Government College (Autonomous) Rajamahendravaram
Accredited "A" Grade by NAAC

Department of Biotechnology

B.Sc., Model Papers
CBCS (Choice Based Credit system) semester wise

Government (Autonomous) College , Rajamahendravaram.
Department of Biotechnology
B.Sc-I; Biotechnology ; Semester -1;

Paper-1 :MICROBIOLOGY AND CELL BIOLOGY

Model question paper for Semester end theory examinations. Oct /Nov 2018

Time : 3 Hours   **Max.Marks : 60**

Part – A

Answer any 4 of the following essay questions   **4 X 10= 40M**

Note : Draw Diagrams wherever necessary for both essay and short answers.

1. Describe the contributions of Louis Pasteur to microbiology.

2. Write in detail about electron microscopy.

3. Explain the features of a typical bacterial cell.

4. Discuss the basic nutritional requirements of microbes.

5. Write the various physical control methods for microorganisms

6. Describe in detail thestructure of eukaryotic cell

Part -B
Answer any Five short answer Questions   5X4=20 M

7. Numerical aperture	12.Nutritional classification of bacteria.
8. Endospore staining	13. Growth curve.
9. Plasmids	14..Antimicrobial agents
10. Structure of virus	15. Cytoskeleton
11. Basic nutrients required by bacteria	16. Cell cycle.

Government (Autonomous) College , Rajamahendravaram.
Department of Biotechnology
B.Sc-II; Bio technology ; Semester -3;

Paper-3: BIO PHYSICAL TECHNIQUES

Model question paper for Semester end theory examinations. Oct /Nov 2018

Time: 3 Hours   Max. Marks: 60

Part – A

Answer any 4 of the following essay questions   **4 X 10=40M**

Note: Draw Diagrams wherever necessary for both essay and short answers.

1. Describe in detail the structure of DNA.

2Write about the forces stabilizing nucleic acid structures.

3. Write the classification of proteins.

4. what are Carbohydrates and classify them with examples and write their   importance.

5.Describe the various types of enzyme inhibition.

6. Explain the cycle and regulation of glycolysis.

Part-B
Answer any five short answer questions.   **5 X4= 20 M**

7. Chargaff's rule.	12. Heteropolysaccharide
8. Z-DNA.	13. Holoenzyme
9 General structure of amino acid.	14. Redox potential
10. Peptide bond	15.Active site
11. Iodine value	16.Structure of ATP

Time : 3 hrs   Max . Marks : 75

Part- A

Answer All the essay questions.   **5 X 10 = 50M**

Note : Draw Diagrams wherever necessary.

1.A. Write in detail the principles of animal cell culture .
                    Or
   B. Write about the cell culture media composition , preparation and sterilization.

2. A. Write the Culture of Stem cells and their application, classification of proteins.
                    Or
   B. Describe the invitro fertilization and embryo transfer technology in humans.

3. A. Write the characteristics of cells in invitro culture.
                    Or
   B. Write about the Growth factors required for cell survival and growth.

4.A.Describe about recombinant DNA products in medicine.
                    Or
   B. Describe the production of transgenic animals and molecular pharming.

5.A Write an essay intellectual property rights.

                    Or
   B. Write an essay on society and ethical aspects of Biotechnology.

Part-B

Answer any five short answer questions.   **5 X5= 25 M**

5. Explants and cell disaggregation.   10. Cell lines.
6. Culture vessels.   11. Gene therapy
7.Microinjection.   12. Applications of animal cell culture.
8. Preservation of cell lines   13. Copy right.
9. Primary culture   14. Patent

Time : 3 hrs   Max . Marks : 60

Part- A

Answer All the essay questions.   .   4 X 8 = 32 M

Note : Draw Diagrams wherever necessary.

1.A. Describe in detail the structure of DNA.
                                                Or
B.Write about the forces stabilizing nucleic acid structures.

2A. Write the classification of proteins.   Or

B .Describe the structure of proteins.

3.A.what are Carbohydrates and classify them with examples and write their importance.

                                                Or
B. Write about the types and structure of lipids.

4.ADescribe the various types of enzyme inhibition.
                                Or
B. Explain the cycle and regulation of glycolysis.

Part-B

Answer any five short answer questions.   5 X4= 20 M

5. Chargaff's rule.	9. Iodine value.
6. Z-DNA.	10. Heteropolysaccharide
7.General structure of aminoacid.	11. Holoenzyme
8. Peptide bond	12. Redox potential.

Answer all very short questions

Part -C   4X2=8

13 .Hydrogen bond	15. Allosteric site
14. Cytochromes	16. Enthalpy.

Government College (A) , Rajamahendravaram.
B.Sc - II ; Biotechnology ; Semester - 4
Course code : BTIMM 04: Immunology

Model Question Paper — Mar / Apr 2018

Time: 3 hrs   Max. Marks: 60

Part- A

Answer Any 4 essay questions.   **4 X 10 = 40M**

Note: Draw Diagrams wherever necessary.

1. Describe Organs of the human immune system.

2 Write about the cells of the immune system.

3. Write in detail the antibody structure and various classes.

4. What is cell mediated immunity describe the process in detail.

5. Describe the various types of hypersensitivity.

6. Describe the various antigen –antibody reactions.

Part-B

Answer any five short answer questions.   **5 X4= 20 M**

7. Differences between innate and acquired immunity.   8. Complement
9. Factor affecting antigenicity.   10. Antigenicity
11. Cytokines   12. Antibody
diversity.   13. Vaccination
14. Hypersensitivity
15. Immunodiffusion   16. Hybridoma
.

Government College(A) , Rajamahendravaram.
B.Sc - III ;   Biotechnology ; Semester - 6
Course code : BTGEIM -07A: "Genetic Engineering and Immunology"

Model Question Paper –Mar / Apr – 2018

Time : 3 hrs

Max . Marks : 75

Note : Draw Diagrams wherever necessary.

Part – A

Essay questions :   answer any 4   4 X 12 = 48 M

1. Write an essay on Enzymes used in gene cloning.

2. Write an essay on construction of cDNA libraries.

3.   Write an essay on southern blotting technique.

4. Write essay on Principles and applications of PCR.

5. Write an essay on structure of different immune globulins and their functions.

6. Define Hypersensitivity and write about types of hypersensitivity .

Part-B

Short answer questions   :   Answer any 4   4 X 5= 20 M

7. Genomic library   8. Expression cassettes

9. Identification of cloned genes.   10. DNA finger printing
    technique.

11. Features of an Antigen   12. Cells of immune system

13. MHC   14. Autoimmunity

Part-C

Very short answer questions :   Answer all 7   7 X 1= 7

15. Plasmid   16. Shuttle Vector
17. Clone   18. Northern Blot
19. Hapten   **20. Organs of immune system**

21.CDR

Government College(A) , Rajamahendravaram.
B.Sc - III ;   Biotechnology ; Semester - 6
Skill based elective - 1   : Environmental biotechnology

Model Question Paper – Mar / Apr – 2018

Time : 3 hrs   Max . Marks : 75
Part- A
Answer All the essay questions.   **5 X 10 = 50M**
Note : Draw Diagrams wherever necessary.

1.A. Write an essay on principles of ecology.
                        Or
   B. Describe in detail the bio-geo chemical cycles.

2.A. Describe the inorganic and organic pollutants.
                        Or
    B. Write in detail about detection, treatment and prevention of pollution.

3.A. Write in detail about refuse disposal treatment methods.
                        Or
    B. Describe about four stage alternatives .

 4.A. Describe the aerobic and anaerobic treatment of waste.
                         Or
B. write about primary, secondary and tertiary treatment of municipal wastes.

5.A Role of genetically engineered microbes the environmental management.

                        Or
B. Write about biodegradation of recalcitrant compounds

Part-B
Answer any five short answer questions.   **5 X5= 25 M**
5. Water ecosystems.   10. Fertilizers.
6. Nitrogen cycle.   11. Solid waste management.
7. Environmental monitoring   12. Biofilm.
. Biological indicators.   13. Bioremediation.
9. Biocides   14. Biodegradation.

