

**Subject : Environmental Biotechnology**

Day : Wednesday

Date : 05/04/2017



34755

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 question in brief : (10)
- a) Types of environmental pollution.
  - b) Effect of noise pollution.
  - c) Significance of environmental issues
  - d) Primary treatment of sewage and waste water.
  - e) Standards of water
  - f) Detection of microorganisms in environmental fresh water.
- Q.2** Answer the following questions : (10)
- a) Describe the degradation of xenobiotic compound in environment.
  - b) Role of Bioreactors in waste water treatments.
- Q.3** Explain the following : (10)
- a) Soil pollution sources and its control.
  - b) Types and application of biosensors
- Q.4** Write short notes on **ANY TWO** of the following : (10)
- a) Control of air pollution through Biotechnology.
  - b) Water pollution monitoring.
  - c) Biofilms in treatment of waste water.

**SECTION-II**

- Q.5** Answer the following : (10)
- a) Which are the global environmental issues?
  - b) What is bioremediation? Explain its role in environmental pollution control.
- Q.6** Answer **ANY TWO** of the following : (10)
- a) Role of vermicomposting in solid waste management.
  - b) Describe desalination technique.
  - c) How the Biotechnology is useful in healthy environment.
- Q.7** Write short notes on the following : (10)
- a) Carbon credit
  - b) Kinetics of biodegradation of waste
- Q.8** a) Describe the aerobic and anaerobic treatments for waste water. (10)
- OR**
- a) Describe the importance of genetically modified organisms for improving the environment. (10)

**Subject : Plant Biotechnology**

Day : Friday

Date : 07/04/2017

**34756**

Time : 02.00 PM TO 05.00 PM

Max Marks : 60 Total Pages : 1

**N.B:**

- 1) All questions are **COMPULSORY**.
- 2) Write section **I** and **II** on separate answer sheets.
- 3) Draw well labeled diagrams **WHEREVER** necessary.
- 4) All questions carry **EQUAL** marks.

**SECTION-I**

- Q.1** Answer **ANY FIVE** of the following: (10)
- a) What is hotspots of Biodiversity?
  - b) Describe the objectives of modern plant breeding.
  - c) What is pure line selection?
  - d) What are the principles of marker assisted breeding.
  - e) What is bioprospecting?
  - f) Explain genetic basis of cross pollinated crops.
- Q.2** Answer the following questions. (10)
- a) Describe in detail the conservation strategies of Biodiversity.
  - b) Describe systems and methods of breeding in self pollinated crops.
- Q.3** Attempt the following questions: (10)
- a) Explain the characterization of Biodiversity.
  - b) Differentiate between breeding in self pollinated and cross pollinated plants.
- Q.4** Write short notes (**ANY TWO**): (10)
- a) Molecular methods for characterization of Biodiversity
  - b) Mass selection
  - c) Backcross breeding methods

**SECTION-II**

- Q.5** Answer the following questions. (10)
- a) Describe the technique of double haploid plant production.
  - b) Explain manipulation of gene expression in plants.
- Q.6** Explain **ANY TWO** of the following:
- a) Embryo culture technology.
  - b) Production of transgenic plants resistant to insects.
  - c) Utilization of microorganisms for strawberry.
- Q.7** Write short notes. (10)
- a) Differentiate between Ti and Ri plasmid based vectors.
  - b) Seed and micropropagation industries in India.
- Q.8** Explain diagrammatically. (10)
- a) Micropropagation of Ginger via axillary shoot proliferation.
  - b) Technique of protoplast isolation and culture.

**Subject : Animal Tissue Culture**

Day : Saturday

Date : 08/04/2017



**34757**

Time : 02.00 PM TO 05.00 PM

Max Marks : 60 Total Pages : 2

**N.B:**

- 1) Question **ONE & FIVE** are **COMPULSORY**.
- 2) Answer any **TWO** from questions 2, 3 & 4 and **TWO** from questions 6, 7 & 8.
- 3) Both the sections should be written in **SEPERATE** answer book.
- 4) Draw well labeled diagrams **WHEREVER** necessary.

**SECTION-I**

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

- a) Name the instrument used for sterilization of plastic ware and reagents. Give its principle.
- b) What is cross contamination?
- c) Name any two cell lines and state their use.
- d) What are HEPA filters? For what purpose it is used?
- e) How tissue culture medium is sterilized?
- f) Define the role of mitomycin- C in animal tissue culture.

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

- a) What are the common contaminants encountered in tissue culture? How contamination in tissue culture is avoided?
- b) Why it is important to incubate cell cultures in 5% carbon-dioxide atmosphere?

**Q.3** Write notes on **ANY TWO** of the following: (10)

- a) Suspension culture
- b) Balanced salt solution
- c) Immortal cell lines

**Q.4** Describe various methods used for disaggregation of cells. Add a note on choice of enzymes made for this purpose. (10)

**OR**

What are advantages and disadvantages of including serum in tissue culture medium?

**P.T.O**

**SECTION-II**

- Q.5** Answer the following questions: (10)
- a) What is generation number? How and why is it important to keep track of generation number during maintenance of cell lines?
  - b) Describe the methods for viable counting. What do they determine?
- Q.6** a) Define stem cells? State the different types and applications of stem cells. (05)  
b) What is MTT assay? For what purpose it is used? (05)
- Q.7** Write short notes on **ANY TWO** of the following: (10)
- a) Microcarriers
  - b) Bioreactor
  - c) Therapeutic proteins
- Q.8** Define anchorage dependent and anchorage independent cells. Describe any one method for scale up of each type of cells. (10)

**OR**

Give an account of applications of animal tissue culture in different disciplines of biotechnology.

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**Subject : Human Genetics**

Day : Tuesday

Date : 11/04/2017

**34758**

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) Figures to the right indicate **FULL** marks.

**SECTION - I**

- Q.1** Answer **ANY FIVE** of the following in brief: [10]
- a) Define autosomal recessive trait.
  - b) What is F<sub>2</sub> generation?
  - c) Why 'O' group is a universal donor?
  - d) What is epistasis?
  - e) State the genetic abnormality in Jacob's syndrome.
  - f) Give an example of genetic disorder caused due to point mutation.
- Q.2** a) Explain the Mendel's law of segregation giving example. [06]  
 b) What is Rh factor? Explain its significance in blood transfusion. [04]
- Q.3** a) What are mitochondrial genetic defects? How they are caused? [05]  
 b) Describe the structure of nucleosome. [05]
- Q.4** Describe the probable factors responsible for induction of mutations in the genome. What are their consequences? [10]
- OR**
- What is aneuploidy? How is it caused? Enlist various structural chromosomal abnormalities giving one example of each.

**SECTION - II**

- Q.5** a) Write the principle of fluorescent in situ hybridization (FISH) technique. Explain its advantages and limitations in detecting genetic abnormalities. [05]  
 b) Describe the genetic abnormality and symptoms of Klinefelter's syndrome. [05]
- Q.6** a) Explain and compare maternal and Mendelian patterns of inheritance giving suitable examples. [05]  
 b) What is X-Chromosome inactivation? Explain its mechanism. [05]
- Q.7** Write short notes on **ANY TWO** of the following: [10]
- a) Down's syndrome
  - b) Hardy - Weinberg law
  - c) Amniocentesis
- Q.8** Describe the method of karyotype analysis. Explain its significance in diagnosis of genetic abnormalities. [10]
- OR**
- Describe codominance, incomplete dominance and lethal allele combinations giving suitable examples.