



Faculty of Science

End Semester Examination May 2025

FS3CO09 Forensic Chemistry

Programme	: B. Sc. (Hons.)	Branch/Specialisation	: FS
Duration	: 3 hours	Maximum Marks	: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Section 1 (Answer all question(s))

Marks CO BL

- Q1.** Statement 1: A brewery produces through fermentation of grains.
Statement 2: Distillery produces spirits (liquor) by fermented liquids.

1 1 2

Rubric	Marks
Both statement are correct.	1

- ☐ Statement 1 correct
 ☐ Statement 2 correct
☒ Statement 1 & 2 correct
 ☐ Statement 1 & 2 incorrect

- Q2.** Color change of the phenolphthalein in Trap cases is due to presence of-

1 1 3

Rubric	Marks
Weak Acid & Weak Base	1

- ☒ Weak acid & weak base
 ☐ Strong acid & strong base
☐ Weak acid
 ☐ Strong base

- Q3.** A commonly abused drug on street "Miss Emma" is a common name of-

1 2 1

Rubric	Marks
Morphine	1

- ☐ Methadone
 ☒ Morphine
☐ Oxycodone
 ☐ Fentanyl

- Q4.** Which is the correct combination of MARQUIS TEST result for narcotic drug?

1 2 2

Rubric	Marks
Purple may indicate presence of Heroin	1

- ☒ Purple may indicate presence of Heroin
 ☐ Orange - Brown may indicate presence of Oxycodone
☐ Yellow to Brown to Violet may indicate presence of Methamphetamine
 ☐ Orange - Brown may indicate presence of Cocaine

Q5. Which of the following is in-correctly matches for fire investigation?

1 3 2

Rubric	Marks
Rubber COLOR OF SMOKE (White) COLOR OF FLAME (Yellow- Blue)	1

- ☒ Rubber color of smoke (White) color of flame (Yellow- Blue)
 ☐ Kerosene color of smoke (Green) color of flame (yellow)
 ☐ Gasoline color of smoke (black) color of flame (yellow to white)
 ☐ Cloth color of smoke (gray to brown) color of flame (yellow to red)

Q6. Narcotic Drugs and Psychotropic Substances Act, 1985 last amended on year-

1 2 1

Rubric	Marks
2021	1

- ☐ 2020
 ☐ 2000
 ☒ 2021
 ☐ 2023

Q7. Assertion: If the raw petroleum is of a high density then the petroleum classification is termed 'heavy' and if it is of a low density the petroleum classification is termed 'light'.

1 4 2

Reason: If it contains a great deal of long-chain hydrocarbons, the petroleum will be denser. If it contains a greater proportion of short-chain hydrocarbons it will be less dense.

Rubric	Marks
Assertion is correct explanation of Reason	1

- ☐ Assertion is correct
 ☐ Reason is correct
 ☒ Assertion is correct explanation of reason
 ☐ Both assertion & reason is in-correct.

Q8. Which of the following is correct match of adulterant of petroleum product?

1 4 1

Rubric	Marks
All of these	1

- ☐ Petrol - Orange dye
 ☐ Disel - Yellow dye
 ☐ Kerosene- Blue dye
 ☒ All of these

Q9. Which of the following is a low explosive?

1 5 1

Rubric	Marks
Black powder	1

- ☐ Nitroglycerin
 ☐ Nitrocarbonitrates
 ☐ Ammonium Nitrate
 ☒ Black powder

Q10. Give the full form of high explosive as PETN?

1 5 1

Rubric	Marks
Pentaerythritoltetranitrate	1

- ☐ Cyclotrimethylenetrinitramine
 ☒ Pentaerythritoltetranitrate
 ☐ Tri-nitro-tolune
 ☐ None of these

Section 2 (Answer all question(s))

Marks CO BL

Q11. Give any four differences between alcoholic & non-alcoholic beverages.

2 1 1

Rubric	Marks
0.5 marks for one difference.	2

Q12. Define licit and Illicit alcohol as per BIS & PFA act.

3 1 1

Rubric	Marks
!.5 for each definition	3

Q13. (a) Describe complete classification of beverages.

5 1 1

Rubric	Marks
Answer according to Food and beverages act.	5

(OR)

(b) Explain the complete method for examination of dyes in Ink and other material by TLC & U.V. Spectrophotometer.

Rubric	Marks
explain in 250 words	5

Section 3 (Answer all question(s))

Marks CO BL

Q14. What are Narcotic Drugs as per NDPS Act? Give any three examples.

3 2 1

Rubric	Marks
Definition - 2 marks Example - 1 marks	3

Q15. (a) Explain the complete classification of narcotic drugs.

7 2 2

Rubric	Marks
Explain in 300 words.	7

(OR)

(b) Describe any three preliminary test for drug analysis.

Rubric	Marks
Deginition of preliminary test - 1 marks Each preliminary test - 2 marks	7

Section 4 (Answer all question(s))

Marks CO BL

Q16. Give the difference between fire & arson.

3 3 2

Rubric	Marks
Each difference carrieed 1 marks	3

Q17. (a) Explain complete chemistry of fire.

7 3 2

Rubric	Marks
Explain in 300 words.	7

(OR)

(b) Describe the method for collection, preservation and analysis of evidences at fire crime scene.

Rubric	Marks
Definition of fire science - 1 marks Collection - 2 marks Preservation - 2 marks Analysis - 2 marks	7

Section 5 (Answer all question(s))

Marks CO BL

Q18. What is adulteration? Give the name of common adulterants of petroleum products.

3 4 1

Rubric	Marks
Definition - 1 marks Name of common nadulterants - 2 marks	3

Q19. (a) Describe the composition of petroleum product based on number of hydrocarbons and other contents of petroleum.

7 4 2

Rubric	Marks
explain in 300 words	7

(OR)

(b) Explain the methods for analysis of petroleum products.

Rubric	Marks
explain in 300 words.	7

Section 6 (Answer all question(s))

Marks CO BL

Q20. Define explosives. Give the examples of high and low explosives.

5 5 2

Rubric	Marks
Definition - 2 marks Examples - 3 marks	5

Q21. (a) Explain the complete classification of explosives with example of each.

5 5 2

Rubric	Marks
explain in 300 words	5

(OR)

(b) Describe the process for analysis and examination of post-blast residue.

Rubric	Marks
Analysis - 2.5 marks Examination - 2.5 marks	5