Government (Autonomous) College , Rajamahendravaram.

Department of Biotechnology

B.Sc-III ; Biotechnology ; Semester -5;

Paper-*5* :GENETICS AND MOLECULAR BIOLOGY

Model question paper for Semester end theory examinations. Oct /Nov 2018

Time : 3 Hours   **Max.Marks : 60**

Part – A

Answer any 4 of the following essay questions   4 X 10= 40M

Note : Draw Diagrams wherever necessary for both essay and short answers

1. Describe Mendel's Laws and deviations
2. Describe recessive and dominant epistatic gene interaction.
3. Describe chromosome abnormalities in plants and animals
4. Describe use of DNA replication mutants in study of replication
5. Describe physical and chemical mutagens
6. Describe enzymes involved intranscription and process of transcription

Part-B

Answer any 5 of the following essay questions   5 X 4= 20 M

1. Incomplete dominance
2. Linkage
3. DNA polymerase types
4. Missense and nonsense mutations
5. Reverse transcription
6. Hardy Weinberg law and equation
7. Penetration and Pleiotropism
8. Concept of promoter

Government (Autonomous) College , Rajamahendravaram.
Department of Biotechnology

B.Sc-III ; Biotechnology ; Semester -5;

Paper-6 :GENE EXPRESSION AND rDNA TECHNOLOGY

Model question paper for Semester end theory examinations. Oct /Nov 2018

Time : 3 Hours   Max.Marks : 60

Part – A

Answer any 4 of the following essay questions   **4 X 10= 40M**

Note : Draw Diagrams wherever necessary for both essay and short answers

1. Describe Codon and its characteristics
2. Describe codon and anticodon interaction and selection of initiation code.
3. Describe post translational modification
4. Describe Operon concept and types
5. Describe different types of cloning vectors
6. Describe construction of cDNA library and its applications.

Part-B

Answer any 5 of the following essay questions   **5 X 4= 20 M**

7.Characteristics of Codon   11.Antibiotics effecting translation
8.Lac operon   12.YAC
9.Vector   13.Shine Dalgarno sequence
10. Ligation   14. PCR

Model Question Paper – Mar / Apr – 2018

Time : 3 hrs   **Max . Marks : 75**

Part -A

Answer any FIVE of the following.   **5X10=50M**

1. Write in detail about measures of central tendency.
2. Write in detail about probability and probability distribution.
3. Write about the concept of sampling and sampling distribution.
4. Write about the concept of test of hypothesis.
5. Write in detail about correlation and explain various types of correlation.
6. Write in detail about biological databases.
7. Write an essay on applications of bioinformatics.
8. Write in detail the concept of analysis of variance

Part -B

Answer   any FIVE of the following.   **5X5=25M**

1. Statistic application in biology
2. Calculate the mean for individual series 9,7,6,10,12,11.
3. Calculate probability of getting 2 heads on 3 tosses.
4. Alpha particles are emitted by radioactive source at the rate of 3 per ever minute on the average. The number of particles is distributed according to poissson distribution. Calculate the probability of getting exactly 5 emissions in one minute. (e = 2.71)
5. Assume the mean height of sorghum varieties to be 68.22 inches with a variance of 10.8 inches. How many varieties in a field of 100 varities would you expect to be over 6 feet tall. Assuming that the height of varieties is normally distributed.
6. In F2 generation, Mendel obtained 621 tall plants and 187 dwarf plants out of the total of 808. Test whether these two types of plants are in accordance with the Mendelian monohybrid ratio 3:1 or do they deviate from this ratio.
7. Data retrieval
8. Databank.

Model Question Paper – Mar / Apr – 2018

Time : 3 hrs   Max . Marks : 75

Part- A

Answer any 4 essay questions.   **4 X 12 = 48M**

Note : Draw Diagrams wherever necessary.

1. Write an essay on haematopoiesis .

2. Describe the process of homeostatsis .

3. Write an essay on chemical regulation of respiration.

4. Write in essay on neuroanatomy of the brain and spinal cord .

5. Describe the human digestive system ..

6. Write an essay on endocrine glands.

Part-B

  Short answer questions   :   Answer any 4   4 X 5= 20 M

7. Functions plasma   8. Blood groups

9. Waste elimination.   10. Transport of gases.

11. Action potential   12. Neuron

13.Energy balance   14. Gametogenesis

Part-C

Very short answer questions :   Answer all 7   15. Macrophage
                                        16. Blood volume

 17. Lungs   **18. Respiration**

 19. Spinal cord   **21.Ovulation**
20. BMR

Government College(A) , Rajamahendravaram.
B.Sc - III ;   Biotechnology ; Semester - 6
Course code : Course code : BTENVB 08A2: Environmental Biotechnology

Model Question Paper – Mar / Apr – 2018

Time : 3 hrs   Max . Marks : 75
Part- A

Answer All the essay questions.   **5 X 10 = 50M**
Note : Draw Diagrams wherever necessary.

1. Write an essay on principles of ecology.
2. Describe in detail the bio-geo chemical cycles.
3. Write in detail about detection, treatment and prevention of pollution.
4. Describe about four stage alternatives .
5. write about primary, secondary and tertiary treatment of municipal wastes.
6. Role of genetically engineered microbes the environmental management.

Part-B
Answer any five short answer questions.   **5 X5= 25 M**
7. Water ecosystems.   8. Fertilizers.
9. Nitrogen cycle.   10.Solid waste management.
11. Environmental monitoring   12.Biological indicators.
13. Bioremediation.   14. Biocides
Part-C

Very short answer questions :   **Answer all 7**   **7 X 1= 7 M**

 15. Ecology   16. Terrestrial
 17.Organic pollutant   18. Inorganic pollutant
 19.Biocide   20.Biofilm

Government College(A) , Rajamahendravaram.
B.Sc - III ; Biotechnology ; Semester - 6

Course code : BTINDB 08A3: Industrial Biotechonology

Model Question Paper – Mar / Apr – 2018

Time : 3 hrs   Max . Marks : 75
Part- A

Answer Any 4 essay questions.   **4 X 12 = 48 M**

Note : Draw Diagrams wherever necessary.

1. . Describe in detail the Isolation, screening and preservation of microorganisms.

2. Write about improvement of Industrially important microorganisms

3. Write an essay on bioreactors.

 4. Write the process of ethanol Production by fermentation using Molasses.

5. Write about the fermentative production of antibiotic "Penicillin".

6 **.** Describe the production of monoclonal antibodies.

Part-B

Answer any 4 short answer questions.   **4X5= 20 M**

7. Antifoams.	8. Innoculum preparation.
9. Fed batch reactor	10. Classification of Bioreactors
11.Starchy substances	12. Wine
13. Bakers yeast.	14. Insulin

Part-C

Answer any five short answer questions.   **7 X1= 7 M**

15. Serial dilution	16. Sterilization
17. Aeration.	18. Spent medium.
19. Fermentation	20. SCP
21. Somatotrophin	

Model Question Paper – Mar / Apr – 2018

Time : 3 hrs   Max . Marks : 75
Part- A

Answer Any 4 essay questions.   **4 X 12 = 48 M**
Note : Draw Diagrams wherever necessary.

1. Write in detail the facilities necessary to set a plant tissue culture laboratory.

2. Write the composition, preparation and sterilization of Plant tissue culture media.

3. Write in detail the procedure for production of haploid plants and its significance.

4. Write an essay about Bt cotton production.

5. Write about batch and continuous cultures.

6. Write 2 methods of gene transfer in detail

Part-B

Answer any 4 short answer questions.   **4 X5= 20 M**
7. Callus   8. Single cell clones
9. Organogenesis.   10. Protoplast preparation.
11. Ti plasmid   12. Golden rice .
13. Bioreactor.   14. Therapeutic protein.

Part-C

Answer any five short answer questions.   **7 X1= 7 M**
15. Suspension culture.   16. Totipotency.
17. Somatic embryogenesis.   18. Diploid .
19. cry protein   20. Meristem.
21. Transgenic plant.

