **SEPARATE** answer books.
3) Draw well labeled diagrams **WHEREVER** necessary.

SECTION – I

Q.1 Answer the following: **(10)**

a) State two important applications of animal tissue culture
b) State the role of EDTA in disaggregation of tissue
c) State the significance of inverted microscope
d) What is cryopreservation of a cell line?
e) i) Define the terms : i) Cell line ii)Cell strain

Q.2 a) Explain the different types of laminar air flow systems. **(05)**
b) Enlist the important constituents of growth media. State their significance. **(05)**

Q.3 a) Define continuous cell line. Explain their growth characteristics. **(05)**
b) Define and compare anchorage dependent cell culture with anchorage independent cell culture. **(05)**

Q.4 Write short notes on Any **TWO** of the following: **(10)**

a) Aseptic techniques
b) Molecular basis of cell adhesion
c) Serum free media

SECTION - II

Q.5 Attempt any **TWO** of the following: **(10)**

a) Outline the steps involved in subculturing of cell line.
b) Define passage number and generation number. Why is it important to keep record of generation number while maintaining normal diploid cell line.
c) Explain the dye exclusion and dye inclusion tests for determining the viability of cells.

Q.6 a) Describe the cold trypsin method. For what purpose it is used? **(05)**
b) Explain any one assay to determine cytotoxicity of a compound. **(05)**

Q.7 State true or false giving reasons

a) Tissue engineering involves preparation of artificial organs using synthetic material. **(05)**
b) Hybridoma cells grow only in HAT medium. **(05)**

Q.8 Write short notes on any **TWO** of the following **(10)**

a) Hollow fiber reactor
b) Biostat
c) Microcarriers

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CHANDGAD - III (C.B.C.S.) (2012 Course) : SUMMER - 2016

Subject : Human Genetics

Day : Thursday
Date : 07/04/2016

28489

Time : 02.00 PM TO 05.00 PM
Max Marks : 60 Total Pages : 1

N.B.:

1) **Q.No.1** and **Q.No.5** are **COMPULSORY**. Out of remaining questions attempt **ANY TWO** questions from each section.
2) Answers to both the sections should be written in the **SEPARATE** answer books.
3) Draw neat and labeled diagrams **WHEREVER** necessary.
4) Figures to the right indicate **FULL** marks.

SECTION - I

Q.1 Attempt the following: **[10]**

a) What is polyploidy?
b) Define pleiotrophy.
c) What is 'X inactivation'?
d) Define euchromatin and heterochromatin.
e) What is chromosomal monosomy?

Q.2 Attempt the following: **[10]**

a) Explain Mendel's law of independent assortment.
b) Describe co-dominance with illustration.

Q.3 Attempt the following: **[10]**

a) Describe the structure and role of centromere.
b) How chromosomes are classified on the basis of the position of centromere?

Q.4 Write short notes on **ANY TWO** of the following: **[10]**

a) Chromosomal translocation
b) Mitochondrial inheritance
c) Sickle cell anemia

SECTION – II

Q.5 Attempt the following: **[10]**

a) Describe various structural chromosomal abnormalities.
b) Explain the etiology and clinical symptoms of Down's syndrome.

Q.6 Attempt the following: **[10]**

a) Describe X-linked recessive disorder giving one example.
b) Explain Hardy-Weinberg law. What is its significance?

Q.7 Write short notes on **ANY TWO** of the following: **[10]**

a) Jacob's syndrome
b) RH blood grouping
c) Point mutations

Q.8 What is prenatal diagnosis? Describe various techniques used for prenatal diagnosis. **[10]**

OR

Describe various inborn errors of carbohydrate metabolism

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