

This question paper contains 4 printed pages.]

Your Roll No.....

No. of Question Paper : 32 I

Unique Paper Code : 32161101

Name of the Paper : Microbiology and Phycology

Name of the Course : B.Sc. (Honours) Botany

Semester : I

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

Write your Roll No. on the top immediately on receipt of this question paper.

Attempt **any five** questions including Question No. 1 which is compulsory.

(a) Fill in the blanks : (1×10=10)

(i) is an example of prokaryotic alga.

(ii) Iodine is derived from

(iii) is an unicellular motile green alga.

(iv) Transduction in bacteria was described by

(v) Largest animal virus is

P.T.O.

27

- (vi) Biogas can be produced with the help of bacteria
- (vii) is the reserve food material of Rhizoids algae.
- (viii) Colony of *Volvox* is called as
- (ix) Female gametangia in *Polysiphonia* is known as
- (x) Unilocular sporangia is found in

(b) Define the following :

(1×7=7)

- (i) Gongrosira stage
- (ii) Fimbriae
- (iii) Virusoids
- (iv) Hormogonia
- (v) Stigma
- (vi) Akinetes
- (vii) Synzoospores

(c) Explain the following terms :

(2×5=10)

- (i) Cap cells
- (ii) Heterotrichous thallus

- (iii) Chemoorganotrophs
- (iv) Palmella stage
- (v) Attenuated vaccines

Write notes on the following :

(3×4=12)

- (a) Formation of daughter colonies in *Volvox*
- (b) Internal organization of thallus in *Fucus*
- (c) Mycoplasma
- (d) Structure of TMV

Draw well labelled diagrams of the following : (3×4=12)

- (a) EM of *Chlamydomonas*
- (b) VS of endospore
- (c) EM of bacteriophage
- (d) Sex organs of *Chara*

Differentiate between the following :

(3×4=12)

- (a) Lytic and lysogenic cycle
- (b) Gram positive and Gram negative bacteria
- (c) Cyanophyceae and Phaeophyceae
- (d) Prions and viroids

P.T.O.

5. Explain any **three** of the following : (4×3=12)
- (a) Replication of bacteriophage
 - (b) Alternation of generation in *Polysiphonia*
 - (c) Conjugation in bacteria
 - (d) Sexual reproduction in *Ectocarpus*
6. Discuss any **three** of the following : (4×3=12)
- (a) Evolutionary significance of *Prochloron*
 - (b) Significant contributions of F E Fritsch or H D Kuntze
 - (c) Role of virus in biotechnology
 - (d) General features of Chlorophyceae
7. Explain briefly any **two** of the following : (6×2=12)
- (a) Special features of Baltimore classification of virus
 - (b) Macrandrous and Nanandrous species of *Oedogonium*
 - (c) Economic importance of algae

This question paper contains 4 printed pages]

Roll No.

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No. of Question Paper : 33

Unique Paper Code : 32161102 I

Name of the Paper : Biomolecules and Cell Biology

Name of the Course : B.Sc. (Hons.) Botany

Semester : I

Duration : 3 Hours

Maximum Marks : 75

Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *five* questions in all, including question No.. 1 which is compulsory. *All* parts of questions must be attempted together.

(a) Name the organelle in which the following enzymes are located : 5×1=5

(i) Cytochrome oxidase

(ii) Catalase

(iii) Acid phosphatase

(iv) Signal peptidases

(v) Rubisco.

P.T.O.

(b) Match the following :

5×1=

'A'

'B'

- | | |
|-------------------------|--------------------|
| (i) Polysaccharide | rRNA transcription |
| (ii) Nucleolus | Tubulin |
| (iii) Gaucher's disease | Chloroplast |
| (iv) Endosymbiont | Lysosome |
| (v) Microtubule | Glycogen. |

(c) State true or false :

5×1=

- (i) Solid particles are ingested by pinocytosis.
- (ii) Cellulose is a kind of polysaccharide.
- (iii) Lipids in cell membranes are amphipathic.
- (iv) Plasmids are extrachromosomal DNA present in a eukaryotic cells.
- (v) Nucleolus is a membrane bound structure.

2. Differentiate between (any three) :

3×5=

- (i) Facultative heterochromatin and constitutive heterochromatin.
- (ii) Mitosis and Meiosis.