Government (Autonomous) College , Rajamahendravaram.

Department of Biotechnology
B.Sc-I; Biotechnology ; Semester -1;

Paper-1 :MICROBIOLOGY AND CELL BIOLOGY

Model question paper for Semester end theory examinations. Oct /Nov 2018

Time : 3 Hours   Max.Marks : 60

Part – A

Answer any 4 of the following essay questions   4 X 10= 40M

Note : Draw Diagrams wherever necessary for both essay and short answers.

1. Describe the contributions of Louis Pasteur to microbiology.

2. Write in detail about electron microscopy.

3. Explain the features of a typical bacterial cell.

4. Discuss the basic nutritional requirements of microbes.

5. Write the various physical control methods for microorganisms

6.Describe in detail thestructure of eukaryotic cell

Part -B
Answer any Five short answer Questions   5X4=20 M

7. Numerical aperture   12.Nutritional classification of bacteria.
8. Endospore staining   13. Growth curve.
9. Plasmids   14..Antimicrobial agents
10. Structure of virus   15. Cytoskeleton
11. Basic nutrients required by bacteria   16. Cell cycle.

Government (Autonomous) College , Rajamahendravaram.

Department of Biotechnology
B.Sc-II; Biotechnology ; Semester -3;

Paper-3 :BIOPHYSICAL TECHNIQUES

Model question paper for Semester end theory examinations. Oct /Nov 2018

Time : 3 Hours   Max.Marks : 60

Part – A

Answer any 4 of the following essay questions   **4 X 10= 40M**

Note : Draw Diagrams wherever necessary for both essay and short answers.

1. Describe in detail the structure of DNA.

2.Write about the forces stabilizing nucleic acid structures.

3. Write the classification of proteins.

4. what are Carbohydrates and classify them with examples and write their   importance.

5..Describe the various types of enzyme inhibition.

6. Explain the cycle and regulation of glycolysis.

Part-B
Answer any five short answer questions.   **5 X4= 20 M**

7. Chargaff's rule.	12. Heteropolysaccharide
8. Z-DNA.	13. Holoenzyme
9.General structure of aminoacid.	14. Redox potential
10. Peptide bond	15.Active site
11. Iodine value	16.Structure of ATP

Government (Autonomous) College , Rajamahendravaram.

Department of Biotechnology

B.Sc-III ; Biotechnology ; Semester -5;

Paper-5 :GENETICS AND MOLECULAR BIOLOGY

Model question paper for Semester end theory examinations. Oct /Nov 2018

Time : 3 Hours   Max.Marks : 60

Part – A

Answer any 4 of the following essay questions   **4 X 10= 40M**

Note : Draw Diagrams wherever necessary for both essay and short answers

7. Describe Mendel's Laws and deviations
8. Describe recessive and dominant epistatic gene interaction.
9. Describe chromosome abnormalities in plants and animals
10. Describe use of DNA replication mutants in study of replication
11. Describe physical and chemical mutagens
12. Describe enzymes involved intranscription and process of transcription

Part-B

Answer any 5 of the following essay questions   **5 X 4= 20 M**

1. Incomplete dominance
2. Linkage
3. DNA polymerase types
4. Missense and nonsense mutations

5. Reverse transcription
6.Hardy Weinberg law and equation
7.Penetration and Pleiotropism
8. Concept of promoter

Government (Autonomous) College , Rajamahendravaram.

Department of Biotechnology

B.Sc-III ; Biotechnology ; Semester -5;

Paper-6 :GENE EXPRESSION AND rDNA TECHNOLOGY

Model question paper for Semester end theory examinations. Oct /Nov 2018

Time : 3 Hours   **Max.Marks : 60**

Part – A

Answer any 4 of the following essay questions   **4 X 10= 40M**

Note : Draw Diagrams wherever necessary for both essay and short answers

7. Describe Codon and its characteristics
8. Describe codon and anticodon interaction and selection of initiation code.
9. Describe post translational modification
10. Describe Operon concept and types
11. Describe different types of cloning vectors
12. Describe construction of cDNA library and its applications.

Part-B

Answer any 5 of the following essay questions   **5 X 4= 20 M**

7.Characteristics of Codon   11.Antibiotics effecting translation
8.Lac operon   12.YAC
9.Vector   13.Shine Dalgarno sequence
10. Ligation   14. PCR

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

I B.Sc., Biotechnology Paper – I (At the end of I Semester)

CELL BIOLOGY AND GENETICS

Model Question Paper – OCT/NOV – 2011

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

<u>SECTION – A</u>

Answer **ALL** of the following Questions.   6 X 2 = 12M

1.Euchromatin   4. DNA Gyrases

2.Nucleoid   5.Nucleotide

3.Cyclins   6.Transformation

<u>SECTION – B</u>

Write Short notes on any **THREE** of the following.   3 X 5 = 15M

7.Plasmids   8.Structure of Virus

9.Mitosis   10.Theta mechanism of replication.

11.Topoisomerases and their role

   in replication.   12. Prove RNA as Genetic material

<u>SECTION – C</u>

Answer any **FOUR** of the following.   4 X 12 = 48M

13. a) Explain about Ultra structure of Prokaryotic cell.

(or)

   b) Give a detailed account on plant cell.

14. a) Write about structure of specialized Chromosomes

(Or)

   b) Write an essay on Meiosis and its significance .

15. a) Prove DNA as the genetic material with any two experiments.

(Or)

   b) Explain about Watson and Crick model of DNA structure.

16. a) Explain about semi conservative model of DNA replication.

(Or)

   b) Write about any three DNA repair methods.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
I B.Sc., Biotechnology Paper – I (At the end of II Semester)
CELL BIOLOGY AND GENETICS
Model Question Paper – Mar/Apr – 2012

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

SECTION – A

Answer **ALL** of the following Questions.   6 X 2 = 12M

1.Pleiotropism   4. Linkage

2.Epistasis   5.Interference

3.Test cross   6.X- Linked inheritance

SECTION – B

Write Short notes on any **THREE** of the following.   3 X 5 = 15M

7.Law of Segregation   8.Explain Modified dihybrid ratio 15 : 1 with suitable

                              example.

9.Turner's Syndrome.   10.Find out the mean value of the given data

                           6,5,4,8,3,10,14,22.

11.Protein Database   12. t-test applications in biology.

SECTION – C

Answer any **FOUR** of the following.   4 X 12 = 48M

13. a) Define law of Independent Assortment and explain about Dihybrid cross with

     example.   (or)

   b) Explain Duplicate gene interactions with example.

14. a) Describe about cytological proof of crossing over. b) Explain about mechanism of sex determination

15. a) What is Probability ? Mention its basic laws, distribution and its application to biology.

(or)

     b) What is a X^2 (Chi – Square) test ? Among by offsprings of certain cross between Guinea pigs,34 were red, 10 were black and 20 were white.Are the data consistant with in genetic ratio of 9 : 3 : 4

16. a) Mention different types of biological data bases,data banks and their uses to biotechnology.

(Or)

    b) Give a detailed account on applications of Bioinformatics.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
II B.Sc., Biotechnology Paper – II (At the end of III Semester)
BIOLOGICAL CHEMISTRY AND MICROBIOLOGY
Model Question Paper –OCT/NOV– 2011

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

SECTION – A

Answer **ALL** of the following Questions.   6 X 2 = 12M

1Lipoproteins   4. Structure of Fructose
2.Cellulose   5.Streptomycine
3.Phospholipids   6.Essential amino acids

SECTION – B

Write Short notes on any **THREE** of the following.   3 X 5 = 15M

7.Structure and Functions of Cholesterol   8.Factors effecting enzymatic reaction
9.- Oxidation of fatty acids.   10.Transamination.
11.Explain the structure and properties of Phospholipids.
12. Structure and Biochemical importance of starch.

SECTION – C

Answer any **FOUR** of the following.   4 X 12 = 48M

13. a) what are Carbohydrates and classify them with examples and write this importance.

(or)

   b) Explain in detail about various structural level of protein organization.

