

CENTRAL UNIVERSITY OF HARYANA

Term End Examinations, June 2018

Programme : MSc Microbiology

Semester : II

Course Title : Microbial Genetics

Marks : 70

Course Code: SIAL MB 01 02 07 C

Time : 3 hours

Instructions:

1. Question no. 1 has seven sub parts and students need to answer any four. Each sub part carries three and half Marks.

2. Question no. 2 to 5 have three sub parts and students need to answer any two sub parts of each question. Each sub part carries seven marks.

Question No. 1.

(4X3.5=14)

Write a short note on any four of the following

- Alleles and Genes
- Bruce Ames's test for mutagen detection
- Riboswitch in bacterial kingdom
- Transposon and their use in genetics research
- Ti plasmid and their application in plant biotechnology
- Synthetic genome and Genome transplantation
- Plasmids and Extrachromosomal DNA

Question No. 2.

(2X7=14)

- Explain Mendel's law of segregation and law of independent assortment in light of the use of monohybrid and dihybrid crosses.
- What is Genome? Discuss the salient features of prokaryotic, bacterial and eukaryote genome and its organization.
- Graphically explain the sequence of phases of meiosis.

Question No. 3.

(2X7=14)

- What is a point mutation and how that may lead to missense, nonsense and silent mutations? In base substitution in DNA what are transition and transversion? Explain frameshift mutations that may arise from insertion or deletion.
- What is an induced mutation? Name any 6 agents (physical or chemical) that can induce mutation along with their mechanism of action.
- What is DNA repair system? Briefly explain base excision repair and mismatch repair.

Question No. 4.

(2X7=14)

- In tetrad analysis, what are TT, PD and NPD? A cross $ab \times AB$ between two yeast strains produces the following unordered tetrads: PD=48, NPD=12, TT=24. Are the genes linked? If so determine the distance between them.
- What is an Operon? Explain positive and negative control of inducible operon/s with appropriate example/s of Inducible operon.

c) Describe the state of the F factor in an Hfr, F⁺, F' and F⁻ derivative of *E. coli* strain.
Five Hfr strains donate the following markers, shown in the order presented below:

Hfr1: F G H C Z

Hfr2: D L T B J

Hfr3: G F S N V

Hfr4: V K D L T

Hfr5: B J R Z C

All these Hfr strains are derived from the same F⁺ strain. Find out the order of these genetic markers on the F factor?

Question No. 5.

(2X7=14)

- Lambda phage can choose between lytic and lysogenic path during its life inside a host bacterium. Elaborate on how this decision is made by lambda phage inside the host.
- What is DNA cloning? Describe how blue-white selection based cloning are done and the advantage of blue-white selection cloning.
- What is gene fine structure mapping? Explain how Seymour Benzer's work demonstrated that genes are divisible and are not a single point on a chromosome.

CENTRAL UNIVERSITY OF HARYANA

Term End Examinations May /June 2018

Programme: Microbiology
Semester: II
Course Title: Food and Dairy Microbiology
Course Code: SIAL MB 01 02 06 C

Session: 2017-18
Max. Time: 3 Hours
Max. Marks: 70

Instructions:

1. Question no. 1 has seven sub parts and students need to answer any four. Each sub part carries three and half Marks.
2. Question no. 2 to 5 have three sub parts and students need to answer any two sub parts of each question. Each sub part carries seven marks.

Question No. 1.

(4X3.5=14)

- a) What is the difference between food infection and food intoxication? Describe briefly by giving example.
- b) What is the mode of action of ethylene oxide and SO₂ to kill microorganism.
- c) Define bacteriocin. Illustrate their role in food bio-preservation.
- d) What are the components of starter culture used for the preparation of yogurt? Describe their specific role.
- e) Write a short note on microbial spoilage of canned foods.
- f) What is listeriosis? Which section of human population is most sensitive to *Listeria* infection?
- g) Illustrate briefly the steps involved in microbial production of Sauerkraut.

Question No. 2.

(2X7=14)

- a) Describe the various intrinsic and extrinsic factors that affect the survival of microorganisms in foods.
- b) What are the sources of contamination of milk? Write briefly about the spoilage of milk
- c) How food is preserved by physical methods like irradiation, hydrostatic pressure and high voltage pulse? Elaborate.

Question No. 3.

(2X7=14)

- a) Describe the various methods of preservation of food by chemical methods.
- b) What are the indices of food sanitary quality? Elaborate.
- c) What do you understand by HACCP? Describe its various components.

Question No. 4.

(2X7=14)

- a) What are the different steps involved in cheese preparation? Illustrate different types of cheeses.
- b) Define starter culture. Describe their importance in preparation of various dairy products.
- c) Define probiotics. How they are beneficial for humans? Enlist commercially available probiotics in India.