- (iii) Endocytosis and Exocytosis
- (iv) Lysosome and Glyoxysome
- (v) DNA and RNA.

3. Write short notes on (any *three*) : 3×5=15

- (i) Biological role of proteins
- (ii) Semiautonomous nature of mitochondria
- (iii) Glycosylation
- (iv) Structure of Flagella.

4. Draw well labelled diagrams of the following (any *three*) : 3×5=15

- (i) Ultrastructure of chloroplast
- (ii) Double helical structure of DNA
- (iii) Nuclear Pore Complex
- (iv) Structure of *t*RNA

5. (a) Describe the structure, composition and function of cell wall.

(b) Describe the structure and functions of microtubules.

(c) Golgi apparatus is the export house of the cell. Comment.

3×5=15

P.T.O.

6. (a) Discuss the molecular organization of chromatin.
- (b) Discuss the role of endoplasmic reticulum in folding and processing of proteins.
- (c) Explain the structure and function of mitochondria.

3×5=15

[This question paper contains 6 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 836 I
Unique Paper Code : 32165102
Name of the Paper : Plant Anatomy and Embryology
Name of the Course : Botany : G.E. for Honours
Semester : I
Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **Five** questions in all including Question No. 1 which is compulsory.
3. **All** questions carry equal marks.
4. Attempt all parts of a question together.
5. Draw well labelled diagrams whenever necessary.

1. (a) Define the following terms (**any five**) : (1×5=5)
 - (i) Double fertilization
 - (ii) Geitonogamy
 - (iii) Bark

- (iv) Pollination
- (v) Exarch or Endarch
- (vi) Microsporogenesis
- (vii) Cambium

(b) Fill in the blanks (**any five**) :

(1×5=5)

- (i) cells are located at the chalazal end of
the embryo sac.
- (ii) The third integument present in some seeds
called
- (iii) Parenchyma cells that contain chloroplast and
called
- (iv) is a specialized parenchyma cell which
is associated with a sieve tube element and arises
from the same mother cell.
- (v) Casparian strips are the characteristic feature of
.....
- (vi) is present at the micropylar end of
synergids.

(c) Match the following :

(1×5=5)

Column 1	Column 11
(i) Nuclear endosperm	(a) <i>Nerium</i> leaf
(ii) Pollen wall	(b) scattered vascular bundles
(iii) Monocot stems	(c) insects
(iv) Entomophily	(d) coconut
(v) Egg apparatus	(e) embryo sac
(vi) <i>Citrus microcarpa</i>	(f) double fertilization
(vii) S. Nawaschin	(g) adventive embryony
(viii) Porogamy	(h) sucrose, boron
(ix) Pollen germination	(i) micropyle
(x) Sunken stomata	(j) exine and intine

Differentiate between the following (**any five**) : (3×5=15)

- (a) Monocot and dicot stem
- (b) Secretory and amoeboid tapetum
- (c) Anemophily and entomophily
- (d) Orthotropous and anatropous ovule.

- (e) Meristematic tissues & Permanent tissues
- (f) Vascular cambium and cork cambium
3. Draw well label diagrams of following (**any five**) : (3×5)
- (a) T.S of tetrasporangiate anther ready for dehiscence
- (b) A germinating pollen grain with its wall structure.
- (c) T.S. Stem of *Hydrilla*
- (d) L.S. of anatropous ovule
- (e) T.S. monocot root of *Zea mays*.
- (f) L.S. of Root apex
4. Write short notes on (**any five**) : (3×5)
- (a) Apical meristem
- (b) Epidermis
- (c) Embryo-endosperm relationship
- (d) Vascular cambium
- (e) Role of tapetum
- (f) Double fertilization

- (a) Define polyembryony? How is it classified? Discuss its practical applications. (5)
- (b) Discuss the ultrastructure of mature egg apparatus cells. (5)
- (c) What are the differences between meristematic and permanent tissues? (5)
- (a) Explain briefly how secondary growth takes place in a dicot stem with the help of suitable diagrams. (5)
- (b) What is endosperm? Discuss different types of endosperm formation with one example of each. Mention the functions of endosperm. (7)
- (c) Draw different stages of dicot embryo development in an angiosperm. (3)
- (a) Discuss the functions of suspensor. (2)
- (b) What is wood? Differentiate between heartwood and sapwood. (3)
- (c) Give the general account of adaptations in xerophytes and hydrophytes. (5)

(d) Give a brief account of various theories to describe shoot apical meristem.

