



**NAX-003-001428**      Seat No. \_\_\_\_\_

**B. Sc. (Forensic Sci.) (Sem. IV) (CBCS) Examination**

**March / April - 2017**

**FS-401 : Basic Concepts & Principles of Physical,  
Chemical & Biological Analysis Technique - II**

**Faculty Code : 003**

**Subject Code : 001428**

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

[ Total Marks : 70

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

- 1      Give the answers of following questions : **20**
- (1) Which detector is used in AAS ?
  - (2) Full form of AAS.
  - (3) Which interference occurs in AAS ?
  - (4) Which material of furnace is used in thermalgravimetry to obtain the temperature between 1100° C and 1500 °C?
  - (5) Give the full name of DTA.
  - (6) Types of Thermogravimetry.
  - (7) TMS has \_\_\_\_\_ equivalent protons (Hydrogen)

- (8) In H-NMR spectrum number of signal gives the idea of \_\_\_\_\_ in given molecule.
- (9) For benzene how many H-NMR signals obtained ?
- (10) Give full form of HSD.
- (11) Which dye is used for coloring kerosene ? Give chemical name.
- (12) Which of the following chemical changes the colour of Phenolphthalein from white to pink ?
- (13) Types of arsonists.
- (14) What you can understand by vandalism ?
- (15) Steps for Arson crime scene management.
- (16) Define signature.
- (17) Types of simulation forgery.
- (18) Define holoenzyme.
- (19) Name of immunochemical methods.
- (20) Full name of RIA.

**2** Give the answers of following questions as per instruction.

- (a) Write any three out of six **6**
- (1) Types of AAS with labelled block diagram.
  - (2) Which interference occurs in AAS ?
  - (3) Write the working principle of DTA.
  - (4) Reasons for taking TMS as the reference compound in NMR.
  - (5) Which chemical used as reference compound in NMR and give its chemical structure.
  - (6) Describe UV-Visible spectrophotometer analysis for kerosene.

- (b) Write any three out of six. 9
- (1) Automization process-write a short note with diagram.
  - (2) Write a note on Monochromator with labelled diagram.
  - (3) Principle of TG and types of it.
  - (4) What is splitting of signal in NMR ?
  - (5) Give the principle of NMR and just give the name of component of the NMR instrument with fig.
  - (6) Describe the thin layer chromatographic methods for detection of oil soluble dyes of diesel.

- (c) Write any two out of five : 10
- (1) Describe Nebulization and Automization process in ASS.
  - (2) Elaborate different types of forgeries.
  - (3) Instrumentation and principle of DSC.
  - (4) What is chemical shift and splitting of signal in NMR graph ?
  - (5) Parameter analyzed for the forensic analysis of petroleum product.

**3** Give the answers of following questions as per instruction.

- (a) Write any three out of six. 6
- (1) Describe flash point and give the value of flash point of diesel.
  - (2) Define aniline point.
  - (3) In TLC, which visualizing reagents can be used for detection of Phenolphthalein ?
  - (4) Reasons or purpose behind the crime of arson.
  - (5) Most common types of documents encountered in forensic cases.
  - (6) Name of immune assay methods.

- (b) Write any three out of six. 9
- (1) Describe chemical tests for the analysis of sodium ions.
  - (2) Give the classification of fire.
  - (3) Give the preparation of chloranil spray reagent and Rhoda mine spray reagent.
  - (4) Describe the fire patterns.
  - (5) Define document, question document and nature of problems related to question document.
  - (6) Describe immunochemical methods.
- (c) Write any two out of five : 10
- (1) Thin layer chromatography for phenolphthalein
  - (2) Describe examination and Isolation of fire residue.
  - (3) Describe chemistry of fire and heat transfer.
  - (4) Describe security features of Indian currency notes.
  - (5) Describe immunochemical methods.
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