

(A-7) Seat No: \_\_\_\_\_

No. of Printed Pages : 3

52

SARDAR PATEL UNIVERSITY

B.Sc. EXAMINATION - SEMESTER-V (NO)

MICROBIOLOGY – US05CMIC02

BIOINSTRUMENTATION

Date: 11/05/2016

Time: 10:30 am to 1:30 pm

Day: Wednesday

Total marks: 70

N.B: Figures on the right indicate marks.

Q.1 M.C.Q. (01 - mark each) 10

- 1 In visible spectrophotometer, \_\_\_\_\_ is used as a light source.  
(a) Tungsten filament lamp (b) Hollow cathod lamp  
(c) Nernst glower (d) All of the above
- 2 Which of the following instrument measures the intensity of light scattered by the particles in suspension?  
(a) Flame phtometer (b) U.V.spectrometer  
(C) Nephelometer (d) I.R.spectrophotometer
- 3 In U.V. spectrophotometer, the sample cell is made up of \_\_\_\_\_.  
(a) Quartz (b) Glass  
(C) Iron (d) Steel
- 4 Separating gel has P<sup>H</sup> \_\_\_\_\_ stacking gel.  
(a) Same as (b) Lower than  
(C) Higher than (d) None of the above
- 5 The marker dye used in electrophoresis technique is \_\_\_\_\_.  
(a) Saffranin (b) Methylene blue  
(C) Bromophenol blue (d) Bromothymol blue
- 6 In \_\_\_\_\_ centrifugation, the gradient has maximum density below that of least dense sedimenting particle.  
(a) Isopycnic (b) Rate zonal  
(C) Sedimentation equilibrium (d) All of the above
- 7 In HPLC, guard column is installed between the injector & \_\_\_\_\_.  
(a) Pump (b) Detector  
(C) Analytical column (d) Recorder

- 8 Which of the following chromatographic technique can be used for the determination of relative molecular size of proteins?  
(a) Adsorption (b) Gel permeation  
(C) Affinity (d) Ion exchange
- 9 \_\_\_\_\_ has low ionizing power but high penetration.  
(a)  $\alpha$ - particle (b)  $\beta$  (+) particle  
(C)  $\gamma$  rays (d)  $\beta$  (-) particle
- 10 Which of the following is useful as biocatalyst in biosensors?  
(a) Cell (b) Enzyme  
(C) Tissue (d) All of the above

**Q.2 Give short answers to the following questions. (02 - marks each) (Any Ten) 20**

- 1 What are the essential features of a mass spectrophotometer?
- 2 Draw the block diagram of AAS.
- 3 Discuss the Hydrogen discharge lamp.
- 4 Differentiate in brief between native PAGE & SDS-PAGE
- 5 Discuss applications of IEF
- 6 Discuss the application of ultracentrifuge.
- 7 Define & explain the role of an arm in affinity chromatography.
- 8 In TLC, what are the advantages of prepared polyamide layer sheets?
- 9 Discuss the applications of ion exchange chromatography.
- 10 Giving suitable examples, discuss the applications of radioisotopes in clinical diagnosis.
- 11 Define Bioinformatics. Enlist the main branches of it.
- 12 How radioisotopes are useful in ecological studies?

- Q.3 Write notes on,  
(a) Enlist & discuss on radiation sources used in IR spectroscopy. 05  
(b) Describe the burners used in flame photometry. 05  
OR
- Q.3 Write on the following,  
(a) The wavelength selectors used in visible spectroscopy. 05  
(b) Nephelometry. 05
- Q.4 Write on the following,  
(a) Ultracentrifugation. 06  
(b) Sample application & recovery of sample in density gradient centrifugation. 04  
OR
- Q.4 Write on the following,  
(a) Describe the commonly used gels in electrophoresis. 05  
(b) Discuss the applications of gel electrophoresis. 05
- Q.5 Discuss in detail on Gas Chromatography. 10  
OR
- Q.5 Describe in detail on Gel Permeation Chromatography. 10
- Q.6 Write notes on,  
(a) Discuss briefly on safety aspects of radioisotopes. 06  
(b) Enlist different types of radioactive decay and discuss any one in detail. 04  
OR
- Q.6 Write notes on  
(a) Enlist and discuss aim of bioinformatics. 05  
(b) Discuss briefly on Glucose biosensor. 05

ALL THE BEST

— X —  
3