This question paper contains 4 printed pages.]

Your Roll No.....

Number of Question Paper : 34

I

Unique Paper Code : 32161301

Name of the Paper : Anatomy of Angiosperms

Name of the Course : B.Sc. (Hons.) Botany

Semester : III

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **five** questions in all including Question No. 1 which is compulsory.
3. All parts of a question must be attempted together.

1. (a) Define the following (any **five**) : (5×2=10)

(i) Casparian strips

(ii) Aerenchyma

(iii) Bulliform Cells

(iv) Dendrochronology

(v) Cystolith

(vi) Phellem

(vii) Plasmodesmata

(b) Fill in the blanks (any five) :

(5×1=)

- (i) Calcium carbonate crystals found in leaves of *Ficus elastica* are called
- (ii) Concentric vascular bundle in which phloem surrounds xylem is called as
- (iii) In wood, elements of xylem are often blocked by balloon-like ingrowths known as
- (iv) Sclereids with dilated ends resembling bones are called as
- (v) Histogen theory was given by
- (vi) Sugarcane leaves show special type of anatomy known as
- (vii) Water secretion from margins of leaves occurs through pores called

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

- (i) Applications of Plant Anatomy in pharmacognosy
- (ii) Types of trichomes in plants
- (iii) Kranz anatomy
- (iv) Tunica Corpus Theory
- (v) Laticifers

Differentiate between (any **five**) : (5×3=15)

- (i) Primary and secondary xylem
- (ii) Cork cambium and vascular cambium
- (iii) Lenticels and stomata
- (iv) Ring porous and diffuse porous wood
- (v) Fibers and sclereids
- (vi) Tracheids and vessels
- (vii) Amphivasal and ampicribal vascular bundles

Draw well labelled diagrams of (any **three**) : (5×3=15)

- (i) T.S. monocot stem

- (ii) V.S. *Zea mays* leaf
 - (iii) T.S. dicot stem with secondary growth
 - (iv) T.S. *Nymphaea* petiole
 - (v) V.S. lenticel
5. (i) Discuss secondary growth in dicot root along with suitable diagrams.
- (ii) Describe the structure and function of sieve element.
6. (i) Describe the structure and function of simple tissue with well labelled diagram.
- (ii) Give a brief illustrated account of anatomical adaptations of xerophytic plants.
7. (i) Discuss the organization of root apex with suitable theories. Illustrate with diagrams.
- (ii) What is wood? Discuss different types of wood. Reaction wood, tension wood, early and late wood, heart wood and sap wood.

[This question paper contains 4 printed pages.]

Your Roll No.....

No. of Question Paper : 35 I

Unique Paper Code : 32161302

Name of the Paper : Economic Botany

Name of the Course : B.Sc. (Hons.) Botany

Semester : III

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

Write your Roll No. on the top immediately on receipt of this question paper.

Question paper has **SEVEN** questions. All questions carry equal marks.

Attempt **FIVE** questions in ALL. Question No. 1 is compulsory.

All parts of a question must be attempted together.

(a) Mention Botanical Name of **any five** of the following :

(1×5=5)

(i) Poppy

(ii) Otto of Roses

(iii) Vegetable Gold

- (iv) Saffron
- (v) Noble Cane
- (vi) Linseed

(b) Define **any five** of the following terms : (1×5=

- (i) Iodine Number
- (ii) Bagasse
- (iii) Dimorphic Branching
- (iv) Parboiling
- (v) Geocarpic Fruit
- (vi) Adjunct

(c) Expand **any five** of the following abbreviations : (1×5=

- (i) IRRI
- (ii) NBPGR
- (iii) SBI
- (iv) RRIM
- (v) IARI
- (vi) CPRI

Differentiate between **any five** of the following :

(3×5=15)

- (i) Drying Oil & Non-Drying Oil
- (ii) Cotton Fibre & Jute Fibre
- (iii) Flue Curing & Fire Curing
- (iv) Heartwood & Sapwood
- (v) Enfleurage & Maceration
- (vi) Gynophore & Carpophore

