SH-V/MCB-502/C-12/19

B.Sc. 5th Semester (Honours) Examination, 2019-20

MICROBIOLOGY

Course ID : 52212 **Course Code : SH/MCB/502/C-12**

Course Title : Immunology

Time: 1 Hour 15 Minutes **Full Marks: 25**

The figures in the right hand side margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* of the following questions: 1×5=5

(a) What is Hapten?

(b) What do you mean by opsonization?

(c) What is APC?

(d) What is NK cell?

(e) What is interferon?

(f) Name the antibody produced during primary and secondary immuno response.

(g) Write the contribution of Robert-Koch in immunology.

(h) Give one example of artificial passive immunity.

2. Answer *any two* of the following questions: 5×2=10

(a) What is MHC? Write the function of MHC-I and MHC-II. 1+4=5

(b) Write short note on ELISA.

(c) Outline briefly three pathways of complement-activation.

(d) Describe the process of Monoclonal antibody production. What are its uses? 3+2=5

3. Answer *any one* question: 10×1=10

(a) Describe with diagram the structure of a typical antibody. Describe the proteolytic cleavage of antibody. 7+3=10

(b) Write schematically the different components of immuno system. What is the difference between Humoral and cell mediated immunity? What is agglutination and precipitation?

4+3+3=10

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SH-V/MCB-503/DSE-1/19

B.Sc. 5th Semester (Honours) Examination, 2019-20

MICROBIOLOGY

Course ID : 52216 **Course Code : SH/MCB/503/DSE-1**

Course Title : Bio Informatics

Time: 1 Hour 15 Minutes **Full Marks: 25**

The figures in the right hand side margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* of the following questions: 1×5=5

(a) What is domain?

(b) Expand RDBMS.

(c) Name two data submission tools used in bio informatics.

(d) What do you mean by data integration?

(e) Distinguish between scoring matrics and series matrics.

(f) Name one software used for MSA linked with EMBL.

(g) Mention two criteria to be a good biological database.

(h) What do you mean by molecular phylogeny?

2. Answer *any two* of the following questions: 5×2=10

(a) Define bio informatics? What are the branches of bio informatics? Write about the significance of bio informatics in Microbiology. 1+1+3=5

(b) What is sequence alignment? Distinguish between global and local alignment. Differentiate PAM and BLOSUM. 2+1+2=5

(c) What is the principle of 2D-gel electrophoresis? Write a short note on Gene Bank. 2+3=5

(d) What is CADD? What are the basis of molecular drug design? Name one software by which drug designing is done? Expand BLAST. 1+2+1+1=5

3. Answer *any one* question: 10×1=10

(a) Define phylogenetic tree. Write a short note on any two methods of phylogenetic tree construction. Differentiate between cladogram and dendogram. 2+(3+3)+2=10

(b) What is Ramachandran plot? What is its significance? How do you predict the 3D structure of proteins by homology modelling? 2+2+6=10

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SH-V/MCB-503/DSE-1(P)/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

MICROBIOLOGY

Course ID : 52226 **Course Code : SH/MCB/503/DSE-1(P)**

Course Title : Bioinformatics

Time: 2 Hours **Full Marks: 15**

The figures in the right hand side margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Retrive the protein sequences from suitable database in FASTA format using supplied accession number and mention the following information retrieved by you. 4

Organism name, source, name of the problem and number of amino acids.

[Workout-2, Result-2]

2. Make a BLAST/Pair wise sequence alignment analysis using supplied accession number(s) and write the name of the two most similar protein/nucleotide sequence with their accession number, degree of similarity and number of residue match or mismatched. 6

[Principle-2, Workout-2, Result-2]

3. Laboratory Note Book. 2

4. Viva-voce. 3

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SH-V/MCB-504/DSE-2(PI)/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

MICROBIOLOGY

Course ID : 52227 **Course Code : SH/MCB/504/DSE-2**

Course Title : Dissertation work with Seminar

Instructions to the examiners.

Followings are the instructions to examiners for evaluation of dissertation work by the students.

1. Dissertation works (hard and soft copy) performed by student and guided by teacher are to be submitted before exam schedule.

2. The works are to be evaluated by the examiners (both by external and internal) under the following headings:
   (a) Content of Topic — 20
   (b) Presentation — 15
   (c) Interaction — 05
   Total = 40

3. Hard copy and soft copy should be preserved in centre of exam until the publication of result.

4. Marks given by the examiners in OMR sheets and signed by examiners will have to be submitted to the controller of Examination in sealed packet within seven days after completion of examination.

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SH-V/MCB-501/C-11/19

B.Sc. 5th Semester (Honours) Examination, 2019-20

MICROBIOLOGY

Course ID : 52211 **Course Code : SH/MCB/501/C-11**

Course Title : Industrial Microbiology

Time: 1 Hour 15 Minutes **Full Marks: 25**

The figures in the right hand side margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* questions out of eight questions: 1×5=5

(a) Define industrial microbiology.

(b) What do you mean microbial strain?

(c) Write name of the enzymes to produce corn steep liquor.

(d) What is the importance of fed batch culture?

(e) How foaming is controlled in a fermentor?

(f) Name a microbial source that is predominantly used for the production of Vitamin B_{12}.

(g) Give some examples of application of yeast.

(h) What are the merits of spray drying?

2. Answer *any two* questions out of four questions: 5×2=10

(a) How will you isolate an antibiotic producing bacteria? What is bioreactor? 3+2=5

(b) Why cells are disrupted? Write the procedure of cell disruption. 2+3=5

(c) Write the sources of microbial proteases and their industrial importance. 2+3=5

(d) What are the different process of enzyme immobilization? Why enzymes are immobilized? 3+2=5

3. Answer *any one* question: 10×1=10

(a) How pH, temperature, dissolved oxygen and aeration can be mentained within a fermentor?

(b) Describe the brewing process. Write the importance of ethanol. 7+3=10

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SH-V/MCB-501/C-11(P)/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

MICROBIOLOGY

Course ID : 52221 **Course Code : SH/MCB/501/C-11(P)**

Course Title : Industrial Microbiology

Time: 2 Hours **Full Marks: 15**

The figures in the right hand side margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Estimate the activity of the enzyme amylase of the given sample. 5
[Principle: 2, Performance: 1, Comment 2.]

2. Demonstrate different parts of a fermenter with the function of each. 2

3. Tour report. 2

4. Laboratory records. 2

5. Viva-Voce. 3

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SH-V/MCB-501/C-11(PI)/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

MICROBIOLOGY

Course ID : 52221 Course Code : SH/MCB/501/C-11(PI)

Instructions to the examiners.

1. Two concentrations of the enzyme solution shall be given alternately to the candidate of each batch and activity will be measured through DNS method using starch as substrate. A standard glucose carve will be given where OD values are plotted against known concentration of glucose.

[Principle: 2, Performance: 1, Comments: 2.] 5

2. Each candidate will be asked to demonstrate the whole parts of a fermenter. A photograph or picture may be given.

3. Tour report shall be written scientifically having the knowledge on microbial techniques. 2

4. Laboratory notebook shall be properly done and credit shall be given to those records where the signature of teachers will be found in proper date wise order. 2

5. A candidate shall be asked at least 5 questions. 3

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