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**DHANALAKSHMI SRINIVASAN COLLEGE  
OF ARTS & SCIENCE FOR WOMEN  
(AUTONOMOUS)**



(For Candidates admitted from 2018-2019 onwards)

**UG DEGREE EXAMINATIONS APRIL – 2021  
B.SC – FORENSIC SCIENCE  
FIRE AND EXPLOSIVES INVESTIGATION**

**Time: 3 Hrs**

**Max.Marks: 75**

**PART – A**

**CHOOSE THE CORRECT ANSWER.**

**(10\*1=10)**

1. The elements needed for a fire is:
  - a) Fuel
  - b) Oxygen
  - c) Heat
  - d) All of the above
2. \_\_\_\_\_ trail of black soot indicates accelerant was spread.
  - a) Ribbon trail
  - b) Fire Triangle
  - c) Ignition
  - d) Radiation
3. Ignition (as in forest fire) brought about by heat released from reactants due to increased reactions from molecular motion is an example of \_\_\_\_\_.
  - a) Ignition
  - b) Auto-ignition
  - c) Piloted ignition
  - d) Oxidation
4. The temperature at which the fluid will burn and sustain fire for at least 5 seconds after the fire
  - a) Flash point
  - b) Fire point
  - c) Combustion point
  - d) Burning stage
5. Decomposition or breaking of solid fuel in presence of heat into gas phase
  - a) Pyrolysis
  - b) Serial arson
  - c) Gas fuels
  - d) Liquid fuels
6. The main technique used to analyse samples suspected of containing liquid fire accelerants is :
  - a) Ultra-violet spectrography
  - b) X-Ray diffraction
  - c) Gas Chromatography
  - d) Atomic Absorption Spectroscopy
7. A 50% straight dynamite contains
  - a) 50% nitro-glycerine
  - b) 50% trinitrotoluene(TNT)
  - c) 5% nitro-glycerine
  - d) 5% trinitrotoluene(TNT)
8. After bomb-scene debris has been examined microscopically, the next step is to:
  - a) Rinse the recovered debris with acetone to separate the debris from explosive material.
  - b) Examine the explosive using spectrophotometer
  - c) View the detonating mechanism with a low-power stereoscopic microscope
  - d) Utilize X-Ray diffraction to “fingerprint” the organic explosive

9. Most arson fires are started with:

- a) Lead-based paints
- b) Petroleum-based accelerants
- c) Highly unsaturated oils
- d) An oxidising agent

10. The full form of PETN is \_\_\_\_\_

- a) Pentaerythritol Tetranitrate
- b) Point of explosion of trinitroglycerine
- c) Poly ethylene trinitroglycerine
- d) Pyrolysis element of trinitrotoluene

**PART – B**

**ANSWER ALL THE QUESTIONS**

**(5\*7=35)**

11. a) What are fire scene patterns? How are they helpful in locating the point of ignition?

**(OR)**

b) What are arson evidences? Write a short note on collection and preservation of arson evidences.

12. a) Write a note on distillation of petroleum and name the different petroleum fractions (products).

**(OR)**

b) What are accelerants? Explain the action of any two accelerants (other than petrol) and their properties.

13. a) Write the procedure of acetone extraction of explosives.

**(OR)**

b) What are blast injuries? Write about the types/mechanisms of blast injuries.

14. a) What are explosives? Briefly explain the classification of explosives based on their chemical structure.

**(OR)**

b) Write a note on RDX, with its chemical formula.

15. a) Briefly explain the process of post-blast residue collection and analysis.

**(OR)**

b) What are commercial explosives? Write about their characteristics.

**PART – C**

**ANSWER ANY THREE QUESTIONS**

**(3\*10=30)**

16. What is fire? Explain the chemistry of fire and the write about the factors that help in recognition of type of fire.

17. What is fire debris? Write in detail the investigation and evaluation of clue materials in arson cases.

18. Explain in detail the process of fractional distillation of petrol with a neat diagram.

19. What are IED'S? Describe the types of detonators used in them.

20. What is an explosion? How is a scene of explosion searched? Briefly write about the forensic importance of blast residue.