UNIVERSITY OF PETROLEUM & ENERGY STUDIES
Online End Semester Examination – May, 2021

Program: MBA Oil & GAS   Semester : II
Subject/Course: Fundamental of Refining & Petrochemical Business   Max. Marks: 100
Course Code: OGOG 7005   Duration : 3 Hours

SECTION- A
Each Question will carry 5 Marks

S.No.	Question	
Q.1	I) Carbon residue of an oil is determined By conradson method only By ramsbottom method only Either by conradson method or by ramsbottom method By Pensky Martens(closed) method II) Corrosion in crude distillation unit column overhead system is caused by The presence of naphthenic acid in crude oils The presence of HCL formed by dissociation of chloride salts The sculpture compounds in crude oils All of the above III) Which of the following petroleum product has maximum kinematic viscosity at a given temperature? Gasoline Aviation turbine fuel LSD Furnace oil IV)Which of the following petroleum product has maximum C/H ratio (by weight)?	CO2

	Naphtha Kerosene Light diesel oil Fuel oil V) Which of the following petroleum product has minimum C/H ratio (by weight)? Naphtha Kerosene Light diesel oil Fuel oil	
Q.2	I)Pour point of Bombay High crude oil is 18 zero degree C 30 zero degree C -15 zero degree C -50 zero degree C II)What does the word petrochemicals signify? Chemicals based on coal Chemicals based on rocks Chemicals based on atmospheric conditions Chemicals based on fertility III)Which of the following raw material obtained from petroleum can be in preparation of acetic acid? Acetone Phosphoric acid Ethylene Tartaric acid IV)Which of the following is a non-petroleum source?	**CO3**

	CaC2 H2S Paraffin Olefin V)Which of the following process is used to convert the mixture of saturated hydrocarbons obtained from petroleum into a more reactive material? Hydrogenation Acidification Alkylation Chlorination	
Q.3	I)Which of the following is/are the neutralizers added to well to minimize corrosion? Ammonia and Sodium carbonate Ammonia, sodium carbonate, sodium hydroxide, and sodium silicate Ammonia and sodium silicate Sodium carbonate and sodium silicate II)Which of the following metals is/are used for petroleum well valves and wellhead parts? Straight chromium stainless steels and stellite Monel and copper-based alloys Monel, straight chromium steels, stellite, and copper-based alloys Monel and stellite III)With increase in the number of carbon and hydrogen atoms in hydrocarbon molecules, the density of petroleum products Decreases Increases Remain same Unpredictable from the data	CO2

	IV)Which is the most ideal feed stock for 'coking' process used for the manufacture of petroleum coke? Naphtha Vacuum residue Light gas oil Diesel V)Feedstock for the production of biodiesel is Herbal plants Used vegetable oils LSHS Bagasse	
Q.4	I) Which of the following petroleum product has minimum viscosity at a given temperature? Motor Spirit Light diesel oil Aviation Turbine fuel HSD oil II)The viscosity of a hydrocarbon liquids Remain unaffected with change in density Decreases with increase in density Increases with increase in density none of the above III)Which of the following petroleum products has maximum API ? Gasoline Furnace oil LDO HSD	**CO1**

	IV)Characterization factor (K) is defined by	
	$\quad$ K=TB1/2/S	
	$\quad$ K=TB1/3/S	
	$\quad$ K=TB1/4/S	
	$\quad$ K=TB2/3/S	
	V)Cleveland method is applicable for determining flash point of lubricating oil and other oils flashing below	
	$\quad$ 190 zero degree F	
	$\quad$ 180 zero degree F	
	$\quad$ 80 zero degree F	
	$\quad$ 175 zero degree F	
Q.5	I)Methyl tertiary butyl ether (MTBE), a high octane (octane no. = 115) gasoline blending component is produced by the simple additive reaction of isobutylene with	CO3
	$\quad$ Methyl alcohol	
	$\quad$ Ethyl alcohol	
	$\quad$ Methane	
	$\quad$ Ethane	
	II)The first crude oil refinery of India is located at	
	$\quad$ Naharkatiya	
	$\quad$ Digboi	
	$\quad$ Kochi	
	$\quad$ Madras	
	III)CnH2n is the general formula for	
	$\quad$ Olefins	
	$\quad$ Naphthenes	
	$\quad$ Both (a) and (b)	
	$\quad$ Neither (a) nor (b)	

	IV)The general formula of naphthenes is CnH2n + 2 CnH2n-6 (where, n ≥ 6) CnHn-4 Same as that for olefins i.e. CnH2n V) In catalytic cracking, the Gasoline obtained has a very low octane number Pressure & temperature is very high Gasoline obtained has very high aromatic content Gasoline obtained has very high amount of gum forming compounds	
Q.6	I)Petroleum liquid fuels having flash point greater than 66°C is considered as safe during storage and handling. Which of the following has flash point > 66°C? Naphtha Petrol Kerosene Heavy fuel oil II)Pressure & temperature maintained in catalytic cracking is about 2 atm & 500°C 10 atm & 500°C 30 atm & 200°C 50 atm & 750°C III)An upper limit of oil content is limited to about _____ percent for achieving efficient and satisfactory level of wax sweating. 5 15 40 60	**CO4**

IV)Flash point of a liquid petroleum fuel gives an idea about its

Volatility

Explosion hazards characteristics

Nature of boiling point diagram

All (a), (b) and (c)

V)Which of the following has the lowest cetane number?

Aromatics

i-paraffins

Naphthene

Olefins

SECTION- B

Each Question will carry 10 Marks

Q.1	LPG has been very useful in 2020 specially post CORONA-19 pandemic. Illustrate its production in complex refinery(explain both the processes). While there are other items(petroleum products) with very low sale , for a refiner's perspective what are the steps that are required necessary to take to create the balance and run the refinary to a minimal optimal level, how would you deal with this situation.	**CO3**
Q.2	Illustrate in detail how Crude oil classification , considering all aspect of it (crude oil & Gas) and crude assay are impartant aspect in a refinery prespectives.	**CO4**
Q.3	Explain historic perspective of crude oil and refinery business from last 150 years.(Impact of wars). Also critically analyse the low crude price that has impacted during in these years 2008, 2014 and 2020. (Identify the reasons for each given year). How global refineries have reacted / adjusted to this critical situation.	**CO2**

Q.4	Draw a parallel between FCC and Hydrocracking. Both are for the production of light fractions of hydrocarbon yet they are so different. Analyse in detail the two refinery options that we have today.	**CO1**
Q.5	Margins are important for any business so does for a petroleum refinery across the globe. The changing crude pattern from last 30 years has made it more complex in nature. The GRM in a refinery has multipl factors that are responsible for profit and loss. Take two crude of API 18 and 35 and analyse all factors responsible for a good GRM .	**CO2**

SECTION- C

Each Question will carry 20 Marks

Q.1	(a) What is the purpose of Gas Processing? (b) What should be natural gas composition suitable for producing LNG? How you get temperature of liquefaction for LNG production?	**CO3**