Total No. of Questions: 6 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2022

FT3EL11

Safety in Petroleum & Petrochemical Industries

Programme: B.Tech. Branch/Specialisation: FT

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. Corrosion in crude distillation unit column overhead system is caused by- **1**
(a) The presence of naphthenic acid in crude oils
(b) The presence of HCL formed by dissociation of chloride salts
(c) The sulphur compounds in crude oils
(d) All of these

ii. Which of the following petroleum product has minimum viscosity at a given temperature? **1**
(a) Motor spirit (b) Light diesel oil
(c) ATF (d) HSD oil

iii. The main aim of cracking is to produce- **1**
(a) Gasoline (b) Lube oil (c) Petrolatum (d) Coke

iv. Which of the following processes consume hydrogen? **1**
(a) Vis-breaking (b) Fluid catalytic cracking
(c) Propane (d) None of these

v. How often should fire alarms be tested? **1**
(a) Once a week (b) Once a year
(c) Once every 12 years (d) Daily

vi. Who is responsible for carrying out the fire risk assessment? **1**
(a) HSE inspectors (b) Employees
(c) Fire rescue services (d) Fire Warden

vii. Which of the following petroleum products has maximum API? **1**
(a) Gasoline (b) Furnace oil
(c) LDO (d) HSD

P.T.O.

viii. The conductivity of crude water-oil mixture depends on the- **1**
(a) Temperature (b) Percentage of water
(c) PH (d) All of these

ix. The feedstock for the catalytic reforming unit is- **1**
(a) Naphtha (b) High speed diesel oil
(c) Kerosene (d) Reduced crude oil

x. The catalyst used in alkylation process is- **1**
(a) Ni (b) Al203 (c) HF (d) Pt

Q.2 i. Write short notes on LPG. **2**
ii. Explain Naphtha in detail. **3**
iii. Give detailed discussion based on safety precautions of LPG. **5**
OR iv. What is Crude oil? Give its detailed classifications. **5**

Q.3 i. Explain polymerization in detail. **2**
ii. What is lubrication? Explain ADU, VDU, and FCC. **8**
OR iii. Give detail of refinery. Explain simplified flow diagram of refinery. **8**

Q.4 i. Explain various storage tank protections. **4**
ii. Write short note on mobile water monitors and DCP fixed. **6**
OR iii. What is fire protection? Explain different types of fire protection emergency planning used. **6**

Q.5 i. List out various precautionary measures in case of non-ignited releases? **3**
ii. Explain firefighting facilities for depots. What is difference between on-shore, off-shore drilling platforms? **7**
OR iii. Explain various safety measures used in pipelines for transportation of petroleum products & gas. **7**

Q.6 Attempt any two:
i. Explain various applications of advance technologies used in refineries. **5**
ii. Give detailed discussion about (OISD) Oil Industry Safety Directorate. **5**
iii. Explain statutory provisions used in refineries and petrochemical industries. **5**

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Marking Scheme
FT3EL11 Safety in Petroleum & Petrochemical Industries

Q. 1 i. Corrosion in crude distillation unit column overhead system is caused by? **1**

(d) All of the above

ii. Which of the following petroleum product has minimum viscosity at a given temperature? **1**

(a) Motor Spirit

iii. The main aim of cracking s to produce? **1**

(a) Gasoline

iv. Which of the following processes consume hydrogen? **1**

(b) Fluid catalytic cracking

v. How often should fire alarms be tested? **1**

(a) Once a week

vi. Who is responsible for carrying out the fire risk assessment? **1**

(d) Fire Warden

vii. Which of the following petroleum products has maximum API? **1**

(b) Furnace oil

viii. The conductivity of crude water-oil mixture depends on the? **1**

(d) All of these

ix. The feedstock for the catalytic reforming unit is? **1**

(a) Naphtha

x. The catalyst used in alkylation process is? **1**

(c) HF

Q. 2 i. Write short notes on LPG? - 2 Marks **2**

ii. Explain Naphtha in detail? - 3 Marks **3**

iii. Give detailed discussion based on safety precautions of LPG? - Marks 5 **5**

OR iv. What is Crude oil? Give its detailed classifications? **5**

Crude oil - 2.5 Marks
Classification - 2.5 Marks

Q. 3 i. Explain Polymerization in detail? - 2 Marks **2**

ii. What is Lubrication? Explain ADU, VDU, and FCC? **8**

Lubrication - 2 Marks
ADU - 2 Marks
VDU - 2 Marks
FCC - 2 Marks

OR iii. Give detail of Refinery? Explain simplified flow diagram of refinery? **8**

Refinery - 2 Marks
Flow Diagram - 6 Marks

Q. 4 i. Explain various storage tank protections? - 4 Marks **4**

ii. Write short note on mobile water monitors and DCP fixed? **6**

Mobile Water - 3 Marks
DTC fixed - 3 Marks

OR iii. What is fire Protection? Explain different types of fire protection Emergency planning used? **6**

Fire Protection - 3 Marks
Emergency plan - 3 Marks

Q. 5 i. List out various precautionary measures in case of non-ignited releases? **3**

- 3 Marks

ii. Explain Fire fighting facilities for depots? What is difference between on-shore, off-shore drilling platforms? **7**

Fire Fighting depots - 3 Marks
On shores - 2 Marks
Off shores - 2 Marks

iii. Explain various safety measures used in pipelines for transportation of Petroleum products & Gas? **7**

Safety Measures for Petroleum products - 4 Marks
Safety Measures for gas - 3 Marks

Q. 6 Attempt any two: -

i. Five applications of advance technologies used in refineries **5**

Each one mark - 5 Marks

ii. Give detailed discussion about (OISD) Oil Industry Safety Directorate? **5**

Five norms each 1 mark -5 Marks

iii. Statutory provisions used in refineries - 2 marks
Statutory provisions used in petrochemical Industries
3 marks **5**