14. a) write an essay on classification of lipids ?.

(Or)

    b) Write an essay on nomenclature and classification of enzymes according to IUBN

15. a) Explain various steps involved in citric acid cycle add a note on ATP synthesis.

(Or)

   b) What is Mitochandrial Electron Transport chain?

16.   a) Write essay on Deamination ,Decarboxylation and Transamination reactions of amino acids?

(Or)

    b) Define Photosynthesis and add a note on light reactions of photosynthesis?.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
I B.Sc., Biotechnology Paper – I (At the end of II Semester)
CELL BIOLOGY AND GENETICS
Model Question Paper – Mar/Apr – 2012

Time : 3 hrs   Max . Marks : 75
Note : Draw Diagrams wherever necessary.

SECTION – A

Answer **ALL** of the following Questions.   6 X 2 = 12M

1. Pleiotropism   4. Linkage
2. Epistasis   5. Interference
3. Test cross   6. X- Linked inheritance

SECTION – B

Write Short notes on any **THREE** of the following.   3 X 5 = 15M

7. Law of Segregation   8. Explain Modified dihybrid ratio 15 : 1 with suitable
                                   example.
9. Turner's Syndrome.   10. Find out the mean value of the given data
                                   6,5,4,8,3,10,14,22.
11. Protein Database   12. t-test applications in biology.

SECTION – C

Answer any **FOUR** of the following.   4 X 12 = 48M

13. a) Define law of Independent Assortment and explain about Dihybrid cross with
       example.   (or)
    b) Explain Duplicate gene interactions with example.
14. a) Describe about cytological proof of crossingover.
                                   (or)
    b) Explain about mechanism of sex determination .

15. a) What is Probability ? Mention its basic laws, distribution and its application to
biology.
                                   (or)
    b) What is a X^2 (Chi – Square) test ? Among by offsprings of certain cross between
Guinea pigs,34 were red, 10 were black and 20 were white.Are the data consistant with in
genetic ratio of 9 : 3 : 4

16. a) Mention different types of biological data bases,data banks and their uses to
biotechnology.
                                   (Or)
    b) Give a detailed account on applications of Bioinformatics.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
III B.Sc., Biotechnology Paper – III (At the end of VI Semester)
MOLECULAR BIOLOGY, GENETIC ENGINEERING AND IMMUNOLOGY
Model Question Paper –MAR/APR- 2012

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

SECTION – A

Answer **ALL** of the following Questions.   6 X 2 = 12M

1. Ligases   4. Shuttle Vector
2. Cosmides   5.Hapten
3. Precipitation   6.RFLP

SECTION – B

Write Short notes on any **THREE** of the following.   3 X 5 = 15M

7. Identification of cloned genes.
8. DNA finger printing technique.
9. Molecular scissors.
10.ELISA.
11.MHC
12. Features of an Antigen

SECTION – C

Answer any **FOUR** of the following.   4 X 12 = 48M

13. a) Write an essay on Enzymes used in gene cloning.

(or)

   b) What is cDNA ? Explain how to prepare c-DNA libraries

14. a) Write an essay on southern blotting and hybridization technique.

(Or)

   b) Write essay on Principles and applications of PCR?

15. a) Explain various cells of immune system and note their functions ?

(Or)

   b) Write an essay on structure of different immune globulins and their functions?

16. a) What are Antigen – Antibody Reactions ?

(Or)

   b) Define Hypersensitivity and write about type – I hypersensitivity ?

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

II B.Sc., Biotechnology Paper – II (At the end of IV Semester)
BIOLOGICAL CHEMISTRY AND MICROBIOLOGY
Model Question Paper –MAR/APR– 2012

Time : 3 hrs   Max . Marks : 75
Note : Draw Diagrams wherever necessary.

SECTION – A

Answer **ALL** of the following Questions.   6 X 2 = 12M

1.SDS   4. Bacteriophage
2.Typhoid   5.Agar
3.Resolving power   6.Transtormations

SECTION – B

Write Short notes on any **THREE** of the following.   3 X 5 = 15M

7. Cyan bacteria   8. Classification of Viruses
9. Inverted Microscope.   10.Bacterial Growth curve.
11.Ultracentrifuge   12. Thin-layer chromatography.

SECTION – C

Answer any **FOUR** of the following.   4 X 12 = 48M

13. a)Write in detail about classification of Microorganisms ?

(or)

   b) Give detail account on Isolation ,Identification and Preservation of
   Microorganisms?
14. a) Write different methods of sterilization techniques ?
                                         (Or)
    b) Give detail account on Bacterial reproduction?

15. a) What is an Electron Microscope? Explain their types with applications ?
                                         (Or)
   b) Write principle of Colorimetry and it's application.
16. a) Give the working principle, procedure and applications of Gel Electrophoresis?
                                         (Or)
    b) What is Radioisotopes and their uses in biology?

GOVERNMENT COLEGE (A), RAJAHMUNDRY
I B.Sc., Biotechnology Module – I (At the end of Core I)
CELL BIOLOGY - Model Question Paper

Time : 3 hrs   Max .
Marks : 75

SECTION – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**

1.Euchromatin   4. DNA Gyrases
2.Nucleoid   5.Nucleotide
3.Cyclins   6.Transformation

SECTION – B

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**

7.Plasmids   8.Structure of Virus
9.Mitosis   10.Theta mechanism of replication.
11.Topoisomerases and their role
   in replication.   12. Prove RNA as Genetic material

SECTION – C

**Answer any *FOUR* of the following choosing at least two Questions
from Part – A & Part – B.**   **4 X 12 = 48M**

PART – A

13. Explain about Ultra structure of Prokaryotic cell.
14. Write about structure of specialized Chromosomes
15. Write an essay on Meiosis and its significance .

PART – B

16. Prove DNA as the genetic material with any two experiments.
17. Explain about Watson and Crick model of DNA structure.
18. Explain about semi conservative model of DNA replication.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

III B.Sc., Biotechnology Paper – IV (At the end of VI Semester)
APPLICATIONS OF BIOTECHNOLOGY
Model Question Paper –MAR/APR – 2012

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

SECTION – A

Answer **ALL** of the following Questions.   6 X 2 = 12M

1. Callus	4. Biogas
2. Auxins	5. Leaching
3. Ti Plasmid	6. Effluent

SECTION – B

Write Short notes on any **THREE** of the following.   3 X 5 = 15M

7.Induction of callus.
8. Microprojectile bombardment.
9.Batch and continuous culture.
10.Bioethanol production.
11.Biofertilizers.
12.Bioinsecticides.

SECTION – C

Answer any **FOUR** of the following.   4 X 12 = 48M

13. a)Give a brief account on plant tissue culture media composition and its sterilization.

(or)
   b)Write an essay on production fo virus free plants.
14. a)Write about Agrobacterium mediated gene transfer technique.
                                    (Or)
     b)Applications of r-DNA technology in agriculture.
15. a)Write an essay on renewable and non-renewable energy resources.
                                    (Or)
    b)Describe the Microbial analysis of Milk, food and water.
16. a)Write an essay on Microbial treatment of Municipal and industrial effluents.
                                    (Or)
     b) Write about Bioremediation.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

II B.Sc., Biotechnology Paper – II (At the end of III Semester)
BIOLOGICAL CHEMISTRY AND MICROBIOLOGY
Model Question Paper –OCT/NOV– 2014

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

SECTION – A

Answer *ALL* of the following Questions   6 X 2 = 12M

1.Lipoproteins   4. Structure of Fructose
2.Cellulose   5.Streptomycine
3.Phospholipids   6.Essential amino acids

SECTION – B

Write Short notes on any *THREE* of the following.   3 X 5 = 15M

7.Structure and Functions of Cholesterol   8.Factors effecting enzymatic
reaction
9. β- Oxidation of fatty acids.   10.Transamination.
11.Explain the structure and properties of Phospholipids.
12. Structure and Biochemical importance of starch.

