

M.Sc. MICROBIOLOGY
FIRST SEMESTER (SPECIAL REPEAT)
BIOINSTRUMENTATION
MMB-103
[USE OMR SHEET FOR OBJECTIVE PART]

SET
A

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

(Objective)

Choose the correct answer from the following:

1 × 20 = 20

- Which of the following acts as ionizing gas in Geiger Muller counter?
 - Alcohol
 - Krypton
 - Argon gas
 - Hydrogen
- In which of the following type of paper, chromatography does the mobile phase move horizontally over a circular sheet of paper?
 - Ascending paper chromatography
 - Radial paper chromatography
 - Descending paper chromatography
 - Ascending - descending
- The speed of migration of ions in an electric field depends on:
 - Magnitude of charge and mass of molecules
 - Magnitude of charge and shape of molecules
 - Shape and size of molecules
 - Magnitude of charge, shape and mass of molecules
- The most common type of gel used for DNA separation is:
 - Agar
 - Polyacrylamide
 - Agarose
 - All of them
- The thin wire at the cathode of G.M tube acts as:
 - Cathode
 - Neutral
 - Anode
 - None
- Chloroform fraction is eluted from the column by passing chloroform through the column which acts as.....
 - Eluter
 - Elution
 - Eluant
 - None
- What does the electrophoresis apparatus consist of?
 - Gel, buffer chamber and fire pack
 - Buffer chamber and electrophoresis unit
 - Electrophoresis unit and gel separator
 - Power pack and electrophoresis unit
- When is electrophoresis not used?
 - Separation of Proteins
 - Separation of amino acids
 - Separation of lipids
 - Separation of nucleic acids
- Dose equivalent is measured in:
 - Becquerel
 - Curie
 - Sievert
 - Joule

10. Which technique separates charged particle using electric field?
a. Hydrolysis
b. Electrophoresis
c. Protein synthesis
d. Protein denaturing
11. The principle on which thin layer chromatography is based is that the.....
a. Different compounds are absorbed on an adsorbent to different degrees
b. Different compounds are absorbed on an adsorbent to same degrees
c. Different compounds are adsorbed on an adsorbent to different degrees
d. None
12. The amount of radiation that the cells absorb is measured in:
a. Curie
b. Gray
c. Joule
d. Becqueral
13. Properties in which isotopes differ are:
a. Chemical
b. Physical
c. Electrical
d. Mechanical
14. The chromaplate or thin layer chromatography plate is made up of.....
a. Glass
b. Fibre
c. Wood
d. Metal
15. The most advanced form of centrifuge is:
a. High speed centrifuge
b. Low speed centrifuge
c. Ultracentrifuge
d. Table top centrifuge
16. In Column chromatography, the stationary phase is made of..... and the mobile phase is made of.....
a. Solid, liquid
b. Liquid, gas
c. Liquid, liquid
d. Solid, gas
17. The SI unit of Radioactivity is:
a. Joule
b. Curie
c. Becquerel
d. Gray
18. The technique of electrophoresis, for the separation of charged molecules was developed by:
a. Tswett
b. Svedberg
c. Tisekius
d. Sanger
19. In electrophoresis, DNA will migrate towards:
a. Cathode
b. Anode
c. Both 'a' and 'b'
d. None of them
20. In SDS-PAGE, separation is based on:
a. Molecular weight
b. Shape
c. Charge
d. All of them

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(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. Define Radioisotopes. What is the SI unit of radioactivity? Write a note on the biological applications of Radioisotopes. 10
2. Explain the instrumentation of a UV-VIS spectrophotometer. Differentiate between a single beam and a double beam spectrophotometer 10
3. What is centrifugation? What is the principle of centrifugation? Write a note on the types of centrifuge based on their maximum attainable speed. 10
4. What is Thin layer chromatography? Describe its principle and also write a note on the applications of thin layer chromatography. 4+2+4=10
5. Define the following with examples: 2.5×4=10
 - a) Buffers
 - b) Acids
 - c) Bases
 - d) pH
6. What is cell disruption? Describe the methods for cell disruption. 10
7. What is the Geiger Muller Counter? Describe its principle with appropriate diagrams. 10
8. What is Agarose Gel Electrophoresis? What are factors affecting the migration of the particles in agarose gel electrophoresis. 4+6=10

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