Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July 2020

Course Name: B.Tech. APE UP **Semester:** VI
Program: Oil & Gas Marketing and Resource Management **Time:** 24 hrs.
Course Code: CHCE 4007 **Max. Marks:** 40

Instructions

1. Read the instruction carefully before attempting.
2. This question paper has two section, Section A and Section B.
3. There are total of Sixty-Two questions in this question paper. **Sixty** in **Section A** and **Two** in **Section B**
4. **Section A** consist of multiple choice based questions and has the total weightage of 60%.
5. **Section A** will be conducted online on BB Collaborate platform
6. **Section B** consist of long answer based questions and has the total weightage of 40%.
7. The maximum time allocated to **Section A** is two Hrs.
8. **Section B** to be submitted within 24 hrs. from the scheduled time (*exceptional provision due extraordinary circumstance due to COVID-19 and due to internet connectivity issues in the far-flung areas*).
9. No submission of **Section B** shall be entertained after 24 Hrs.
10. **Section B** should be attempted after **Section A**
11. **The section B** should be attempted in blank white sheets (hand written) with all the details like programme, semester, course name, course code, name of the student, Sapid at the top (as in the format) and signature at the bottom (right hand side bottom corner)

SECTION A (60 Marks)
Attempt all questions
Q1 to 58 = 56 (56*1) Marks; Q57 to 58 = 4 (2*2) Marks

S.No.		Marks	CO
Q. 1	Please select the correct answer for each question among the given options- I. What is the primary source of oil and gas? a. Eroded sediments b. Dinosaur remains c. Ancient Swamp d. Marine II. What component of a hydrocarbon system must exist in order for there to be oil and/or gas? a. A trap b. A reservoir c. A source rock d. A migration pathway	**10 (1*10)**	**1**

III. Prior to the shale gas and shale oil revolution, shale was considered to be a poor reservoir rock because of its low-
   a. Permeability
   b. Porosity
   c. Both
   d. None

IV. What technology is used to image rock layering in the subsurface over regions extending many miles/kilometers?
   a. Well log data
   b. Seismic data
   c. Gravity data
   d. Magnetic data

V. What isolates the interior of an oil/gas well from the surrounding rock and fluids?
   a. Drill cuttings
   b. Drilling mud
   c. Cemented casing
   d. The blowout preventer

VI. The oil window is primarily defined by a range in which of the following?
   a. Depth
   b. Liquid content
   c. Organic matter in rock
   d. Temperature

VII. In which of the following geologic settings do oil and gas deposits first form?
   a. Large rivers
   b. Shallow seas
   c. Deserts
   d. Mountain ranges

VIII. Production rates from an oil/gas well initially decline because of a loss of what?
   a. Water
   b. Oil
   c. Gas
   d. Reservoir pressure

IX. A lease must first be obtained from the land company agent before drilling for oil and gas.
   a. TRUE
   b. FALSE

X. Which of the following technological innovations has reduced the number of drilling rigs needed to find and extract oil and gas?
   a. Fracking
   b. High-speed drill rigs
   c. Horizontal drilling
   d. Diamond tip drill bits

Q. 2	Please select the correct answer for each question among the given options- I. In the oil and gas industry, what is a specific subsurface site where oil and gas might be found called? a. A play b. A migration pathway c. A prospect d. A structure II. What two substances are used to extract oil during the secondary recovery phase? a. Natural gas and water b. Carbon dioxide and water c. Soap III. What is increasingly being used as an injection gas in tertiary oil recovery? a. Natural gas b. Carbon dioxide c. Water d. Soap IV. After tertiary recovery methods have been applied to an oil field, how much oil is typically still left in the reservoir? a. 0–5% b. 10–20% c. 20–30% d. 40–60% V. In tertiary recovery, the remaining oil is freed from its adhesion to sediment grains by... a. Fluid flow b. Reducing its viscosity c. Pressurization d. Increased pumping VI. Drilling of what type of additional wells turn an economic well into an oil field? a. Wildcat b. Dryholes c. Injection d. Development VII. What does the history of production rates for a large region or even country generally look like over a long time? a. Exponential decline b. Linear rise c. Box-shaped curve d. Bell-shaped curve VIII. Wet gas is rich in what? a. Water b. Natural gas liquids c. Oil d. Condensate IX. "Stranded" natural gas is gas that… a. Explodes b. Cannot be moved to market	**10**	**2**