SECTION – C

 Answer any *FOUR* of the following choosing at least two Questions
 from Part – A & Part – B.   4 X 12 = 48M

PART – A

13. what are Carbohydrates and classify them with examples and write their
importance.
14. Explain in detail about various structural level of protein organization.
15. write an essay on classification of lipids ?.

PART – B

 16. Explain various steps involved in citric acid cycle add a note on ATP synthesis.
 17. What is Mitochondrial Electron Transport chain?
 18. Define Photosynthesis and add a note on light reactions of photosynthesis?.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
III B.Sc., Biotechnology Paper – III (At the end of V Semester)
MOLECULAR BIOLOGY,GENETIC ENGINEERING AND IMMUNOLOGY
Model Question Paper –OCT/NOV– 2014

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

SECTION – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**

1. Gene   4. Promoters
2. Genetic code   5.Denaturation
3. Histones   6.Codon

SECTION – B

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**

7. Single copy sequences
8. Wobble Hypothesis
9. Inhibitors.
10.Satellite DNA.
11.T_M Value
12. Splicing.

SECTION – C

**Answer any *FOUR* of the following choosing at least two Questions
from Part – A & Part – B.**   **4 X 12 = 48M**

PART – A

13. Write an essay on Organization of Nuclear Genome.
14. Give an account on Mitochondrial Genome organization.
15. Write an account on organization of Eukaryotic Genes.

PART – B

16. Write an essay on post transcriptional modifications?
17. Explain Translation process in prokaryotes and what are the steps involved in it?
18. Describe about Lac operon concept in Bacteria ?

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

II B.Sc., Biotechnology Paper – II (At the end of IV Semester)
BIOLOGICAL CHEMISTRY AND MICROBIOLOGY
Model Question Paper –MAR/APR– 2015

Time : 3 hrs   Max . Marks : 75
Note : Draw Diagrams wherever necessary.

SECTION – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**

1.SDS   4. Bacteriophage
2.Typhoid   5.Agar
3.Resolving power   6.Transtormations

SECTION – B

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**

7. Cyanobacteria   8. Classification of Viruses
9. Inverted Microscope.   10.Bacterial Growth curve.
11.Ultracentrifuge   12. Thin-layer chromatography.

SECTION – C

**Answer any *FOUR* of the following choosing at least two Questions
from Part – A & Part – B.**   **4 X 12 = 48M**

PART - A
13. Write in detail about classification of Microorganisms ?

14. Give detail account on Isolation ,Identification and Preservation of
    Microorganisms?
15. Write different methods of sterilization techniques ?

PART - B

16. What is an Electron Microscope? Explain their types with applications ?
17. Give the working principle, procedure and applications of Gel Electrophoresis?
18. What is Radioisotopes and their uses in biology?

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

III B.Sc., Biotechnology Paper – IV (At the end of V Semester)
APPLICATIONS OF BIOTECHNOLOGY
Model Question Paper –OCT/NOV– 2014

Time : 3 hrs   Max . Marks : 75
Note : Draw Diagrams wherever necessary.

SECTION – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**

1. Cell lines   4. Bioethics
2. Gene therapy   5.Interferons
3. Stem cells   6.Pencillin

SECTION – B

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**

7. Culture vessels used for animal cell culture.
8. Cell Disaggregation
9. Stem cells and their applications.
10.Secondary metabolites.
11.Bioreactors.
12. Intellectual property Rights.

SECTION – C

 Answer any *FOUR* of the following choosing at least two Questions
 from Part – A & Part – B.   **4 X 12 = 48M**

PART – A

   13. Write an essay on animal cell culture media preparation and sterilization.
   14. Give a brief account on Invitro Fertilization and embryo transfer technology
   15. Explain about various Gene transfer methods in Animals.

PART – B

   16. Write an essay on Screening, Isolation and Preservation of Microorganisms.
   17. Describe the production of Penicillin.
   18. Write about Production of Monoclonal Antibodies.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
III B.Sc., Biotechnology Paper – III (At the end of VI Semester)
MOLECULAR BIOLOGY, GENETIC ENGINEERING AND IMMUNOLOGY
Model Question Paper –MAR/APR- 2015

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

SECTION – A

Answer *ALL* of the following Questions.   6 X 2 = 12M

1. Ligases   4. Shuttle Vector
2. Cosmid   5. Hapten
3. Precipitation   6. RFLP

SECTION – B
Write Short notes on any *THREE* of the following.   3 X 5 = 15M

7. Identification of cloned genes.
8. DNA finger printing technique.
9. Molecular scissors.
10. ELISA.
11. MHC
12. Features of an Antigen

SECTION – C

Answer any *FOUR* of the following choosing at least two Questions
from Part – A & Part – B.   4 X 12 = 48M

PART - A
13. Write an essay on Enzymes used in gene cloning.
14. Write an essay on southern blotting and hybridization technique.
15. Write essay on Principles and applications of PCR?

PART - B

16. Write an essay on structure of different immune globulins and their functions?
17. What are Antigen – Antibody Reactions ?
18. Define Hypersensitivity and write about type – I hypersensitivity ?

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

III B.Sc., Biotechnology Paper – III (At the end of VI Semester)
MOLECULAR BIOLOGY,GENETIC ENGINEERING AND IMMUNOLOGY
Model Question Paper –MAR/APR- 2015

Time : 3 hrs   Max . Marks : 75
Note : Draw Diagrams wherever necessary.

SECTION – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**

 1. Ligases   4. Shuttle Vector
 2. Cosmid   5.Hapten
 3. Precipitation   6.RFLP

SECTION – B
Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**

 7. Identification of cloned genes.
 8. DNA finger printing technique.
 9. Molecular scissors.
10.ELISA.
11.MHC
12. Features of an Antigen

SECTION – C

 **Answer any *FOUR* of the following choosing at least two Questions
 from Part – A & Part – B.**   **4 X 12 = 48M**

PART - A
 13. Write an essay on Enzymes used in gene cloning.
 14. Write an essay on southern blotting and hybridization technique.
 15. Write essay on Principles and applications of PCR?

PART - B

 16. Write an essay on structure of different immune globulins and their functions?
 17. What are Antigen – Antibody Reactions ?
 18. Define Hypersensitivity and write about type – I hypersensitivity ?

GOVERNMENT COLEGE (A), RAJAHMUNDRY
I B.Sc., Biotechnology Module – I (At the end of Core I)
CELL BIOLOGY - Model Question Paper

Time : 3 hrs   Max . Marks : 75

<u>SECTION – A</u>

Answer ALL the questions   **4 X 10 = 40M**

1.a) Explain about Ultra structure of Prokaryotic cell. (or)

   b) Write about structure of specialized Chromosomes

2. a) Write an essay on Meiosis and its significance (or)

   b) Describe about chloroplast and Endoplasmic reticulum

3. a) Prove DNA as the genetic material with any two experiments.(or)

    b) Explain about Watson and Crick model of DNA structure.

4. a) Explain about semi conservative model of DNA replication. (or)

   b) Explain any three DNA Repair mechanisms

<u>SECTION – B</u>

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**

7.Plasmids	8.Structure of Virus
9.Mitosis	10.Theta mechanism of replication.
11.Topoisomerases and their role in replication.	
	12. Prove RNA as Genetic material
13.Mitochondria	14.structure of chromosome

<u>SECTION – C</u>

Answer *ALL* of the following Questions.   **10 X 2 = 20M**

1.Euchromatin	4. DNA Gyrases
2.Nucleoid	5.Nucleotide
3.Cyclins	6.Transformation
7.Karyokinesis	8.Crossing over
9.capsule	10.chitin

GOVERNMENT COLLEGE (A), RAJAHMUNDRY.
I B.Sc., Biotechnology– MODULE II (At the end of Core-2)
GENETICS and MICROBIOLOGY-   Model Question Paper

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

SECTION – A

Answer ALL the following Questions   4 X 10 = 40M

1. a) Define law of Independent Assortment and explain about Dihybrid cross with example.   (or)
   b) Describe about cytological proof of crossing over.