Mention the Botanical Name, Family Name, Plant Part Used, Chemical Constituents and Economic Uses of **any five** of the following :

(1+0.5+0.5+1+2=5) (3×5=15)

- (i) Foxglove
- (ii) Tea
- (iii) Sarpagandha
- (iv) Tobacco
- (v) Clove
- (vi) Fever Bark Tree

Explain **any three** of the following :

(5×3=15)

- (i) Retting of Jute
- (ii) Properties of Wood

(iii) Nobilization

(iv) Chemistry and Processing of Coffee

5. Mention Botanical Name, Family Name and Draw Labeled Diagram of **any three** of the following :
(1+1+3=5) (5×3=)

(i) L.S. Cotton Seed

(ii) T.S. Fennel Mericarp

(iii) T.S. Potato Tuber

(iv) Stalk of Sugarcane

6. Write short notes on **any three** of the following :
(5×3=)

(i) Millets

(ii) Processing of Edible Vegetable Oil

(iii) Importance of Legumes

(iv) Tobacco and Health

7. Discuss **any three** of the following :
(5×3=)

(i) Processing and Uses of Rubber

(ii) Vavilov's work on Origin of Cultivated Plants

(iii) Evolution of Bread Wheat

(iv) Classification of Aromatic Vegetable Products

This question paper contains 4+2 printed pages]

Roll No.

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S. No. of Question Paper : 36

Unique Paper Code : 32161303

I

Name of the Paper : Genetics

Name of the Course : B.Sc. (H) Botany

Semester : III

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *five* questions in all.

Question No. 1 is compulsory.

1. (a) Define the following (any *five*) :

5×1=5

(i) Pseudoallele

(ii) Plaque

(iii) Alkylating Agents

(iv) Hemizygous

(v) Polygenic Inheritance

(vi) Test Cross.

P.T.O.

(b) Expand the following (any *four*) :

4×1=4

(i) NCO

(ii) SCA

(iii) MMS

(iv) F_1

(v) QTL.

(c) State any *one* important contribution of the following scientists (any *five*) :

5×1=5

(i) H. G. Muller

(ii) C. Stern

(iii) Reginald Punnett

(iv) Lucien Cuenot

(v) Carl Correns

(vi) Sutton and Boveri.

(d) Answer the following (any *five*) :

5×1=5

(i) Write down the term used for depicting the degree of expression in an organism having a particular genotype.

- (ii) What does an arrow signify in a pedigree analysis ?
- (iii) What would be the phenotypic ratio when two non-allelic genes controlling a single trait interact in an additive manner ?
- (iv) What is the chemical nature of H substance ?
- (v) What is the probability of obtaining a child with blood group O⁺ from parents with blood group O⁺ and AB⁺ ?
- (vi) Write down the chromosomal formula for a double monosomic individual.

2. (a) Differentiate between (any *three*) :

3×4=12

- (i) Dominance and Epistasis
- (ii) Euploidy and Aneuploidy
- (iii) Multiple Alleles and Polygenes
- (iv) Allopatric and sympatric speciation.

(b) Write down the chromosomal formulae for :

2×1=2

- (i) Turner's Syndrome
- (ii) Edward's Syndrome.

P.T.O.

3. (a) Write short notes on any two :

2×5=10

(i) Hardy Weinberg's Law

(ii) rII locus in bacteriophage T4

(iii) Genetic mechanism of leaf variegation in Four o'clock plant.

(b) An allele W, for white wool is dominant over allele w for black wool. In a sample of 900 sheep, 891 are white and 9 are black. Calculate allelic frequencies within this population, assuming, the given population is in Hardy-Weinberg equilibrium.

4. (a) Elaborate CIB method for detecting mutations.

(b) Using a forked line method list the genotypes for the following dihybrid crosses :

$$DdGg \times DdGg$$

D/d Plant height (Tall and Dwarf)

G/g Seed color (Yellow and Green)

5. (a) How has polyploidy contributed towards evolution of agriculture crops ? Elaborate with any two suitable examples.

