Sc

Seat No.:_____ No. of Printed Pages: 2

(39)

SARDAR PATEL UNIVERSITY

B. Sc. (Genetics) – Fifth Semester Examination (CBCS)

Tuesday, 7th November 2017

10:00 a.m. to 1:00 p.m.

US05CGEN01: Instrumental Methods of Analysis

Total Marks: 70

Note: (1) Figures to the right indicate marks.
(2) Draw a neat and labeled diagram, wherever necessary.

Q. 1 Choose the most appropriate answer from the four alternatives given: [10]

i. **Amplitude is responsible for _____of light.**
(a) Colour (b) Intensity (c) Power (d) Bending

ii. **_____is a most expensive component of light microscope responsible for production of the magnified images.**
(a) Condenser lens (b) Objective lens (c) Diaphragm (d) Eye piece

iii. **Live and unstained specimens can be observed best by using_____.**
(a) Fluorescence Microscope (b) Transmission Electron Microscope
(c) Scanning Electron Microscope (d) Phase Contrast Microscope

iv. **The unit for sedimentation is_____.**
(a) Poise (b) Swedburg (c) RPM (d) RCF

v. **_____is obtained by multiplying centrifugal field with gravitational factor.**
(a) RPM (b) Sedimentation coefficient (c) RCF (d) Sedimentation velocity

vi. **Source fo U.V radiation in spectrophotometer is_____.**
(a) Sunlight (b) Prism (c) Hydrogen lamp (d) Tungsten filament

vii. **In High performance liquid chromatography, guard column is inserted between injector and _____.**
(a) Pump (b) Analytical column (c) Recorder (d) Detector

viii. **Size exclusion chromatography is also known as_____.**
(a) Liquid-solid chromatography (b) Ion exchange chromatography
(c) Gel permeation chromatography (d) Liquid-liquid chromatography

ix. **Fractionation of the larger DNA fragments and whole chromosome is done by____.**
(a) IEF (b) Cellulose acetate electrophoresis (c) PFGE (d) Agarose gel

x. **Which of the following is amost commonly used stain for protein?**
(a) Silver nitrate (b) CBB (c) Ehidium bromide (d) BPB

P.T.O.

(1)

Q.2 Answer any TEN from the following: **[20]**

i. Define the terms wave length and frequency.

ii. Enlist steps for tissue processing in electron microscope.

iii. Write applications of fluorescence microscope.

iv. State Beer- Lambert's law.

v. Write applications of colorimeters.

vi. Differentiate between rate zonal and isopycnic centrifugation.

vii. Define the term partition coefficient.

viii. Enlist different types of column matrix materials.

ix. Write principle of chromatography.

x. What is contour – clamped homogeneous electric field?

xi. Enlist applications of PFGE.

xii. "Electrophoresis is a half electrolytic process" Justify.

Q.3 (a) Explain principle and working of phase contrast microscope. **[6]**

(b) Briefly explain magnification and resolution in terms of microscope. **[4]**

OR

Q.3 (a) Write short notes on: (i) Polarization (ii) Refraction **[6]**

(b) Differentiate between SEM and TEM. **[4]**

Q.4 (a) Write a note on electromagnetic radiations. **[4]**

(b) Discuss types of rotors. **[6]**

OR

Q.4 (a) Write a note on Density gradient centrifugation. **[4]**

(b) Differentiate between visible and UV spectrophotometer. **[6]**

Q.5 (a) Write a note on Thin layer chromatography. **[6]**

(b) Explain applications of gas liquid chromatography. **[4]**

OR

Q.5 (a) Differentiate between anionic and cationic exchangers. **[4]**

(b) Describe affinity chromatography. **[6]**

Q.6 Explain SDS poly acrylamide gel electrophoresis in detail. **[10]**

OR

Q.6 Explain agarose electrophoresis and isoelectric focusing. **[10]**

****