2. a) Explain about mechanism of sex determination . (or)
   b) write about the modified Dihybrid ratios – 12:3:1, 9:3:4, 9:7

3. a) Give detail account on Isolation ,Identification and Preservation of Microorganisms. (or)
   b) Write different methods of sterilization techniques

4. a) Write in detail about classification of Microorganisms (or)
   b) Briefly describe about Bacterial Reproduction.

SECTION – B
Answer *any FIVE* of the following Questions.   5 X 3 = 15M

5.Pleiotropism   9. Typhoid
6.Epistasis   10.Incomplete dominance
7.Bactriophage   11. Fungal cell
8. Linkage   12. Pure cultures

SECTION – C
Answer ALL the following Questions   10x2=20M

1. Test cross   18. HIV
2. Hemophilia   19. Batch culture
3. Map distance   20. Autoclave
4. Co – dominance   21. cryopreservation
5. Phenocopies   22. Laminar airflow

GOVERNMENT COLLEGE (A), RAJAHMUNDRY.
II B.Sc BIOTECHNOLOGY
MODULE-III BIOLOGICAL CHEMISTRY
CORE - III

Model Question Paper(At the end of Core-III) –OCT/NOV– 2015

Time : 3 hrs   Max . Marks : 75
Note : Draw Diagrams wherever necessary.

SECTION – A
Answer ALL the following Questions   **4 X 10 = 40M**
1.a)what are Carbohydrates and classify them with examples and write their
     importance.   (or)
  b) Explain in detail about various structural level of protein organization.
2.a) write an essay on classification of lipids (or)
   b) Write about kinetics of Enzymes
 3.a)Explain various steps involved in citric acid cycle add a note on ATP
      synthesis. (or)
    b) What is Mitochondrial Electron Transport chain?
 4.a) Define Photosynthesis and add a note on light reactions of photosynthesis?
                    (or)
   b) Describe about catabolism of Phenyl alanine

SECTION – B
 Answer *any FIVE* of the following Questions.   **5 X 3 = 15M**
 5.Structure and Functions of Cholesterol
 6.Factors effecting enzymatic   reaction
 7.β- Oxidation of fatty acids.
 8.Transamination.
 9.Explain the structure and properties of Phospholipids.
10. Structure and Biochemical importance of starch.
11.Glycolysis
12. Deamination
SECTION – C
Answer *ALL* of the following Questions   **10 X 2 = 20M**
13.Lipoproteins   14. Structure of Fructose
15.Cellulose   16.Streptomycine
17.Phospholipids   18.Essential amino acids
19.Gluconeogenesis   20.Decarboxilation
21.Epimers   21.Albinism

Model Question Paper(At the end of Core-IV) –MAR/APR– 2016

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

SECTION – A

Answer *ALL* of the following Questions   4 X 10=40M

1.a)Give a brief account on plant tissue culture media composition and its sterilization.
                                    (or)
   b)Write about Agro bacterium mediated gene transfer technique.
2. a) Applications of r-DNA technology in agriculture. (or)
   b)What is an Electron Microscope? Explain their types with applications ?
3. a) Give the working principle, procedure and applications of Gel Electrophoresis?
                                    (or)
   b) What is Radioisotopes and their uses in biology?
4. a) Describe about Production of Therapeutic proteins (or)
   b) Explain the principle and applications of Ion exchange chromatography

SECTION – B

Write Short notes on any FIVE of the following.   5 X 3 = 15M

 5.Induction of callus.   6. Paper Chromatography
 7.Micro projectile bombardment.   8.Agarose Gel Electrophoresis
 9.Batch and continuous culture.   10. Spectrophotometer
 11. Bioreactor   12. Dialysis

SECTION – C

Answer *ALL* of the following Questions   10 X 2=20M

13. Explant   14. SDS   15. Organogenesis
16. Colorimeter   17. Transgenic Plant   18. Resolving power
19. TLC   20. Centrifugation   21. Ti plasmid
22. Auxins

GENERAL ELECTIVE I
MODULE IV - NURSERY AND GARDENING
Model Question Paper and Blue Print

Time:1$^{1/2}$**hr**   Max.Marks:40

PART-I

Answer any **TWO** questions from the following   2x10=20M

1. Define Nursery and explain its objectives, scope and infrastructure facilities.
2. Write an essay on Vegetative propagation of Plants.
3. Describe about different types of Gardening.
4. Write about cultivation of Tomatoes and Brinjal.

PART-II

Write short notes on any **FOUR** of the following   4x5=20M

5. Seed Dormancy
6. Green House
7. Manuring
8. Management of Pests
9. Storage of Vegetables
10. Seed testing

GENERAL ELECTIVE II
MODULE IV - BIOFERTILIZER TECHNOLOGY
Model Question Paper and Blue Print

Time:1$^{1/2}$**hr**   Max.Marks:40
PART-I

Answer any **TWO** questions from the following   2x10=20M

1. Define Biofertilizer and explain various types of Biofertilizers.
2. Isolation ,identification and culturing on Microbial species.
3. Write about Applications of Biofertilizers.
4. Write an essay on morphological and biochemical characters of Azolla.

PART-II

Write short notes on any **FOUR** of the following   4x5=20M

5. Blue green algae
6. Organic fertilizers
7. Phosphate solubilizers
8. Morphology of Rhizobium
9. Inoculam preparation of Azatobacter
10. Composting of Azolla

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
III B.Sc., Biotechnology Paper – III (At the end of V Semester)
MOLECULAR BIOLOGY,GENETIC ENGINEERING AND IMMUNOLOGY
Model Question Paper –OCT/NOV– 2015

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

SECTION – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**

1. Gene   4. Promoters
2. Genetic code   5.Denaturation
3. Histones   6.Codon

SECTION – B

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**

7. Single copy sequences
8. Wobble Hypothesis
9. Inhibitors.
10.Satellite DNA.
11.T_M Value
12. Splicing.

SECTION – C

Answer any *FOUR* of the following choosing at least two Questions
from Part – A & Part – B.   **4 X 12 = 48M**

PART – A

13. Write an essay on Organization of Nuclear Genome.
14. Give an account on Mitochondrial Genome organization.
15. Write an account on organization of Eukaryotic Genes.

PART – B

16. Write an essay on post transcriptional modifications?
17. Explain Translation process in prokaryotes and what are the steps
     involved in it?
18. Describe about Lac operon concept in Bacteria ?

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
III B.Sc., Biotechnology Paper – IV (At the end of V Semester)
APPLICATIONS OF BIOTECHNOLOGY
Model Question Paper –OCT/NOV– 2015

Time : 3 hrs   Max . Marks : 75
Note : Draw Diagrams wherever necessary.

SECTION – A

Answer *ALL* of the following Questions.   6 X 2 = 12M

1. Cell lines   4. Bioethics
2. Gene therapy   5.Interferons
3. Stem cells   6.Pencillin

SECTION – B

Write Short notes on any *THREE* of the following.   3 X 5 = 15M

7. Culture vessels used for animal cell culture.
8. Cell Disaggregation
9. Stem cells and their applications.
10.Secondary metabolites.
11.Bioreactors.
12. Intellectual property Rights.

SECTION – C

Answer any *FOUR* of the following choosing at least two Questions from Part – A & Part – B.   4 X 12 = 48M

PART – A

13. Write an essay on animal cell culture media preparation and sterilization.
14. Give a brief account on Invitro Fertilization and embryo transfer technology
15. Explain about various Gene transfer methods in Animals.

