

EA-300101 Seat No. 155

B. Sc. (Sem. V) Examination

December - 2020

FC : English

(Foundation Compulsory)

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

1 Answer in brief : (Any Six)

18

- (1) What mark did Guru Nayak have on his chest ?
- (2) Name two creatures which are extinct in the wild state but survive in zoos.
- (3) Why did Gerald Durrell move around the zoo at midnight ?
- (4) Why were student's mind "crippled" in India ?
- (5) Where does Tagore want God to lead the mind ?
- (6) What does the poet (Frost) say about the owner of the woods ?
- (7) Why does the poet compare his mood to a bird ?
- (8) Where does the poet stop ?
- (9) Why did the astrologer think he had committed a murder ?

(A) Narrate the theme of the lesson Education: Indian and American and discuss in detail your views on the education system. 17

OR

(B) Bring out the patriotic fervor as depicted in the poem Where the Mind is Without Fear.

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[ Contd...

3 (A)

Change the following into indirect speech :  
(Any Six)

(1) Ridhhi said to them, "Let us go to the picnic".

(2) The teacher said, "Fortune favours the brave".

(3) The child said, "What a beautiful garden!"

(4) The employer said to the workmen, "I cannot pay you higher wages".

(5) "Please don't go there", He said.

(6) Sachin said, "Where shall I be this time next year".

(7) He said, "I clean my teeth twice a day".

(B) Fill in the blanks with proper conjunction given below : (Any Six)

(1) \_\_\_\_\_ he watered the plants, they did not grow well.

- (A) While
- (B) Or
- (C) Though
- (D) And

(2) \_\_\_\_\_ you tell me the secret, I shall punish you.

- (A) If
- (B) Though
- (C) However
- (D) Unless

(3) Judy crossed eighty-five years, \_\_\_\_\_ she is quite strong.

- (A) Yet
- (B) both
- (C) Because
- (D) While

(4)

I hear \_\_\_\_\_ out of the bull

- (A) That
- (C) Till

(5) Sit properly

- (A) And
- (C) Or

(6)

not select

- (A) Or
- (C) But

(7)

Ask him never s

- (A) A
- (C) A

(C)

Use the f (Any Six)

- (1) Win
- (2) Wit
- (3) Acc
- (4) Co

- (5) Lc
- (6) SI
- (7) P



irect speech :  
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favours the

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(4) \_\_\_\_\_ I heard the explosion, I rushed  
out of the building.

- (A) That (B) But  
(C) Till (D) When

(5) Sit properly \_\_\_\_\_ leave the class !

- (A) And (B) So that  
(C) Or (D) Until

(6) \_\_\_\_\_ good health and body, he was  
not selected for the army.

- (A) Or (B) In spite of  
(C) But (D) Because

(7) Ask him to speak \_\_\_\_\_ he will  
never stop.

- (A) And (B) But  
(C) As (D) Until

(C) Use the following in meaningful sentences : 6  
(Any Six)

- (1) Wind up  
(2) With a view to  
(3) According to  
(4) Come across  
(5) Look After  
(6) Shut down  
(7) Put off

(A) Translate the following passage into Gujarati or Hindi.

In modern age, all the school going boys and girls should be like Eklavya. When Drona demands Eklavya's thumb as his gurutadaksina he neither hesitates nor denies. We should also practice the same discipline and patience in our school life. Students should give respect and reverence to their elders and teachers. They should practice great discipline and obey the advices and orders of their teachers. A student should be an epitome of courtesy and discipline. Politeness and humbleness should be the identity of his character.

3) Draft a dialogue between a doctor and his patient discussing the latter's sickness.

OR

Draft a dialogue between two friends discussing the effects of cinema on youth.



B. Sc

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Molecular Bass

Time : 2  $\frac{1}{2}$  Hours

(a) Answer

(1)

(2)

(3)

(4)

(5)

(b) Disc

(1)

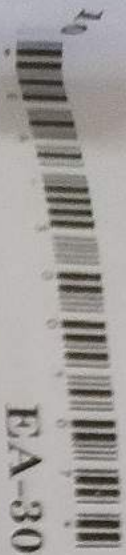
(2)

(3)

(4)

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EA-300107

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

B. Sc. (Sem. V) Examination  
December - 2020

Microbiology : Paper - MI-501

*(Molecular Basis of Microbial Genetics) (Core Course)*

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

1 (a) Answer in short : (any **three**) **6**

- (1) Who did propose 'One Gene-One enzyme' hypothesis ? What it is ?
- (2) Clear the concept of 'Gene' in short.
- (3) How the genetic material is different in Eukaryotes as compared to Prokaryotes.
- (4) Compare Meiosis and Mitosis in short.
- (5) What is Centromeres & Telomeres in Chromosome ?

(b) Discuss in detail : (any **two**) **12**

- (1) Divide the Genetics in various branches based on level of study and application.
- (2) Double helix structure of DNA.
- (3) Explain the mechanism of Mitosis.
- (4) Write about different forms of DNA.

