

Seat No. : \_\_\_\_\_

**AF-104**

**April-2016**

**B.Sc., Sem. – VI**

**Elective-311 : Biochemistry  
(Applied Bio-Technology)**

**Time : 3 Hours]**

**[Max. Marks : 70**

**Instructions :** (1) All questions carry equal marks.  
(2) Draw diagram wherever necessary.

1. Discuss: (Any **one**) **14**  
(1) Enzyme engineering.  
(2) Biosensor.  
(3) Immobilized enzymes with reference to types, advantages & disadvantages.
- OR**
- Discuss what are bioreactors & their types in detail. **14**
2. (a) Discuss: Safe use of single cell protein **6**  
(b) Write a brief note on Probiotics **8**
- OR**
- Discuss the production and advantages of genetically modified foods. **14**
3. Write a note on :  
(a) Recombinant vaccines **9**  
(b) DNA Finger Printing **5**
- OR**
- Role of retro virus in gene therapy **5**
4. (a) Explain : Degradation of xenobiotic **8**  
(b) What is Phyto remediation ? Explain with example **6**
- OR**
- Write a note on : (Any **two**) **14**  
(1) Biofertilizers  
(2) Biocontrol  
(3) Advantages & disadvantages of bioremediation

5. Answer the followings : **14**
- (1) Write: Two uses of immobilized enzyme **(02)**
  - (2) Give uses of any two enzymes in food industries **(02)**
  - (3) Define: Probiotics **(01)**
  - (4) Define:
    - (i) Biostimulation
    - (ii) Bioaugmentation **(02)**
  - (5) Write two advantages of bioremediation. **(02)**
  - (6) Give two examples of recalcitrant. **(01)**
  - (7) Name two approaches of Gene Therapy **(02)**
  - (8) Name two DNA markers in disease diagnosis **(02)**
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# AF-104

April-2016

B.Sc., Sem. – VI

## Elective-311: Biochemistry (Plant Biochemistry – II)

Time : 3 Hours]

[Max. Marks : 70

1. Explain plant cell wall formation and its functions. 14

**OR**

Write in detail on plant cell organelles. 14

2. (a) Explain non-cyclic photophosphorylation. 7

- (b) Explain C4 metabolism in plants. 7

**OR**

- (a) Explain cyclic photophosphorylation. 7

- (b) Explain Calvin's cycle. 7

3. (a) Write a detailed note on nitrogen fixation and assimilation. 7

- (b) Write a note on sucrose synthesis and breakdown. 7

**OR**

- (a) Write in detail on phosphate assimilation and its role in plant cells. 7

- (b) Write a note on sulphate assimilation. 7

4. Write a note on cytokinins, its biosynthesis, transport, signal transduction and downstream effect. 14

**OR**

Write a note on Auxins, its biosynthesis, transport, signal transduction and downstream effect. 14

5. Answer the following :

14

- (1) The enzyme nitrogenase is extremely sensitive to \_\_\_\_\_
- (2) Sucrose-phosphate is an intermediate in sucrose synthesis. True/False
- (3) Conversion of fats into sugars in plants occurs in \_\_\_\_\_.
- (4) The secondary cell wall found in certain cell types is formed inside the primary cell wall after the cell is fully grown and is composed of lignin. True/False.
- (5) What are sclerenchyma cells and in which plant tissue are they found ?
- (6) Photosynthesis maintains equilibrium of which gases in atmosphere ?
- (7) Cytochrome oxidase is an electron carrier in photosynthesis. True/False
- (8) How many molecules of NADPH and ATP are required for fixation of 1 CO<sub>2</sub> molecule in C<sub>4</sub>-pathway ?
- (9) How is Hatch Slack pathway different from Calvin cycle ?
- (10) The true natural auxin of higher plants is \_\_\_\_\_
- (11) Concentration of which hormone increases in senescence of plants ?
- (12) Fruit ripening hormone is \_\_\_\_\_
- (13) Which is the precursor for gibberellic acid synthesis ?
- (14) What is the role of jasmonic acid in plants ?

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# AF-104

April-2016

B.Sc., Sem. – VI

## Elective-311 : Biochemistry (Recombinant DNA Technology)

Time : 3 Hours]

[Max. Marks : 70

1. (a) Write in detail on isolation of plasmid DNA from bacteria. 7  
(b) What are the different methods of introducing DNA into living cells ? 7

**OR**

- (a) Write a detailed note on bacteriophages justifying their suitability as cloning vehicles. Give examples. 7  
(b) Write a note on enzymes that are used to modify DNA for cloning. 7
2. (a) How are genomic DNA libraries and cDNA libraries created and how are specific clones selected from these libraries ? 7  
(b) Write in detail on different methods of designing probes. 7

**OR**

- (a) Describe FISH and Southern Hybridization in brief and give their application. 7  
(b) Write in detail on DNA sequencing. 7
3. (a) What are expression vectors ? What would be the specifications required in an expression vector for use in E.coli ? 7  
(b) Write in detail on cloning vectors for yeast. 7

**OR**

- (a) How does one identify the control (regulatory) sequences and their function ? 7  
(b) Explain phage display method and yeast two hybrid methods in studying protein function. 7
4. (a) Write in detail on production of recombinant insulin ? 7  
(b) Write in detail on production of recombinant vaccines using gene cloning. 7

**OR**

Write in detail on applications of gene cloning. 14

5. Answer in short :

14

- (1) What is a cosmid ?
  - (2) Give two characteristics of pUC8 that makes it a good cloning vector.
  - (3) What are linkers ?
  - (4) Give two advantages of PCR.
  - (5) Why is phenol - chloroform used in DNA isolation from bacteria ?
  - (6) What is the use of S1 nuclease in recombinant DNA technology ?
  - (7) What is the basis of HRT and HART ?
  - (8) List three methods of labelling DNA probes.
  - (9) What is codon bias ?
  - (10) What do you understand by fused genes and how are they helpful in gene cloning ?
  - (11) What is the use of baculoviruses in gene cloning ?
  - (12) How does one study whether genes expressed are tissue specific ?
  - (13) What is insertional inactivation ?
  - (14) What do you understand by molecular pharming ?
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# AF-104

April-2016

B.Sc., Sem. – VI

## Elective-311 : Biochemistry (Endocrinology)

Time : 3 Hours]

[Max. Marks : 70

1. List four hormonal glands and give characteristics of hormones. 14

**OR**

Write a note on following: 14

- (a) Mode of action of peptide hormone  
(b) Effect of steroid hormone at different level

2. Write a note on following : 14

- (a) Explain synthesis of thyroxin

**OR**

Effect of hormones on calcium homeostasis

- (b) Parathyroid hormones

**OR**

Thyroid disorder

3. Explain role of hormone regulating carbohydrate metabolism. 14

**OR**

Explain the following : 14

- (a) Diabetes mellitus and insulin  
(b) Disorder due to islet of Langerhans secreting hormones

4. Write the following :

14

(a) Hormones secreted by male gonad gland

**OR**

Role of adrenaline and nor adrenaline

(b) Explain Anatomy of adrenal gland and hormones secreted by them.

**OR**

Female sex hormones and its effect

5. Write the following in brief :

14

Full form and function of the following :

(1) TSH

(2) FSH

(3) ACTH

(4) PTH

(5) TSHRH

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