

3. Write notes on the following : 5+5
- (a) Difference between scanning tunnelling microscopy (STM) and transmission electron microscope (TEM)?
 - (b) Micromotility meter.
4. What do you understand by pH? Describe different types of pH-meter and their uses. 10
5. Write short notes on the following: 5+5
- (a) Laws of absorption
 - (b) Emission spectroscopy
6. What is fluorimetry? Explain the basic instruments used for fluorescent microscopy. 10
7. Write short notes on the following: 5+5
- (a) Osmotic absorption
 - (b) Principle and working of an autoclave

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8. What is enrichment? Explain biological & chemical techniques for microbial culture 10

3490/3

A (Printed Pages 3)
(20622) Roll No.
B.Sc.(Micro.)-I Year

3490

B.Sc. (Microbiology) Examination,

June-2022

INSTRUMENTATION AND CULTURE

TECHNIQUES

(B-107)

[B.Sc. (Micro.)]

Time : Three Hours] [Maximum Marks : 50

Note : Attempt any **five** questions. All
questions carry equal marks.

1. Explain the principle and applications of
the phase contrast microscope. 10
2. Give a detail account of the requirements
to prepare a standard microbial culture
lab. 10

P.T.O.

3. What do you understand by spectroscopy ? Explain principle and advantages of emission spectroscopy. 10
4. Write short notes on the following :
(a) Wave theory of electromagnetic radiation
(b) Explain the use of high resolution manometry and impedance pH manometry 5.5
5. Explain principles of polarography. What feature of polarography sets it apart from other electroanalytical techniques ? 10
6. Write short notes on the following :
(a) Electromagnetic radiation
(b) Colorimetry 5.5
7. Explain the principle, methodology and applications of density gradient centrifugation. 10
8. What do you understand by culture ? Explain different types of culture media used in microbiology. 10

NA-321

(2)

2. Write a detailed note on the principle and laws of absorption. Draw a ray diagram of double beam spectro photometry.
3. What is centrifugation? Can we use it to fractionate eukaryotic cell organelles. If yes explain the procedure.
4. What is sterilization? Describe various chemical agents used for sterilization.
5. Write a detailed note on isolation, identification of common bacteria.
6. Why do we need to preserve microbes?
Describe various methods used.

3490/2

7. What is x-ray crystallography? Describe various steps & principle involved in x-ray crystallography.
8. Write a note on any **two** :
(a) Differential media
(b) Densitometry
(c) Confocal microscopy

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(20519)

Total Questions : 8]

Roll No. R180979131031

[Printed Pages : 2

3490

B.Sc. (Micro.) Ist Year Examination,
May-2019

INSTRUMENTATION AND
CULTURE TECH.

(B-107)

[B.Sc. (Micro.)]

Time : 3 Hrs.]

[M.M. : 50]

Note :- Attempt any **five** questions. All questions carry equal marks.

1. Explain STM (Scanning Tunnelling Microscopy). What is the difference between scanning electron microscopy (SEM) and transmission electron microscope (TEM) ? 10
2. Write short notes on the following :
 - (a) Advantages and limitations of phase contrast microscopy.
 - (b) Principles of simple and electron microscopy. 5,5

NA-321

(1)

Turn Over

D

(20524)

(Printed Pages 3)

Roll No.

B.Sc. (Micro.)-I Year

3490

B.Sc. (Microbiology)
Examination, May-2024

INSTRUMENTATION AND CULTURE

TECHNIQUES

(B-107)

[B.Sc. (Micro.)]

Time : Three Hours] **[Maximum Marks : 50]**

Note : Attempt any **five** questions. **All**

questions carry equal marks.

1. What do you mean by 'Resolving Power' of a microscope. How TEM differ from bright field microscope explain.

P.T.O.

3. Explain single beam and double -beam infrared spectrophotometer and their applications. 10

4. Write short notes on the following : 2.5×4=10

- (i) Elution techniques
- (ii) Chromatogram
- (iii) Wave theory of electro magnetic radiation.
- (iv) Titration curve for an amino-acid.

5. (i) Why do we obtain steady increase rather than a series of stepwise increase in the number of cells at the log phase of bacterial culture? Explain.
(ii) What is enrichment? Explain use of inhibitory substances for enrichment.

3490/2

6. Describe the common culture media used for microbial culture. How will you make the choice of medium and prepare it in the laboratory? 10

7. Describe the techniques used for Isolation of single cell of fungi from a mixed culture. 10

8. (i) What is the unique feature of polarography which separates it from other electro analytical techniques? 5
(ii) Sketch a polarogram and label two important details of the polarographic wave on your diagram. 5

3490/3

2. What do you mean by spectro photometry? Describe the working & principle of spectro photometer.

3. What is Centrifugation? Describe in detail its applications in biological science.

4. How industrial sterilization differ from microbiological sterilization? Describe various physical agents used for sterilization.

5. What do you mean by 'enrichment'? Explain with suitable example.

6. What do you mean by preservation of microbes? Describe various methods used for the preservation of microbes.

3490/2

7. What is X-ray crystallography? Describe its various steps and applications in life science.

8. Write a detailed assay on SEM.

3490/3

N (Printed Pages 3)
(20517) Roll No.....

B.Sc.(Micro.)-I Year

3490

B.Sc. (Micro.) Examination, May- 2017

Instrumentation and Culture Tech.

(B-107)

Time : Three Hours] Maximum Marks : 50

Note : Attempt any **five** questions. All questions carry equal marks.

1. Explain the principle, instrumentation and applications of the phase contrast microscope. 10
2. What is buffer solution? Explain the properties of a good buffer system. 10

P.T.O.

D (Printed Pages 3)
(21223) Roll No.
B.Sc.(Micro.) - I Year

3490

**B.Sc. (Microbiology) Back-Paper
Examination, Dec.-2023**

**INSTRUMENTATION AND CULTURE
TECHNIQUES**

(B-107)

[B.Sc.(Micro.)]

Time : Three Hours] [Maximum Marks : 50

Note : Attempt any **five** questions. All questions carry equal marks.

1. (a) Why we use immersion oil for 100x objective in bright field microscopy.
(b) What is resolving power of a microscope? Describe the factors on which it depends.

P.T.O.