(a) Answer in short : (any **two**) **5**

- (1) Write about 'DNA super coiling'.
- (2) Write down the function of the Enzymes: Topoisomerases, Helicase.
- (3) What is 'SSB Protein' ? Give its role in DNA replication.
- (4) What is 'Oric' ? Give its role in DNA replication.



B. Sc.

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*Techniques in*

Time : 2 <sup>1</sup>/<sub>2</sub> Hours

- (b) Discuss in detail : (any **two**)
- (1) Molecular mechanism of DNA replication.
  - (2) Models of DNA replication.
  - (3) Enzymes involved in DNA replication.
  - (4) Prove that Nature of DNA Replication is Semi conservative.

3 (a) Answer in short : (any **three**)

- (1) What is 'Central Dogma' in biology ?
  - (2) Write down the function of different types of RNAs.
  - (3) Write about : 'RNA polymerase'.
  - (4) What is the role of 'Sigma factor' and 'Promoter' ?
  - (5) Write about : 'Ribosome'.
- (b) Discuss in detail : (any **two**)
- (1) Write a note on 'Genetic codes'.
  - (2) Outline of Transcription.
  - (3) Initiation of protein synthesis in E.coli.
  - (4) Write a note on : Tryptophan operon.

4

(a) Answer in short : (any **two**)

- (1) Enlist the various types of Mutation.
- (2) What is Mutagen ? Give their examples.
- (3) What is 'Non sense' Mutation ?
- (4) What is base substitution ? How many types are there ?
- (5) Enlist the various types of DNA repair mechanism.

(b) Discuss in detail : (any **two**)

- (1) Photo reactivation.
- (2) Explain various type of mutation and their advantages.
- (3) Describe "Save our soul" repair of DNA. Enlist mutagen and discuss mode of action of Ultraviolet light.

12

2

(a)

(b) Answer

- (1) Answer
- (2) Wh
- (3) Dis
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(a)

Answer

- (1) Wh
- (2) Dis
- (3) Dis
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EA-300115

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

**B. Sc. (Sem. V) Examination**

December - 2020

**MT-502 : Microbiology**

*(Techniques in Gene Transfer) (Core Compulsory)*

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

1 (a) Answer any **two** questions from following : 6

- (1) What is Curing ?
- (2) Discuss : Non-replicative transposition.
- (3) Discuss : Electro transformation.
- (4) Define : Jumping Genes.
- (5) Define Plasmid and enlist their types.

(b) Answer any **two** questions from following : 12

- (1) Explain general principal of recombination.
- (2) Write detail note on plasmid properties.
- (3) Explain Ti Plasmid in detail.
- (4) Write a note on Mechanism of Transposition.

(a) Answer any **two** questions from following : 6

- (1) Use of transformation.
- (2) Who proved that DNA and not RNA or protein is the genetic material ?
- (3) What is genetic mapping ?
- (4) Requirements of transformation in bacteria.
- (5) Linked markers.



- (b) Answer any **two** questions from following : 12
- (1) The experiment of Griffith.
  - (2) Write a note on Artificial Transformation.
  - (3) Molecular mechanisms of transformation.
  - (4) Mapping by transformation.

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- 3 (a) Answer any **two** questions from following : 5
- (1) Define : Lysis and Lysogeny.
  - (2) Defective Transducing Phage.
  - (3) Specialized transducing phage as a cloning vehicle.
  - (4) What is Prophage ?
  - (5) What is Linkage ?

- (b) Answer any **two** questions from following : 12
- (1) Mapping by Co-Transduction.
  - (2) U-tube experiments.
  - (3) Specialized Transduction.
  - (4) Generalized Transduction.

- (a) Answer any **two** questions from following : 5
- (1) Define  $F^+$  strain.
  - (2) What is Gene mapping ?
  - (3) Define Conjugation.
  - (4) Define : Horizontal Gene Transfer.
  - (5) Define : Hfr strain.

- (b) Answer any **two** questions from following : 12
- (1) Write a note on Hfr mapping and Hfr collection.
  - (2) Discuss interrupted mating and Hfr entry mapping.
  - (3) Isolation of Hfr strains and  $F'$  plasmids.
  - (4) Hfr Mapping.

Time : 2:30 H

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(1)  
(3)

(b) An  
(1)

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(3)

2 (a) F

(1)  
(3)

(b) A

(1)



## B. Sc. (Sem. V) Examination

December - 2020

Microbiology : MI-503  
(Classical Genetics)

[ Total Marks : 70

Time : 2:30 Hours ]

- 1 (a) Explain any two of the following terms : 6
- (1) Allele
  - (2) Gene
  - (3) Trait
  - (4) Mutation

12

- (b) Answer any two of the following :
- (1) Short Note on Genes and Traits with suitable example.
  - (2) Various Fields of Genetics.
  - (3) Historical timeline in the fields of Genetics.
  - (4) Importance and Role of Genetics in the field of Microbiology.

