

PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
M.Sc., Summer 2017-18 Examination

Semester: 3

Subject Code: 11203103

Subject Name: Analytical Tools & Technique

Date: 30/05/2018

Time: 10:30pm To 01:00pm

Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1. A) Essay type/ Brief note (4x2) (08)

- (a) Discuss in detail principle and application of UV-Visible Spectrophotometer.
- (b) Discuss in detail principle and application of Scanning electron microscopy.

Q.1. B) Answer the following questions (Any two)

(a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (04)

1. Write concise note on Iso-electric focusing.
2. Write concise note on Autoradiography.
- (b) Short note on Thin layer chromatography. (04)
- (c) Short note on affinity chromatography. (04)

Q.2. A) Answer the following questions.

(a) Short note/ Brief note (2x2)/ Fill in the blanks. (04)

1. The most common type of _____ gel used for DNA separation. (Agar /Agarose)
2. The technique to distinguish the individual based on their DNA print patterns is called as _____ (DNA Fingerprinting/DNA Sequencing)

(b) Short note on two application of Blotting techniques. (04)

Q.2. B) Answer the following questions (Any two)

(a) Short note/ Multiple choice questions. (03)

1. Living, unstained cells and organisms can be observed best using

a.) Light Microscope	b.) Compound Microscope
c.) Fluorescence Microscope	d.) Both a and b
2. A 40 X objective and 10 X ocular produce a total magnification of

a.) 04	b.) 05	c.) 400	d.) 40
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3. Name the stain used in gel- electrophoresis.

a.) Congo red	b.) Crystal violet	c.) Ethidium bromide	d.) None
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(b) Short note on application of radioisotopes in biological sciences. (03)

(c) Short note on pH electrode. (03)

Q.3. A) Essay type/ Brief note (4x2) (08)

- (a) Define chromatography and Write in detail principle and application of HPLC.
- (b) Write in detail principle and application of Southern blotting techniques.

Q.3. B) Answer the following questions (Any two)

(a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (04)

1. Write concise note on Beer –Lambert law.
2. Write concise note on flow cytometry.
- (b) Short note on Lyophilization. (04)
- (c) Short note on Transmission Electron Microscopy. (04)

Q.4. A) Answer the following questions.

(a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) (04)

1. _____ method is the widely used for trace gas analysis?
(Galvanic method/ Conductometric method)
2. Conductometric method is not very suitable for measuring traces of _____. It is suitable for measuring traces of H₂O. (CO /CO₂)

(b) Write the principle of NMR and CD. (04)

(c)

(d)

Q.4. B) Answer the following questions (Any two)

(a) Short note/ Multiple choice questions. (Each of 01 marks)

(03)

1. Compound containing some amount of radioisotope is

a.)Tracer

b.)Radioactive compound

c.) Non radioactive

d.)linear active compound

2. This technique is used to separate molecule with same size of particles (M) but different shapes

a.)Zones of equal density centrifugation

b.)Preparative ultracentrifuges

c.)None of the above

d.)All of the above

3 Chromatography with solid stationary phase is called

a.)Circle chromatography

b.)Square chromatography

c.)Solid chromatography

d.)Adsorption chromatography

(b) Short note on sedimentation.

(03)

(c) List the applications of Radioisotopes in biology.

(03)