2½ Hrs Marks 75

structions :

1) Draw diagrams wherever necessary.
2) All questions are compulsory.
3) Figures on the right indicate marks.

1 A) Answer the following questions in one sentence. (Any 4) 8

1) Define Diffusion.
2) How is viscosity affected by temperature ?
3) Define osmosis.
4) What is the relation of concentration and rate of diffusion ?
5) Which phenomenon is responsible for unequal distribution of charges ?
6) Give equation of Fick's law.
7) What is osmotic pressure ?
8) Why is cell membrane a semi permeable membrane ?

B) Answer the following in brief. (Any 2) 6

1) What is Mole ? Explain Molarity.
2) Explain Diffusion coefficient.
3) Explain Osmosis with diagram.
4) What are colloidal solutions ? List its types.

C) Answer the following in detail. (Any 1) 6

1) Describe the methods used for measurement of viscosity.
2) Explain Donan's Equilibrium with example.

2 A) Answer the following questions in one sentence. (Any 4) 8

1) What is a section ?
2) What is laser capture microdissection ?
3) State the use of trypsin in cell culture.
4) What is Hypotonic solution ?
5) What is Biochemical investigation ?
6) Explain the technique used for indirect cell counting.
7) What is soiid shear ?
8) State the use of serum in cell culture medium.

B) Answer the following. (Any 2) 6

1) Write a short note on Yeast as a model organism.
2) Describe Manual method of cell counting.
3) Explain the use of Arabidopsis thaliana as an experimental model.
4) State the significance of paraffin wax in tissue studies.

C) Answer the following in detail. (Any 1) 6

1) Give an account of FACS.
2) Justify, E-Coil is an ideal model for studying many fundamental aspects of biochemistry and molecular biology.

A) Answer the following in one sentence. (Any 4) 8

1) What is the source of light in Bright field microscopy ?
2) What is a Barrier filter ?
3) What is the source of light in fluorescence microscopy ?
4) What is SEM ?
5) What is the function of Coarse Focus Knob ?
6) Which objectives are known as dry objectives ?
7) What is the function of an eyepiece ?
8) What are fluorochromes ?

P.T.O.

B) Answer the following in brief. (Any 2)

1) Draw the ray diagram for light microscope.
2) Draw the ray diagram for SEM.
3) Advantages of Fluoroscence microscopy.
4) Advantages of phase contrast microscopy.

C) Answer the following in detail. (Any 1)

1) Describe the working of Fluorescence microscope.
2) Describe the working of TEM.

Q.4 **A) Write short note on : (Any 1)**

1) Osmoregulation 2) Role of Bile salt in digestion of lipids.

B) Match the following. (Any 3)

A	B
1) Diffusion pressure	a) Donan equilibrium
2) Osmosis	b) Force generated by diffusion
3) Colloids	c) Particles less than a micron
4) Viscosity	d) Pressure required to stop Osmosis
5) Osmotic pressure	e) Movement of solvent
6) Dialysis	f) Shear force

C) Explain the following. (Any 1)

1) Liquid shear. 2) Chemical Permeabilisation

D) Fill in the blanks. (Any 3)

1) In a _____ , cells are agitated in suspension with small abrasive particles.
(Solid shear / Ball mill / Liquid shear)
2) _____ is used to separate celular components on the basis of their buoyant density.
(Ultracentrifugation / Density gradent centrifugation / Isocrasic separation)
3) Cell cultures prepared directly from the tissues of an organism are called as _____ .
(Secondary culture / Primary culture / Organ culture)
4) The cells of _____ have the ability to aggregate into multicellular structures.
(E.coli / Yeast / Dictyostelium)
5) _____ is used as a fixative in histology.
(Sarine / Formaldehyde / Serum)
6) _____ is used as a separation medium in density gradient centrifugation.
(Glucose / Sucrose / Fructose)

E) Write short notes on : (Any 1)

1) Applications of light microscope.
2) Applications of TEM.

F) Fill in the blanks. (Any 3)

1) The maximum resolution of light microscope is about _____ . (0.1 µM / 1 nm / 0.2 µM)
2) When a ray of light passes from one medium to another, _____ occurs.
(Refraction / Adsorption / Absorption)
3) _____ acts as a collection of prisms operating as a unit.
(Lenses / Light source / Condenser)
4) The microscopes having eyepieces for both eyes are known as _____ microscopes.
(Substage condenser / Light path / Binocular)
5) _____ Is the distance between the front surface of the lens and surface of the cover glass
(Working distance / Resolving power / Magnification)
6) Fluorochromes absorb _____ energy from excifation light.
(Light / Solar / Radiation)

—— The End ——