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SARDAR PATEL UNIVERSITY
EXTERNAL EXAMINATION
Tuesday- DAY, DATE - 12/11/13
TIME-10:30-1:30 p.m. Course: US05CGEN-01
SUBJECT: Instrumental Methods of Analysis

CLASS- T.Y.B.Sc SEMESTER-V MAX. MARKS- 70

Q1- Select the correct from the following Multiple Choice: [1 X 10] [10]

1]Which wave has wavelength greater than visible light
a)Infra red b) X rays c) UV rays d) none.

2] - Unpolarized light can be converted into polarized by
a) Nicol prism b) silver mirror c) Water d) lens

3] Which of the following is NOT equivalent to 10 micrometers.
a) 0.0001 cm b) 0.01 mm c) 10,000 nm d) 100,000 angstrom

4] Nanograph is used for determination of
a) Angular velocity b) colour c) RCF d) density

5] Living, unstained cells and organisms can be observed best using
a) fluorescent microscopy b) TEM c) phase contrast microscopy d) SEM

6] In normal phase hplc, there is a
a. non polar solvent/polar column
b. polar solvent/non-polar column
c. non polar solvent/non-polar column
d. any of the above

7] Nucleic acid can be separated on.....
a) Silica gel Chromatography b) SDS-PAGEc) Agarose Gels d) Polythelene Gels

8] Agarose is
a) Synthetic molecule b) Extracted from red algae c) Extracted from Fungus
d) Extracted from bacteria.

9] Electrophoresis of histones (pI - 8.5) and myoglobin (pI - 5.5) under non-denaturing conditions (pH - 7.0) results in:
a) histones migrate to the cathode (-); myoglobin migrates to the anode (+)
b)histones migrate to the anode (+); myoglobin migrates to the cathode(-).
c)both proteins migrate to the anode (+).
d) both proteins migrate to the cathode (-).

10] Large DNA (e.g., yeast chromosomes) is easily separated using
a) PAGE b) PFGE c) isoelectric focussing d) agarose.

[P.T.O]

Q2— Answer the Short Questions: (attempt any TEN) [20]

1] What is the use of ethidium bromide in electrophoresis?
2] How polymerization occur in SDS PAGE ?
3] If the velocity of light is 3x108 m/s and wavelength is 400 nm, find the frequency of the light?
4] Why filters are required in fluorescent microscope ?
5] What is the applied centrifugal force at a point equivalent to 5 cmfrom centre of rotation and an angular velocity of 3000rad/s?
6] Differentiate Rate Zonal and Isopycnic centrifugation.
7] How molecules of different size separated by gel exclusion chromatography?
8] What is RF value?
9] Why two different phases (stationary phase and mobile phase) are used in Chromatography?
10] Differentiate TEM and SEM.
11] What type of lens is used in electron microscope?
12] Why agarose plugs are used in PFGE?

Q3 Explain agarose gel electrophoresis in detail. [10]

OR

Q3 (a)What are the important features of capillary electrophoresis? [5+5]
Q3 (b) How chromosomes are separated in PFGE?

Q4 Differentiate the working of compound microscope, electron microscope, fluorescent microscope. [10]

OR

Q4 (a) Explain in detail the important features of phase contrast microscope. [5+5]
Q4 (b) Explain in brief the different properties of light.

Q5 Discuss the principle, instrument and applications of Spectrophotometer. [10]

OR

Q5 (a)Elaborate the type and importance of different type of rotars [5+5]
(b) Explain the principle and types of Centrifuge

Q6 What is Chromatography? Explain any two methods in detail. [10]

OR

Q6 Write a short note on
a) Gas Liquid chromatography b) Affinity chromatography [5+5]

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