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SEAT No. \_\_\_\_\_

No. of Printed Pages: 2

{ 19 } Sardar Patel University  
M. Sc. Genetics, First Semester Examination  
Friday, 22<sup>nd</sup> March, 2019  
10:00 p.m. to 01:00 p.m.

PS01CGEN22: Bioinstrumentation

Note: (i) Figures on right indicates marks.

Max Marks: 70

(ii) Draw neat and labeled diagram, wherever necessary.

Q.1 Attempt the followings

[08 x 1 =8]

- i) Resolution of microscope is limited by.....
  - a) Wavelength
  - b) numerical apertures
  - c) Angular apertures
  - d) All
- ii) C.W. Oatley discovered which of the following microscopy technique?
  - a) SEM
  - b) SPM
  - c) AFM
  - d) TEM
- iii) Organelles that differ only in density can be separated by
  - a) Isopycnic centrifugation
  - b) Rate zonal centrifugation
  - c) Differential centrifugation
  - d) None
- iv) The SDS-PAGE is used to resolve proteins on the basis of
  - a) Charge & Mass
  - b) Charge SPM
  - c) Mass
  - d) Shape
- v) A molecule can absorb IR frequency only if its absorption causes a change in its
  - a) Electric dipole
  - b) Magnetic dipole
  - c) Electronic dipole
  - d) None
- vi) Induced magnetic field in NMR reinforces the applied magnetic field causing
  - a) Shielding of proton
  - b) Deshielding of proton
  - c) Shielding of electron
  - d) Deshielding of electron
- vii)  $\alpha$ -particle produces \_\_\_\_\_ track length in autoradiography
  - a) 10 – 20  $\mu\text{m}$
  - b) 15 – 40  $\mu\text{m}$
  - c) 20 – 60  $\mu\text{m}$
  - d) 25 – 80  $\mu\text{m}$
- viii) The total energy of the electron beam converted to x-ray is
  - a) 100%
  - b) 90%
  - c) 10%
  - d) 1%

Q.2 Attempt any **seven** of the followings

[07 x 2 =14]

- i) What is interference in microscopy?
- ii) Write the basic function of a phase plate?
- iii) Explain the use of analytical centrifuge.
- iv) Enlist the factors effecting retention time in chromatographic techniques.
- v) What is isotachopheresis?
- vi) Define hyperchromic shift.
- vii) Write the significance of collimator.
- viii) Give the application of radioactivity in biology.
- ix) What is the significance of radiation dosimetry?

(1)

(P.T.O.)

