HCX-003-001328 Seat No. _____

B. Sc. (Forensic Science) (Sem. III) (CBCS) Examination

October / November - 2017

FS - 301 : Basic Concepts and Principle of Physics, Chemistry and Biological Analytic Techniques - I

(Old Course)

Faculty Code : 003

Subject Code : 001328

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

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

(2) Question - 1 carries 20 Short questions and all are compulsory.

(3) Question - 2 & 3 carries 25 marks with three sub questions (A, B, C).

(4) Draw neat and labeled diagrams wherever necessary.

(5) Figures to the right indicate marks

1 Give the correct answer of following questions : **20**

(1) What does FT in FTIR stand for?

(2) Molecular transitions are following except _____

(3) Which of these is not a form of vibrational spectra?

(4) Which of these is not a type of atomic spectra?

(5) On which plant did Mendel performed his first experiment?

(6) How many arms does a chromosome have?

(7) Histons are _____

(8) DNA replication means _____

(9) Okazaki fragments are found in _____ strand during replication.

(10) Which of these is not a type of RNA?

(11) Which of these is not a type of defensive body in Innate immunity?

(12) Synthesis of DNA always proceeds in _____ direction.

(13) Which of these is not required for electrophoresis?

(14) The rate of movement of a component is given by:

(15) Electrophoretic mobility is a ratio of _____

(16) The principle for ion exchange chromatography is _____

(17) Floppy disks can be used for what?

(18) CPU of computer consists of

(19) What is a malware?

(20) Which are the output devices of the computer?

2 Give the answer of following questions :

(A) Give the answer in short : (Any **Three**) **6**

(1) Describe "Rotational Spectra" for Microwave Spectroscopy

(2) Give Law of Segregation and Law of Independent Assortment.

(3) Define: - Histons and give its characteristics.

(4) Give function of Immunoglobulin's.

(5) Give reason why electrophoresis is called as incomplete electrolysis.

(6) What is Hardware? Give examples.

(B) Give the answer of Any **Three** out of six : **9**

(1) Give the advantages of FT-IR spectrometry.

(2) How does a DNA replicate? (Draw a labeled structure only)

(3) Describe the Ag-Ab reaction.

(4) Describe the principle of electrophoresis.

(5) Give the working principle of Gas chromatography.

(6) Describe Internet.

(C) Give the answer of following questions in detail: **10**
(Any **Two**)

(1) Write a note on molecular spectra.

(2) Detail out Transcription process.

(3) Explain: Hypersensitivity, Allergy and Auto-Immune disease.

(4) Give the principle and working of SDS-PAGE.

(5) How a computer security can be maintained?

3 Give the answer of following questions :

(A) Give the answer in short : (Any **Three**) **6**

(1) Give the principle of Raman spectroscopy.

(2) Give main 4 features of DNA.

(3) What is phenotype? Give 2 examples.

(4) 2 difference between paper chromatography and TLC.

(5) What is the function of SDS and β - mercaptoethanol in SDS - PAGE?

(6) Which is the permanent memory of a computer? Give one characteristics.

(B) Give the answer of Any **Three** out of six : **9**

(1) How is the sample analyzed in FT - IR ?

(2) What is incomplete dominance and co-dominance?

(3) Give difference between Humoral and Cell mediated immunity.

(4) Explain Exclusion chromatography.

(5) Name different storage devices and explain the RAM and ROM memory.

(6) Define Virus. Explain its types.

(C) Give the answer of following questions in detail : **10**
(Any **Two**)

(1) Discuss the principle and working of FT-IR spectroscopy (with diagram).

(2) Show the possible progeny in following cases:

Mother Blood Group	**Father Blood Group**
A	AB
B	O
O	O
AB	AB

(3) What is immunity and give its classification.

(4) Explain Ion exchange chromatography

(5) What are malicious logic programs?