- (b) Describe criss-cross inheritance giving a suitable example. 4
- (a) Explain the experiment that provided cytological proof of crossing over. 8
- (b) Discuss base excision repair mechanism of DNA damage repair. 6

Ebony body colour (*e*), rough eyes (*ro*), brevis bristles (*bv*) are three recessive mutations in fruit flies. A wild type fly (*e⁺ ro⁺ bv⁺*), was crossed with triple mutant fly (*e ro bv*). F₁ progeny were heterozygous and they were crossed with mutant homozygous recessive males. The results of the test cross are as follows :

Wild type	<i>e⁺ ro⁺ bv⁺</i>	625
Ebony, rough eyes, brevis bristles	<i>e ro bv</i>	634
Ebony	<i>e ro⁺ bv⁺</i>	165
Rough eyes, brevis bristles	<i>e⁺ ro bv</i>	158
Brevis bristles	<i>e⁺ ro⁺ bv</i>	93
Ebony, rough eyes	<i>e ro bv⁺</i>	91
Rough eyes	<i>e⁺ ro bv⁺</i>	5
Ebony, brevis bristles	<i>e ro⁺ bv</i>	4

P.T.O.

- (a) Are the above genes linked ? Give reasons for your answer.
- (b) Diagram the crosses giving the genotype of parents and F_1 .
- (c) What is the order of the genes ?
- (d) Calculate the map distance between the genes and construct the linkage map.
- (e) Calculate the coefficient of coincidence.
- (f) Calculate the interference and comment on its significance.

[This question paper contains 4 printed pages]

Your Roll No. :

Sl. No. of Q. Paper : **480** **I**

Unique Paper Code : 32163302

Name of the Course : **B.Sc.(Hons.) Botany
Skill Enhancement
Course**

Name of the Paper : Intellectual Property
Rights

Semester : III

Time : 3 Hours **Maximum Marks : 38**

Instructions for Candidates :

(a) Write your Roll No. on the top immediately on receipt of this question paper.

(b) Attempt any **five** questions in all. Question **NO.1** is compulsory.

(c) **All** questions carry equal marks.

1. (a) Expand the following abbreviations (any **five**):

1×5=5

(i) TRIPS

P.T.O.

- (ii) USPTO
- (iii) CRRI
- (iv) EPO
- (v) WIPO
- (vi) WTO

(b) State **True or False** :

0.5×6=3

- (i) Dramatics does not come under copyright.
- (ii) Slogan is a trademark.
- (iii) Traditional Knowledge can be patented.
- (iv) Jewellery design comes under IPR.
- (v) Patents are territorial rights.
- (vi) Mysore Agarbaatti is a GI.

2. Write short notes on any **three** :

3×5=15

- (i) TKDL

(ii) Patent filing Procedure.

(iii) Types of Trademark.

(iv) Works protected under copyright.

(v) Domain name protection.

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3. Attempt any **three** :

3×5=15

(a) Name one agricultural, handicraft and industrial product which are under GI and briefly explain about them.

(b) Discuss briefly about Protection of Plant Varieties and Farmers' Rights Act, 2001.

(c) Differentiate between Bio-piracy and Bio-prospecting with **one** example of each.

- (d) Industrial design is protected by patents, trademarks and copyrights. Explain.
- (e) How can software be protected using IPR?

[This question paper contains 4 printed pages.]

Your Roll No.....

No. of Question Paper : 966 I
Unique Paper Code : 32165302
Name of the Paper : Environmental Biotechnology
Name of the Course : **Generic Elective for Hons. :
Botany**
Semester : III
Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

Write your Roll No. on the top immediately on receipt of this question paper.

Attempt **FIVE** questions in all. Question No. 1 is compulsory.

All questions carry **EQUAL** marks.

All parts of a question **MUST** be answered together.

Draw the well labeled **DIAGRAM** wherever required.

(a) Define **any five** of the following :

(1×5=5)

(i) Lithosphere

(ii) Radionuclides

P.T.O.