PART – B

16. Write an essay on Screening, Isolation and Preservation of Microorganisms.
17. Describe the production of Penicillin.
18. Write about Production of Monoclonal Antibodies.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
III B.Sc., Biotechnology Paper – III (At the end of VI Semester)
MOLECULAR BIOLOGY,GENETIC ENGINEERING AND
IMMUNOLOGY
Model Question Paper –MAR/APR- 2016

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

SECTION – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**

 1. Ligases   4. Shuttle Vector
 2. Cosmid   5.Hapten
 3. Precipitation   6.RFLP

SECTION – B

Write Short notes on any *THREE* of the following.   3 X 5 = 15M

 7. Identification of cloned genes.
 8. DNA finger printing technique.
 9. Molecular scissors.
10.ELISA.
11.MHC
12. Features of an Antigen

SECTION – C

Answer any *FOUR* of the following choosing at least two Questions
from Part – A & Part – B.   **4 X 12 = 48M**

PART - A
13. Write an essay on Enzymes used in gene cloning.
14. Write an essay on southern blotting and hybridization technique.
15. Write essay on Principles and applications of PCR?
PART – B

   16. Write an essay on structure of different immune globulins and
                             theirfunctions?
17. What are Antigen – Antibody Reactions ?
18. Define Hypersensitivity and write about type – I hypersensitivity ?

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
III B.Sc., Biotechnology Paper – IV (At the end of VI Semester)
APPLICATIONS OF BIOTECHNOLOGY
Model Question Paper –MAR/APR – 2016

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

SECTION – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**

1. Callus   4. Biogas
2. Auxins   5. Leaching
3. Ti Plasmid   6. Effluent

SECTION – B

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**

7. Induction of callus.
8. Micro projectile bombardment.
9. Batch and continuous culture.
10. Bioethanol production.
11. Biofertilizers.
12. Bioinsecticides.

SECTION – C

Answer any *FOUR* of the following choosing at least two Questions from Part – A & Part – B.   **4 X 12 = 48M**

PART – A

13. Give a brief account on plant tissue culture media composition and its sterilization.
14. Write about Agro bacterium mediated gene transfer technique.
15. Applications of r-DNA technology in agriculture.

PART – B

16. Write an essay on renewable and non-renewable energy resources.
17. Write an essay on Microbial treatment of Municipal and industrial effluents.
18. Write about Bioremediation.

Government College(A) , Rajamahendravaram.
I - B.Sc   ;   Biotechnology ; Semester - 1
BT 101: Microbiology and Cell biology

Time : 3 hrs   Max . Marks : 60
Part- A

Answer any 4 essay questions   4 X 8 = 32M

Note : Draw Diagrams wherever necessary.

1.A. Describe the contributions of Louis Pasteur to microbiology.
                    Or
B. Write in detail about electron microscopy.

2.A. Explain the features of a typical bacterial cell.
                    Or
B. Describe the lytic and lysogenic cycle of virus.

3. A. Discuss the basic nutritional requirements of microbes.
                        Or
B. Describe the various kinds of bacteriological media.

4.A. Write the various physical control methods for microorganisms
                        Or
 B. Describe in detail the structure of eukaryotic cell.

Part -B

Answer any Five short answer Questions   5X4=20 M

5. Numerical aperture   9.synthetic media.
6. Endospore staining   10. Sterilization
7. Plasmids   11. Synaptic transmission.
8. Structure of virus   12. Cytoskeleton

Part -C
Answer all very short answer questions   4X2 = 8M

13. Resolving power   15. Nucleic acids
14. Flagella.   16. Generation time.

Government College(A) , Rajamahendravaram.
B.Sc - I ; Biotechnology ; Semester - 2
Macromolecules : Enzymology And Bioenergetics

-

Time : 3 hrs   Max . Marks : 60

Part- A

Answer All the essay questions.   .   **4 X 8 = 32 M**

Note : Draw Diagrams wherever necessary.

1.A. Describe in detail the structure of DNA.

             Or

   B.Write about the forces stabilizing nucleic acid structures.

2.A. Write the classification of proteins.

             Or

   B.Describe the structure of proteins.

3.A.what are Carbohydrates and classify them with examples and write their   importance.

             Or

   B. Write about the types and structure of lipids.

 4.A.Describe the various types of enzyme inhibition.

                Or

B. Explain the cycle and regulation of glycolysis.

Part-B

Answer any five short answer questions.   **5 X4= 20 M**

5. Chargaff‛s rule.   9. Iodine value.

6. Z-DNA.   10. Heteropolysaccharide

7.General structure of aminoacid.   11. Holoenzyme

8. Peptide bond   12. Redox potential.

 Answer all very short questions   Part -C   4X2=8

13.Hydrogen bond   15. Allosteric site

14. Cytochromes   16. Enthalpy.

Model Question Paper

Government College (A), Rajamahendravaram.
II B.Sc Biotechnology: Module-III
Core- III Biological chemistry

Time : 3 hrs   Max . Marks : 75
Note : Draw Diagrams wherever necessary.

Section- A

Answer ALL the following Questions   **4 X 10 = 40M**

1.a)what are Carbohydrates and classify them with examples and write their
    importance.   (or)
  b) Explain in detail about various structural level of protein organization.
2.a) write an essay on classification of lipids (or)
  b) Write about kinetics of Enzymes
3.a)Explain various steps involved in citric acid cycle add a note on ATP
    synthesis. (or)
  b) What is Mitochondrial Electron Transport chain?
4.a) Define Photosynthesis and add a note on light reactions of photosynthesis?
                      (or)
  b) Describe about catabolism of Phenyl alanine

Section—B

Answer *any FIVE* of the following Questions.   **5 X 3 = 15M**

5.Structure and Functions of Cholesterol
6.Factors effecting enzymatic   reaction
7.β- Oxidation of fatty acids.
8.Transamination.
9.Explain the structure and properties of Phospholipids.
10. Structure and Biochemical importance of starch.
11.Glycolysis
12. Deamination

Section-C

Answer *ALL* of the following Questions   **10 X 2 = 20M**

13.Lipoproteins   14. Structure of Fructose
15.Cellulose   16.Streptomycine
17.Phospholipids   18.Essential amino acids
19.Gluconeogenesis   20.Decarboxilation
21.Epimers   21.Albinism

Time : 3 hrs   Max . Marks : 75

Note : Draw Diagrams wherever necessary.

Section- – A

Answer *ALL* of the following Questions   **4 X 10=40M**

1.a)Give a brief account on plant tissue culture media composition and its sterilization.
                                    (or)
   b)Write about Agro bacterium mediated gene transfer technique.
2. a) Applications of r-DNA technology in agriculture. (or)
   b)What is an Electron Microscope? Explain their types with applications ?
3. a) Give the working principle, procedure and applications of Gel Electrophoresis?
                                    (or)
   b) What is Radioisotopes and their uses in biology?
4. a) Describe about Production of Therapeutic proteins (or)
   b) Explain the principle and applications of Ion exchange chromatography

Section-– B

Write Short notes on any FIVE of the following.   **5 X 3 = 15M**

5.Induction of callus.   6. Paper Chromatography
7.Micro projectile bombardment.   8.Agarose Gel Electrophoresis
9.Batch and continuous culture.   10. Spectrophotometer
11. Bioreactor   12. Dialysis

Section- – C

Answer *ALL* of the following Questions   **10 X 2=20M**

13. Explant   14. SDS   15. Organogenesis
16. Colorimeter   17. Transgenic Plant 18. Resolving power
19. TLC   20. Centrifugation   21. Ti plasmid
22. Auxins

Model Question Paper

Government College (A), Rajamahendravaram.
General Elective

Module IV - Nursery and Gardening

Time:1$^{1/2}$hr   **Max.Marks:50**

Part-I

Answer any **THREE** questions from the following   3x10=30M

1. Define Nursery and explain its objectives, scope and infrastructure facilities.
2. Write an essay on Vegetative propagation of Plants.
3. Describe about different types of Gardening.
4. Write about cultivation of Tomatoes and Brinjal.
5. Describe about the computer applications in landscaping.
6. Write in detail about seed dormancy and methods to break it.

Part-II

Write short notes on any **FOUR** of the following   4x5=20M

7. Seed Dormancy
8. Green House
9. Manuring
10. Management of Pests
11. Storage of Vegetables

Seed testing

Government College (A), Rajamahendravam.
B.Sc -III;   Biotechnology ; Semester-5.
Advanced : Elective - 1 : Animal Biotechnology

Time : 3 hrs

Max . Marks : 75

Note : Draw Diagrams wherever necessary.

