



PBD-003-1013024 Seat No. _____

**B. Sc. (Forensic Science) (W. E. F. 2016) (Sem. III)
(CBCS) Examination**

November / December - 2018

**FS - 301 : Basic concepts and principles of
physical, chemical and biological analysis
Technique - I**

Faculty Code : 003

Subject Code : 1013024

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) $n \rightarrow \sigma^*$ transition requires more energy than $\pi \rightarrow \pi^*$ transition. True or False?
(2) Define Chromophore
(3) Which part is replaced by an interferometer in FTIR?
(4) Define Stoke lines.
- (b) Answer in brief : (Any **One** out of Two) 2
(1) Block diagram of dispersive IR spectrometer.
(2) What is Raman Effect? Who introduced it?
- (c) Answer in detail : (Any **One** out of Two) 3
(1) Write a note on molecular absorption spectral and types of molecular energy.
(2) Instrumentation of FTIR.

- (d) Write a note on : (Any **One** out of Two) 5
 (1) Theory of Infrared spectroscopy.
 (2) Raman spectroscopy.
- 2** (a) Objective type questions : 4
 (1) Which plant was chosen by Mendel for his experimental work?
 (2) What is plasmid?
 (3) What is DNA replication?
 (4) The process of translation in protein synthesis subdivided into which step?
- (b) Answer in brief : (Any **One** out of Two) 2
 (1) Describe the terms : (a) Back cross (b) Test cross
 (2) Describe Histone.
- (c) Answer in detail : (Any **One** out of Two) 3
 (1) Difference between monohybrid and dihybrid process.
 (2) Write a note on RNA translation.
- (d) Write notes on : (Any **One** out of Two) 5
 (1) Protein synthesis.
 (2) Mendel law of heredity.
- 3** (a) Objective type questions : 4
 (1) Give the name of cells of immune system.
 (2) Define epitop.
 (3) Define auto immunity.
 (4) Which component is mainly responsible for allergy?
- (b) Answer in brief : (Any **One** out of Two) 2
 (1) Give the characteristic of IgM.
 (2) Define antibody and give its example.
- (c) Answer in detail : (Any **One** out of Two) 3
 (1) Explain nature of antibody and antigen.
 (2) General function of immunoglobulin.

- (d) Write notes on : (Any **One** out of Two) **5**
- (1) Explain types of immunoglobulin.
 - (2) Write a note on barriers related to innate immunity.
- 4 (a) Objective type questions : **4**
- (1) Who introduced the chromatography technique?
 - (2) Give the example of 2-D chromatography.
 - (3) Usefulness of flow controller in GC.
 - (4) Give the full form of SDS-PAGE.
- (b) Answer in brief : (Any **One** out of Two) **2**
- (1) Define R_f value which is relate to chromatography and mention the characteristics of R_f value.
 - (2) Give the types of paper chromatography.
- (c) Answer in detail : (Any **One** out of Two) **3**
- (1) Write a note on types of paper chromatography.
 - (2) Write about the detectors of HPLC.
- (d) Write notes on : (Any **One** out of Two) **5**
- (1) Describe the instrumentation of GC with labelled diagram.
 - (2) Write a note on Gel electrophoresis
- 5 (a) Objective type questions : **4**
- (1) Define medulla.
 - (2) Give types of fiber on the basis of origin.
 - (3) The cell wall of diatoms is made up of _____.
 - (4) What percentage of people are ABO Secretors?

- (b) Answer in brief : (Any **One** out of Two) **2**
- (1) Difference between human and animal hair.
 - (2) Give the forensic significance of diatoms.
- (c) Answer in detail : (Any **One** out of Two) **3**
- (1) Forensic examination of fiber
 - (2) Define saliva, give its characteristics and name the glands secreting saliva.
- (d) Write notes on : (Any **One** out of Two) **5**
- (1) Morphology and forensic examination of diatoms.
 - (2) Give the characteristics causing change in color of urine, functions of Urine and test for urine?
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