- (iii) Bioremediation
- (iv) Biomagnification
- (v) Surfactants
- (vi) Smog

(b) Fill in the blanks (**any five**) :

(1×5=5)

- (i) Increased productivity of lakes and streams brought about by nutrient enrichment is known as
- (ii) Loudness (sound) is measured in terms of
- (iii) Protocol concerned with the protection of ozone layer is
- (iv) Wildlife Protection Act was passed in year
- (v) Chipko movement was commenced in district of Uttarakhand.
- (vi) Minamata disease is caused by the contamination of in the water.
- (vii) The Stockholm conference was held in the year

(c) Match the following :

(1×5=5)

<u>Column A</u>	<u>Column B</u>
(i) Nitrification	(a) WCED
(ii) Ozone	(b) Spent wash
(iii) Incineration	(c) UV absorption
(iv) Distillery industry	(d) <i>Nitrosomonassp.</i>
(v) Brundtland report	(e) Burning of waste

Briefly explain **any five** of the following :

(3×5=15)

- (a) Ramsar Convention
- (b) Ozone depletion
- (c) Narmada Bachao Andolan
- (d) Brundtland Report
- (e) Forest Conservation Act 1980
- (f) Up-flow anaerobic sludge blanket reactor

(a) Give detailed account of waste water treatment by aerobic processes. (8)

(b) What do you understand by Bioleaching? Describe its process with suitable examples. (2+5=7)

P.T.O.

4. (a) What are xenobiotic compounds? Discuss various bioremediation techniques for treating xenobiotic compounds from environment. (2+6=8)
- (b) Describe bioreactor and its operation. (7)
5. Describe (**any three**) of the following : (5×3=15)
- (a) Air Pollution (Prevention and Control) Act, 1981
- (b) Silent Valley Movement
- (c) Environmental Education and Awareness
- (d) Kyoto Protocol
6. (a) Discuss the role of immobilized cells and enzymes in treatment of toxic compounds. (4+4=8)
- (b) What do you understand by Biosensors? How are they used for waste water monitoring? (3+4=7)
7. (a) Explain acid rain and its effects on environment. (4+4=8)
- (b) Describe the greenhouse effect and its impact on environment. (7)

[This question paper contains 4 printed pages.]

Your Roll No.....

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Hours

No. of Question Paper : 446

IC

Unique Paper Code : 42237903

Theme of the Paper : Animal Cell Biotechnology

Theme of the Course : B.Sc. (Prog) DSE-3

Semester : V

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

Write your Roll No. on the top immediately on receipt of this question paper.

Attempt five questions in all including Question No. 1 which is compulsory

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(a) Define: (5)

(i) Chimeric DNA

(ii) Transformation efficiency

(iii) Phagemid

(iv) Conjugation

(v) Gene knockout

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P.T.O.

(b) Differentiate between the following (10)

- (i) Expression and Shuttle Vector
- (ii) Transgenic animal and cloned animal
- (iii) Neo and Caudoischizomers
- (iv) Blunt and cohesive ends
- (v) Phosphatases and ligase

(c) Expand the abbreviations: (5)

- (i) BAC
- (ii) pBR 322
- (iii) ddNTP
- (iv) SDS PAGE
- (v) BSA

(d) Write important contributions of the following: (5)

- (i) Hamilton Smith and D. Nathan
- (ii) Griffith
- (iii) Cohen and Boyer

(10)

(iv) W. N. Burnette

(v) Temin and Baltimore

(e) Write the importance of following in biotechnology

(2)

(i) Reverse transcriptase

(ii) Multiple cloning site

(iii) *Lac z*

(5)

(iv) Humulin

(a) What is gene cloning? What are different steps for successful gene cloning? (7)

(b) Write an account on Artificial chromosomes as cloning vectors. (5)

(a) What are different methods for induced transformation of a bacterial cell? (6)

(5)

(b) What are DNA chips? Add a note on their advantages and applications. (6)

(a) Describe the use of rDNA technology in the production of a recombinant drug/protein. (6)

- (b) Describe briefly microinjection method for the production of transgenic animals. (6)
5. (a) What are VNTRs? How can these be used for identification of an individual. (7)
- (b) Describe the technique of DNA sequencing using Sanger method. (5)
6. (a) Describe various strategies of gene therapy in the cure of any human genetic disease. Add a note on the advantages over conventional methods. (7)
- (b) Write the importance of Agrobacterium in the production of transgenic plants. (5)
7. Write short note on any three of the following: (3×4)
- (i) Colony hybridization method
 - (ii) Southern blotting
 - (iii) Type II restriction endonucleases
 - (iv) PCR