MBI-003-1020024 Seat No. _____

B. Sc. (F. S.) (Sem. II) (CBCS) Examination

April / May - 2018

FS - 201 : Forensics, Crime & Investigative Technique

Faculty Code : 003

Subject Code : 1020024

Time : $2\frac{1}{2}$ Hour] [Total Marks : **70**

Instructions : (1) This question paper contains five questions. All are compulsory.

(2) Draw neat and labeled diagrams wherever necessary.

(3) Figure to the right indicate marks.

1 (a) Objective type questions : **4**

(1) In Raman spectra, the lines to the right of Rayleigh peak and having higher value of wave no. are called as _____.

(2) Sound waves are Mechanical wave. True or False?

(3) Example of electromagnetic wave

(4) Define Wavelength.

(b) Answer in brief : (any **1** out of 2) **2**

(1) Which information obtained from the spectrum of substance ?

(2) Define wave and wavelength.

(c) Answer in detail : (any **1** out of 2) **3**

(1) Explain Types of spectra.

(2) Types of molecular energy.

(d) Write a note on : (any **1** out of 2) **5**

(1) Define spectra and explain its types.

(2) Describe those effects which explain the wave nature of electromagnetic radiation'.

2 (a) Objective type questions **4**

(1) Bragg's Equation.

(2) Who discovered the X-Rays ?

(3) List out the methods of x-ray techniques.

(4) Full form of EDS Energy.

(b) Answer in brief : (any **1** out of 2) **2**

(1) What is the characteristic of target of X-ray production unit ?

(2) Use of collimator in X-ray spectrometer.

(c) Answer in detail : (any **1** out of 2) **3**

(1) Explain monochromator with figure.

(2) Production of X-Rays.

(d) Write a note on : (any **1** out of 2) **5**

(1) Instrumentation of X-ray spectrometer.

(2) Production of X-Rays.

3 (a) Objective type questions : **4**

(1) _____ is used as a material for prism used in the IR spectroscopy.

(2) Wavelength of UV-Visible region.

(3) In Argon ion Laser, Argon converts in to _____ state to produce Laser light.

(4) Define Chromophore

(b) Answer in brief : (any **1** out of 2) **2**

(1) Forensic application of LASER.

(2) Block diagram of instrumentation of single beam UV-Spectrophotometer.

(c) Answer in detail : (any **1** out of 2) **3**

(1) Write a note on auxochrome.

(2) Write a note on types of electron transition in UV-Visible spectroscopy.

(d) Write a note on : (any **1** out of 2) **5**

(1) Write a note on Argon ion Laser.

(2) Instrumentation of UV-spectrophoto meter.

4 (a) Objective type questions : **4**

(1) Centrifugation technique works on the basis of _____ principle.

(2) What is basic buffer solution ?

(3) Define pH.

(4) Rpm means ?

(b) Answer in brief : (any **1** out of 2) **2**

(1) What is centrifugation ? On which principle it works ?

(2) What is pH ? And give the pH range for acidic and basic solution.

(c) Answer in detail : (any **1** out of 2) **3**

(1) List out the types of centrifuge techniques.

(2) Write a note on buffer capacity and types of buffer solution.

(d) Write a note on : (any **1** out of 2) **5**

(1) Write a note on pH and PH meter

(2) Write a note on buffer capacity and types of buffer solution.

5 (a) Objective type questions : **4**

(1) Give example of disaccharide.

(2) Which sugar is present In RNA ?

(3) Guanine pairs _____ with _____ hydrogen bonds in DNA.

(4) Which macromolecules is the main source of cellular energy ?

(b) Answer in brief : (any **1** out of 2) **2**

(1) Draw the structure of amino acid.

(2) What are the complimentary strands of following bases in RNA and DNA ? Also give the number of hydrogen bonds between them. ACGAC

(c) Answer in detail : (any **1** out of 2) **3**

(1) Which macromolecules are useful for genetic heredity ? Give the types of it and, how they differ from each other ?

(2) Explain oligosaccharide and polysaccharide.

(d) Write a note on : (any **1** out of 2) **5**

(1) What is proteins and how it is formed ? Explain the four structures of proteins.

(2) Write a note on DNA.