5

- (a) Explain any two of the following terms :
- (1) Backcross
  - (2) Codominance
  - (3) Inheritance
  - (4) Gamete

12

- (b) Answer any two of the following :
- (1) Explain Mendel's First Law with suitable example.
  - (2) Describe Mendel's Second Law with suitable example.
  - (3) Discuss the Genetics of ABO Blood Grouping System.
  - (4) Describe the Pedigree Analysis and Punnet Square.

3 (a) Explain any two of the following terms :

- (1) Autosome
- (2) Genotype
- (3) Phenotype
- (4) Cytokinesis

(b) Answer any two of the following :

- (1) What is cell cycle ? Explain Meiosis in detail.
- (2) Explain the chromosomal basis of sex determination in *Drosophila melanogaster*.
- (3) Explain in detail the chromosome structure and stability.
- (4) The Cis-Trans Complementation test.

4 (a) Explain any two of the following terms :

- (1) Genetic Distance
- (2) Meiosis
- (3) Genetic Mapping
- (4) Recombination

(b) Answer any two of the following : 12

- (1) Write a note on : Mitotic recombination.
- (2) Write a note on : Tetrads analysis.
- (3) Explain in detail the Crossing over taking place at four strand stage of meiosis.
- (4) Write a note on : Genetic Linkage.



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Time : 3 Hours ]

(a) Answer : (a)

(1) Histor Engine

(2) Give the hi Wilmu

(3) Discus

(4) Defina its co event

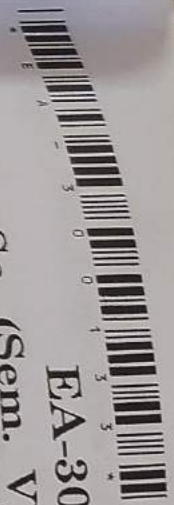
(b) Answer an

(1) Defin

(2) Which

(3) Vho

(4) Vho



EA-300133

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

B. Sc. (Sem. V) Examination  
January - 2021

Microbiology : Paper - MI-504  
(r-DNA Technology)

[ Total Marks : 70

Time : 3 Hours ]

Answer : (any two)

12

(a) Answer : (any two)  
(1) Historical developments in Genetic Engineering.

(2) Give contribution of Paul Berg, Ian Wilmut, Karry Mullis and M. Smith in the history of rDNA technology.

(3) Discuss various applications of PCR.

(4) Define genetic engineering and explain its concept how it differs from *in vivo* events.

(b) Answer any three :

(1) Define clone.

(2) Which was the first recombinant plasmid ?

(3) Who discovered PCR ?

(4) Who do we mean by *In Vivo* and *In Vitro* ?

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2 (a) Answer : (any two)  
(1) Write a short note on Restriction nucleases.

(2) What is homopolymer tail, adaptors and linkers ?

(3) cDNA synthesis.

(4) Insertion and replacement vectors.

(b) Answer : (any three)

(1) What are Cohesive and blunt ends of DNA ?

(2) Define : Plasmid and Cos site.

(3) Function of reverse transcriptases.

(4) What are Transgenic animals/plants ?

3 (a) Answer : (any two)

(1) Write a note on colony hybridization technique.

(2) Site directed mutagenesis.

(3) Gene cloning using Ti plasmids.

(4) Write a short note on cloning vectors.

(b) Answer : (any three)

(1) Define : Oncogenes and tumors.

(2) Who performed the first cloning experiment ?

(3) Introns v/s Exons.

(4) What are palindromic sequences ?

12

(a)

(1)

(2)

(3)

(4)

(b)

Answer

(1)

(2)

(3)

(a) Discuss the application of Genetic Engineering in (any two) fields.

- (1) Animal and Plant improvement.
- (2) Treatment of Genetic disorders and diagnostics.
- (3) Pollution control
- (4) Industry

(b) Answer : (any two)

4

(1) NiF genes

(2) Define : Monoclonal antibodies.

(3) What is gene therapy ?

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EA-300145

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

**B. Sc. (Sem. V) Examination**

January - 2021

**Microbiology**

*(Subject Elective) (Bioinformatics)*

Time : Hours]

[Total Marks : 50

1 Define or Explain any four of the following terms : 12

- (a) Algorithm.
- (b) Give full form of NCBI, EMBL and DDBJ.
- (c) Bioinformatics.
- (d) Sequence Alignment
- (e) Identity.
- (f) Primary Database.

2 Answer any two of the following : 13

- (a) Write a short note on basic computing.
- (b) Write in detail about Database and its use.
- (c) Discuss scope of bioinformatics.
- (d) Mention four applications of bioinformatics.

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1 1 Contd...



- 3 Answer any two of the following :
- (a) Write a short note on components of bioinformatics.
  - (b) What is sequence analysis ? Give a brief overview.
  - (c) Write a short note on BLAST.
  - (d) Write a short note on areas of bioinformatics.

4 Answer any two of the following :

- (a) Giving two examples, write about tools of bioinformatics.
- (b) Discuss in detail : FASTA.
- (c) Compare and contrast Nucleic acid and Protein Database.
- (d) Giving examples, explain the terms similarity and homology.