Section – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**

1. Cell line   4. Confluency
2. Explant   5. Contact inhibition
3. Stem cell   6.Fertilization

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**

1. Culture vessel
2. Cell Disaggregation
3. Stem cell culture applications
4. Transgenic animals
5.   Microinjection
6. Molecular pharming

Section -– C

Answer any *FOUR* of the following choosing at least two Questions
from Part – A & Part – B.   **4 X 12 = 48M**

Part-A

1. Write the composition , preparation and sterilization of animal cell culture medium.
2. Write an account on establishment and preservation of cell lines
3. Describe invitro fertilization and embryo transfer technology.

Part—B

1. Explain various methods of gene transfer.
2. Write about gene therapy in detail.
3. Write an essay on animal biotechnology.

Model Question Paper

Government College (A), Rajamahendravaram.
III B.Sc., Biotechnology Paper – III; Semester-5
Molecular biology

Time : 3 hrs

Max . Marks : 75

Note : Draw Diagrams wherever necessary.

<u>Section – A</u>

Answer *ALL* of the following Questions.   **6 X 2 = 12M**
1. Gene   4. Promoters
2. Genetic code   5.Denaturation
3. Histones   6.Codon

<u>Section – B</u>

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**
7. Single copy sequences
8. Wobble Hypothesis
9. Inhibitors.
10.Satellite DNA.
11.T_M Value
12. Splicing.

<u>Section -– C</u>

 **Answer any *FOUR* of the following choosing at least two Questions
 from Part – A & Part – B.**   **4 X 12 = 48M**
Part-A

13.   Write an essay on Organization of Nuclear Genome.
14.   Give an account on Mitochondrial Genome organization.
15.   Write an account on organization of Eukaryotic Genes.

Part-– B

16.   Write an essay on post transcriptional modifications?
17.   Explain Translation process in prokaryotes and what are the steps
      involved in it?
18.   Describe about Lac operon concept in Bacteria ?

Model Question Paper

Government College (A), Rajamahendravaram.

III B. SC., Biotechnology; semester-5.

Advanced :Elective - 2 : Industrial Biotechnology

Time : 3 hrs

Max . Marks : 75

Note : Draw Diagrams wherever necessary.

Section – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**
1. Yogurt   4.Biofuel
2. Patent   5.Biosafety
3.Protease   6. Bioreactor

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**
1. Amylase.
2. Primary metabolic product "amino acid"
3. Fermentative production of chemicals.
4. Monoclonal Antibodies.
5. Good Manufacturing Process.
6. Bioethics   **Section -– C**

**Answer any *FOUR* of the following choosing at least two Questions
from Part – A & Part – B.**   **4 X 12 = 48M**

Part-A

1. Write about screening, isolation and preservation of microorganisms.
2. Write about the fermentative production of antibiotic "Penicillin".
3. Write in detail about production of human growth hormone, using animal cells as bioreactors.

Part-– B

1. What is a patent? Write in detail about Intellectual Property Rights.
2. Write the procedure for production of dairy product "cheese".
3. Enumerate principles of fermentation technology.

Model Question Paper

Government College (A), Rajamahendravaram.
III B.Sc., Biotechnology Paper – III : Semester-6
Genetic Engineering and Immunology.

Time : 3 hrs

Max . Marks : 75

Note : Draw Diagrams wherever necessary.

Section – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**

1. Ligases   4. Shuttle Vector
2. Cosmid   5. Hapten
3. Precipitation   6. RFLP

Section – B

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**

7. Identification of cloned genes.
8. DNA finger printing technique.
9. Molecular scissors.
10. ELISA.
11. MHC
12. Features of an Antigen

Section– C

**Answer any *FOUR* of the following choosing at least two Questions
from Part – A & Part – B.**   **4 X 12 = 48M**

Part - A
13. Write an essay on Enzymes used in gene cloning.
14. Write an essay on southern blotting and hybridization technique.
15. Write essay on Principles and applications of PCR.

Part– B

16. Write an essay on structure of different immune globulins and theirfunctions.
17. What are Antigen – Antibody Reactions .
18. Define Hypersensitivity and write about type – I hypersensitivity .

Model Question Paper
Government College (A), Rajamahendravaram.
B.Sc -III;   Biotechnology ; Semester-6.
Skill Based :Elective - 1 : Biostatistics and Bioinformatics

Time : 3 hrs Max .   Marks : 75

Note : Draw Diagrams wherever necessary.

Section – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**

1. Mean   4. Sequence alignment
2. Median   5. Probability
3. Mode   6. Data Base

Section B

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**
   1.   Statistic application in biology
   2. Write about the concept of sampling and sampling distribution.
   3. Write about the concept of test of hypothesis.
   4. Write in detail about correlation and explain various types of correlation.
   5. Write in detail about biological databases.
   6. Write an essay on applications of bioinformatics.

Section –- C

Answer any *FOUR* of the following choosing at least two Questions
from Part – A & Part – B.   4 X 12 = 48M

Part-A

   9. Calculate the mean for individual series 9,7,6,10,12,11.
   10. Calculate probability of getting 2 heads on 3 tosses.
   11. Alpha particles are emitted by radioactive source at the rate of 3 per ever minute on the average. The number of particles is distributed according to poissson distribution. Calculate the probability of getting exactly 5 emissions in one minute. (e = 2.71)

Part—B

   12. Assume the mean height of sorghum varieties to be 68.22 inches with a variance of 10.8 inches. How many varieties in a field of 100 varities would you expect to be over 6 feet tall. Assuming that the height of varieties is normally distributed.
   13. In F2 generation, Mendel obtained 621 tall plants and 187 dwarf plants out of the total of 808. Test whether these two types of plants are in accordance with the Mendelian monohybrid ratio 3:1 or do they deviate from this ratio.
   14. Data retrieval 8.Databank

Model Question Paper
Government College (A), Rajamahendravaram.
B.Sc -III;   Biotechnology ; Semester-6.
Skill Based: Elective - 2 : Environmental Biotechnology

Time : 3 hrs Max .   Marks :
            75

Note : Draw Diagrams wherever necessary.

Section – A

Answer *ALL* of the following Questions.   **6 X 2 = 12M**
1. MBRT   4. Xenobiotics
2. Minimum probable number   5.Gasohol
3.   Botulism   6. Renewable energy source

Section B

Write Short notes on any *THREE* of the following.   **3 X 5 = 15M**

1. Renewable energy sources.
2. Conventional energy .sources
3. Biogas
4. Bioremediation
5. Biopesticide
6. Biofertilizer.

Section -– C

**Answer any *FOUR* of the following choosing at least two Questions
from Part – A & Part – B.**   **4 X
12 = 48M**

Part-A

1. Write about non renewable energy sources.
2. Write about non conventional energy sources "bioethanol" and its impact on environment.
3. Write in detail about microbial analysis of food.

Part—B

4.Describe the treatment of municipal waste.

5. Write about microbial ore leaching

6. Describe the microbial degradation of pesticides

Government College(A) , Rajamahendravaram.
B.Sc -I ; Biotechnology ; Semester - 2
Theory Syllabus– Nov 2017
Course code : BTMMEB -02: Macromolecules, Enzymology And Bioenergetics.

Model Question Paper — Mar / Apr 2018

Time : 3 hrs   Max . Marks : 60

Part- A

Answer All the essay questions.   **5 X 8 = 40M**

Note : Draw Diagrams wherever necessary for both essay and short answers .

1. Describe in detail the structure of DNA.

2. Write an essay on forces stabilizing nucleic acid structures.

3. Write an essay on classification of aminoacids .

4. What are Carbohydrates and classify them with examples and write their   importance.

 5.Describe the various types of enzyme inhibition.

6.Explain the cycle and regulation of glycolysis.

Part-B

Answer any five short answer questions.   **5 X4= 20 M**

7. Chargaff's rule.   8. Z-DNA
9.   General structure of aminoacid   10. Peptide bond
11. Heteropolysaccharide   12. Phospholipid Redox potential
13. Holoenzyme   14.Active site
15. Entropy   16.Structure of ATP