

Total No. of Questions: 6

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Enrollment No.....



Faculty of Engineering
End Sem (Odd) Examination Dec-2018
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. Viscosity index of a lubricating oil 1
 - (a) Should be low.
 - (b) Is the measure of variation of viscosity with temperature.
 - (c) None of these.
 - (d) Is the measure of its flash point.
 - ii. Crude oil is pumped by a _____ pump. 1
 - (a) Gear (b) Reciprocating
 - (c) Screw (d) Centrifugal
 - iii. The proper arrangement of the petroleum fractions in order of their boiling points is 1
 - (a) Lubricating oil > diesel > petrol > LPG
 - (b) Lubricating oil > petrol > diesel > LPG
 - (c) Petrol > lubricating oil > diesel > LPG
 - (d) Petrol > diesel > LPG > lubricating oil
 - iv. _____ is not an important refinery process for upgrading the quality of lubricating oil. 1
 - (a) Hydro treatment (b) Clay treatment
 - (c) Deoiling (d) Solvent refining
 - v. Which is NOT a type of fire sprinkler system? 1
 - (a) Pre-Action (b) Even-Distribution
 - (c) Dry Pipe (d) Wet Pipe

P.T.O.

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- vi. Buildings more than _____ feet high must have an automatic sprinkler system throughout the building. **1**
(a) 25 (b) 35 (c) 45 (d) 55
- vii. _____ is best suited to extinguishing oil or flammable liquid fire. **1**
(a) Soda acid (b) Vaporizing liquid
(c) Foam (d) Dry chemical
- viii. The main use of heavy gas oil produced by the vacuum distillation unit is as a heater. **1**
(a) Feedstock for fluid catalytic cracking unit.
(b) Blending component for petrol
(c) Blending component for kerosene.
(d) None of these.
- ix. Stabilization of gasoline (petrol) means **1**
(a) Improving its lead susceptibility.
(b) Increasing its vapour pressure.
(c) Increasing its oxidation stability.
(d) Removal of dissolved gases from it.
- x. The colour of gasoline is an indication of its **1**
(a) Octane number.
(b) Lead susceptibility.
(c) Gum forming tendency & thoroughness of refining.
(d) None of these.
- Q.2 i. Write the classification of crude oil and its properties. **2**
ii. Explain various types of hazardous gases used in petrochemical plant. **3**
iii. Prepare MSDS of ammonia & crude oil. **5**
OR iv. Draw the layout of refinery with their working process. **5**
- Q.3 i. Write short note on: **2**
(a) Catalytic cracking (b) Polymerization
ii. What is fractional distillation? Explain in detail ADU and VDU with neat sketch. **8**
OR iii. Explain the working principle of lubricating oil treating process. **8**

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- Q.4 i. Draw and explain Subsurface injection system. **3**
ii. Describe sulphur recovery. Explain in detail. **7**
OR iii. Define fire risk assessment. Explain its process in detail. **7**
- Q.5 i. Discuss the phenomena of BLEVE. **4**
ii. Enlist the major fire risk area in oil refinery and Suggest suitable fire prevention and protection measure. **6**
OR iii. Explain the potential fire hazards in case LPG leakage in Bottling plant and their control measures. **6**
- Q.6 Attempt any two:
i. Describe salient features of Explosive Rules 1983 in detail **5**
ii. Discuss Petroleum Act 1934 concerning to the safety aspects of an occupier. **5**
iii. What do you mean OISD and explain norms provided by OISD pertaining fire protection? **5**

Marking Scheme

FT3EL11 Safety in Petroleum & Petrochemical Industries

Q.1	i.	Viscosity index of a lubricating oil (b) Is the measure of variation of viscosity with temperature.	1	1
	ii.	Crude oil is pumped by a _____ pump. (d) Centrifugal	1	1
	iii.	The proper arrangement of the petroleum fractions in order of their boiling points is (a) Lubricating oil > diesel > petrol > LPG	1	1
	iv.	_____ is not an important refinery process for upgrading the quality of lubricating oil. (c) Deoiling	1	1
	v.	Which is NOT a type of fire sprinkler system? (b) Even-Distribution	1	1
	vi.	Buildings more than ___ feet high must have an automatic sprinkler system throughout the building. (d) 55	1	1
	vii.	_____ is best suited to extinguishing oil or flammable liquid fire. (c) Foam	1	1
	viii.	The main use of heavy gas oil produced by the vacuum distillation unit is as a heater. (a) Feedstock for fluid catalytic cracking unit.	1	1
	ix.	Stabilization of gasoline (petrol) means (c) Removal of dissolved gases from it.	1	1
	x.	The colour of gasoline is an indication of its (c) Gum forming tendency & thoroughness of refining.	1	1
Q.2	i.	Classification of crude Its properties.	1 mark 1 mark	2
	ii.	Types of hazardous gases used in petrochemical plant.	3	3
	iii.	MSDS of ammonia MSDS of Crude oil	2.5 marks 2.5 marks	5
OR	iv.	Layout of refinery (diagram) Working process.	2 marks 3 marks	5
Q.3	i.	Write short note on: (a) Catalytic cracking	1 mark	2

		(b) Polymerization	1 mark	
	ii.	Fractional Distillation ADU VDU Diagram	3 marks 2 marks 2 marks 1 marks	8
OR	iii.	Working principle of lubricating oil Uses Diagram	4 marks 3 marks 1 mark	8
Q.4	i.	Diagram Subsurface injection system.	1 mark 2 marks	3
	ii.	Diagram Process of sulphur recovery	2 marks 5 marks	7
OR	iii.	Fire risk assessment Its Process	2 marks 5 marks	7
Q.5	i.	Phenomena of BLEVE. Diagram Explanation	1 mark 3 marks	4
	ii.	Major fire risk area in oil refinery Any three areas Fire prevention and protection measure.	3 marks 3 marks	6
OR	iii.	Potential fire hazards in case LPG leakage in Bottling plant Control measures.	4 marks 2 marks	6
Q.6	Attempt any two:			
	i.	Features of Explosive Rules 1983 in detail	5	5
	ii.	Petroleum Act 1934 concerning to the safety aspects of an occupier.	5	5
	iii.	OISD and OISD pertaining fire protection	5	5