Question No. 5.

(2X7=14)

- a) Describe the etiology and symptoms of typhoid fever. What are the preventive measures to control food borne salmonellosis?
- b) Elaborate the various recent methods for detection of food-borne pathogens.
- c) Elaborate food intoxication by exemplifying Staphylococcal food poisoning and botulism.

CENTRAL UNIVERSITY OF HARYANA

Term End Examinations, May 2018

Programme : MSc Microbiology

Semester : II

Course Title : Virology

Course Code : SIAL MB 01 02 05 C

Session: 2018-19

Max. Time: 3 Hours

Max. Marks : 70

Note: Question no. 1 has seven sub parts and students need to answer any four. Each sub part carries three and half Marks. Question no. 2 to 5 has three sub parts and students need to answer any two sub parts of each question. Each sub part carries seven marks.
Make diagram wherever necessary.

Question 1: Briefly explain about the following: (4X3.5=14)

1. Phage Therapy
2. Cytopahtic effects
3. Types of oncogenic DNA and RNA viruses.
4. Antiviral compounds
5. Satellite Viruses
6. Segmented & Non- Segmented genomes.
7. Largest and smallest virus
8. Viral vectors

Question 2 (2X7=14)

- a:** Explain about isolation, purification and cultivation of plant & animal viruses?
b: Discuss about viral taxonomy and explain about classification and nomenclature of different group of animal and plant viruses?
c: Compare and contrast viroids, virusoids, and prions?

Question 3 (2X7=14)

- a:** Define bacteriophages and discuss about diversity and classification of bacteriophages?
b: Differentiate between lytic and lysogenic cycle of phages and discuss one step multiplication curve?
c: Describe about early and late proteins expression during viral infection?

Question 4 (2X7=14)

- a:** Discuss about the viral entry in the host cell and also explain about assembly, maturation and release of virus?
b: Briefly discuss about Baltimore classification; write about replication of different classes of viral genomes as per Baltimore's classification?
c: Discuss and explain with examples about various modes of transmission of plant and animal viruses?

Question 5 (2X7=14)

- a:** What are Interferon's, explain their mechanism and clinical applications?
b: Explain briefly emerging infections viral diseases with special reference to Ebola, dengue & Chikungunya.
c: Define viral pathogenesis and what are the different factors involved in viral pathogenesis?

CENTRAL UNIVERSITY OF HARYANA

Term End Examinations, May 2018

Programme : M.Sc Microbiology
Semester : II
Course Title : Mycology and Phycology
Course Code : SIAL MB 01 02 01 DCEC

Session: 2017-18
Max. Time: 3 Hours
Max. Marks : 70

Note: There are **total five questions** in this question paper and all are **compulsory**. Each Question carries **Fourteen Marks**.

Question no.1 has **seven sub parts** and students need to answer all. Each sub part carries **two Marks**.

Question No. 1.

(7X2=14)

- a. Uniseriate and Multiseriate filament thallus in algae.
- b. Differentiate between Spermatization and somatogamy mode of reproduction.
- c. Describe perithecia in Ascomycota.
- d. Describe Clamps and crozier formation in Basidiomycota.
- e. Differentiate Heteromeric and homomeric Lichens.
- f. Write a short note on heterothallism.
- g. Difference between Mycoses and Mycotoxicoses.

Note: Question number **Two to Five** have three sub parts and students need to answer **any two sub part** of each question. Each sub part carries **seven marks**.

Question No. 2

(2X7=14)

- a. Write a detailed note on reproduction in fungi
- b. Discuss various modes of nutrition in fungi.
- c. Briefly explain the cellular organization of fungal cells along with recent classification of fungi.

Question No.3

(2X7=14)

- a. Describe different types of ascocarp in Ascomycota with suitable examples and diagram
- b. Classify and write the economic importance of Neocallimastix and Ascomycota
- c. Describe and illustrate basidium and basidiospore formation in Basidiomycota

Question No.4

(2X7=14)

- a. Describe types of mycorrhizal fungi with suitable examples and describe the benefit of endomycorrhiza as symbiont in detail
- b. Describe the thallus structure and important characteristics of filamentous algae with suitable examples and diagrams.
- c. Describe the role of algae in bioremediation and environmental sustainability.

Question No.5

(2x7=14)

- a. Explain in detail the fungal metabolites and their role in food and agriculture
- b. Describe the role of fungi in deterioration of biomolecules and biomaterials.
- c. Write short note on the following
 1. Biocontrol agents.
 2. Algal Pigments.

