



**NBI-003-10120024** Seat No. \_\_\_\_\_

**B. Sc. (Forensic Sci.) (Sem. I) (CBCS) Examination**  
**March / April - 2017**

**FS-201 : Forensics, Crime & Investigative Technique**

**Faculty Code : 003**

**Subject Code : 10120024**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

- Instructions :** (1) This question paper contains five questions. All are compulsory.  
(2) Draw neat and labelled diagrams wherever necessary.  
(3) Figures to the right indicate marks.

- 1 (a) Objective type questions : 4
- (1) Define velocity of Wave.
  - (2) \_\_\_\_\_ Quantum numbers tells about the basic energy level and distance from the nucleolus.
  - (3) Electromagnetic wave not required any supporting medium for propagation.  
True or False?
  - (4) Example of electromagnetic wave.
- (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) Describe those effects which explain the particle nature of electromagnetic radiation.
  - (2) Types of molecular energy.

- (d) Write a note on : (any 1 out of 2) 5
- (1) Define spectra and explain its types.
  - (2) Write a note on Quantum Numbers.
- 2 (a) Objective type questions : 4
- (1) Who discovered the X-Rays?
  - (2) Full form of EDS
  - (3) What is Wavelength of X-ray region?
  - (4) Detectors used in X-Ray spectrometer.
- (b) Answer in brief : (any 1 out of 2) 2
- (1) Use of collimator in X-ray spectrometer.
  - (2) What is the characteristic of target of X-ray production unit?
- (c) Answer in detail : (any 1 out of 2) 3
- (1) Explain monochromator with figure.
  - (2) Explain X-ray diffraction and Bragg's Law.
- (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) Write the Characteristics of Laser light.
  - (3) Nicrome wire lamp is used as a source in \_\_\_\_\_ Spectrometer.
  - (4) Wavelength of UV-Visible region.

- (b) Answer in brief : (any 1 out of 2) 2
- (1) Full form of LASER and give the example of them.
  - (2) Block diagram of instrumentation of double beam UV-Spectrophotometer.
- (c) Answer in detail : (any 1 out of 2) 3
- (1) Write a note on chromophore.
  - (2) Source of UV spectrometer.
- (d) Write a note on : (any 1 out of 2) 5
- (1) Write a note on absorption and intensity shift for UV-visible spectroscopy.
  - (2) Instrumentation of IR-spectrophotometer.
- 4 (a) Objective type questions : 4
- (1) Rpm means \_\_\_\_\_.
  - (2) Define pH.
  - (3) The range of pH of acidic solution is \_\_\_\_\_.
  - (4) Centrifugation technique works on the basis of \_\_\_\_\_ principle.
- (b) Answer in brief : (any 1 out of 2) 2
- (1) What is pH? And give the pH range for acidic and basic solution.
  - (2) List out the types of centrifuge techniques.
- (c) Answer in detail : (any 1 out of 2) 3
- (1) Principle of centrifugation and write a note on density gradient centrifugation.
  - (2) Write a note on types of buffer solution in short.
- (d) Write a note on : (any 1 out of 2) 5
- (1) List out the types of centrifuge technique and explain the differential centrifugation.
  - (2) Write a note on pH and PH meter.

- 5 (a) Objective type questions : 4
- (1) The diameter of helix of DNA is \_\_\_\_\_ Å and \_\_\_\_\_ base pairs are present in each turn of helix.
  - (2) Which macromolecules is the main source of cellular energy?
  - (3) Give the examples of polysaccharide.
  - (4) Proteins are the chain of \_\_\_\_\_ acids linked by \_\_\_\_\_ bonds.
- (b) Answer in brief : (any 1 out of 2) 2
- (1) Draw the structure of amino acid.
  - (2) What is the difference between nucleoside and nucleotide?
- (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) Give the classification of carbohydrates.
- (d) Write a note on : (any 1 out of 2) 5
- (1) Write a note on Lipid
  - (2) Write a note on DNA.
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