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DATE: _____

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SARDAR PATEL UNIVERSITY
EXTERNAL EXAMINATION

DATE -22/10/18 DAY- MONDAY TIME 10:00 TO 1:00 pm
Course- US05CGEN01 SUBJECT: GENETICS
CLASS- T.Y.B.Sc V Sem TITLE---INSTRUMENTAL METHOD OF ANALYSIS
TOTAL MARKS: 70

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

- 1) Namograph is used for the determination of value.
a) Angular velocity b) colour c) RCF d) density
- 2) Which is not the property of light
a) Refraction b) Frequency c) Diffusion d) Diffraction.
- 3) In reverse phase HPLC is used for separation
a) non polar solvent/polar column b) polar solvent/non-polar column
c) non polar solvent/non-polar column d) any of the above
- 4) 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 (-).
- 5) Transmission electron microscopy is best for high magnification viewing of
a) internal structure of fixed cells.
b) internal structure of live, motile cells.
c) surface structure of fixed cells.
d) surface membranes of live, motile cells
- 6) You want to determine the location of a specific protein in a cell using a colored stain. Which of the following is the best technique for this purpose?
a) electron microscopy b) phase contrast microscopy
c) bright-field microscopy d) fluorescence microscopy
- 7) The pH of (i) stacking, (ii) resolving gel and (iii) tank buffer in SDS PAGE is _____ respectively.
a) (i) 8.30 (ii)8.80 (iii)6.80 b) (i) 6.80(ii)8.80(iii)8.30
c) (i) 8.30 (ii) 6.80 (iii)8.80 d) (i)6.80 (ii) 8.30 (iii) 8.80
- 8) Denaturation of proteins leads to loss of biological activity by
a) Formation of amino acid
b) Loss of primary structure
c) Loss of both primary and secondary structure
d) Loss of secondary and tertiary structure
- 9) Source for U.V radiation in spectrophotometer is
a) Sunlight b) prism c) hydrogen lamp d) tungsten filament
- 10) Optical system in UV radiation spectrophotometer made up of
a) Glass b) Quartz c) silica d) NaCl

(1)

(P.T.O.)

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

[20]

- 1) Differentiate compound microscope and electron microscope.
- 2) Why two different filters are used in fluorescent microscope
- 3) Light with a frequency of 7.26×10^{14} Hz lies in the violet region of the visible spectrum. What is the wavelength of this frequency of light? Answer in units of nm.
- 4) Why agarose plugs are used in PFGE?
- 5) How polymerization occur in SDS PAGE ?
- 6) For pelleting of microsomal fraction from a liver homogenate, an ultracentrifuge is operated at a speed of 40,000 r.p.m. What is the angular velocity in radian/sec?
- 7) What are ampholites and why they are use in iso-electric focusing gel.
- 8) Give the significance of affinity chromatography.
- 9) Explain the principle of centrifugation and spectrophotometer.
- 10) How separation occur in ion exchange chromatography.
- 11) Why two different phases (stationary phase and mobile phase) are used for separation in chromatography?
- 12) Differentiate density gradient and preparative centrifugation.

Q3 Discuss the principle, working and significance of fluorescent microscope. [10]

OR

Q3 Elaborate the instrument operation and applications of compound microscope [10]

Q4 Explain the instrument (its parts) spectrophotometer and its types (based on the wavelength of light used) in detail. [10]

OR

Q4(a) Describe the types and applications of different type of rotars. [05]

Q4(b) Explain Preparative centrifugation in detail. [05]

Q5 Write a note on TLC and gel permeable chromatography. [10]

OR

Q5 What is Gas liquid chromatography? Discuss the method and application. [10]

Q6 Explain SDS PAGE technique in detail. [10]

OR

Q6(a) How chromosomes are separated in PFGE? [05]

Q6(b) Explain the method of agarose gel electrophoresis [05]

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(2)