	c. Is associated with oil d. None X. What is a LNG "train"? a. A chain of natural gas pipelines b. An LNG tanker c. A plant that liquifies natural gas **d.** A train that carries compressed gas		
Q. 3	Please select the correct answer for each question among the given options- I. What is a very common contaminant that must be removed from both natural gas and oil? a. Particulate matter b. Salt c. Sulfur d. Carbon dioxide II. Methane gas is almost pure after it has been processed. a. TRUE b. FALSE III. Among other products, naphtha is used to produce diesel. a. TRUE b. FALSE IV. The lower the viscosity of the crude in a barrel of oil, the more of what can be produced from it? a. Kerosene b. Diesel c. Sulfur d. Gasoline V. Which one is not among International Energy Agency (IEA)'s 4Es (main areas of focus) a. Energy unconventional b. Economic development c. Environmental development d. Engagement worldwide VI. The cracking unit in a refinery will increase the production of diesel. a. TRUE b. FALSE VII. An oil distribution pipeline carries refined fuels. a. TRUE b. FALSE VIII. Where is oil in the U.S. Strategic Petroleum Reserve stored? a. In saline aquifers b. Underground in hollowed-out salt domes c. In large tanks surrounding refineries d. In oil fields that have not yet been pumped	**11**	**3**

	IX. Compared to other hydrocarbons, the energy content of natural gas is low per unit a. Volume b. Mass c. Weight d. Value X. Natural gas is transferred from transmission pipelines to distribution pipelines at the… a. Natural gas processing plant b. City gate c. Entrance to buildings d. Wellhead XI. A sour smelling odorant is added to natural gas before it is put into distribution gas lines to reduce gas use. a. TRUE b. FALSE		
Q. 4	Please select the correct answer for each question among the given options- I. Before it can be used, imported LNG must first be… a. Regassified b. Liquified c. Dewatered d. Cleaned of Sulphur II. What has to be determined at the "casing point"? a. Whether to log the well b. Whether to case the well c. Whether to complete the well d. None III. Which of the following is a major cost in oil and gas exploration that occurs before the casing point? a. Production casing costs b. Flow-line hook-up costs c. Water disposal costs d. Lease costs IV. Who bears the drilling and production costs of an oil and gas well? a. The driller b. The mineral rights owner c. The working interest owner d. The overriding interest owner V. In addition to a royalty, an overriding royalty may also need to be paid on sales of oil and gas production from a well if what? a. There is a burden on the lease b. The state requires it	**10**	**4**

	c. The royalty owner demands a higher royalty d. It is stipulated in the original mineral lease VI. What is the "payout" point? a. When the well starts to produce oil and/or gas that can be sold b. When drilling and completion costs for a well must be paid c. When sales of oil and/or gas from a well produce a net profit d. When the cumulative net profit from a well equals its drilling and completion costs VII. The "1" in the 3-2-1 crack spread refers to a barrel of diesel. a. TRUE b. FALSE VIII. Variation in what leads to significant differences in the price of gasoline from one state to the next? a. State production of crude oil b. State production of refined petroleum products c. State taxes d. State distribution of costs for petroleum products IX. What is an important component to the cost of natural gas for residential customers but not for operators of natural gas power plants? a. Transmission costs b. Distribution costs c. Taxes d. Drilling and completion costs X. Demand for oil changes significantly with the price of oil; e.g., demand falls when the price of oil rises. a. TRUE b. FALSE		
Q. 5	Please select the correct answer for each question among the given options- I. U.S. natural gas prices vary seasonally because... a. Supply is seasonal b. Total amount of storage capacity is seasonal c. Temperatures vary seasonally d. Demand is seasonal II. Which one is not the focus areas of Centre for High Technology (CHT) a. Performance Evaluation & Monitoring b. Energy Efficiency Improvement c. Technical Support/Assistance to MoP&NG d. None of all III. A decrease in the production of oil from Saudi Arabia has often what? a. Had no effect on oil prices	**6**	**5**

	b. Spurred increases in oil production elsewhere in the world c. Increased oil prices d. Decreased oil prices IV. When futures prices for oil increase with increasing months into the future, the prices are said to be in what? a. Normal backwardation b. Speculation c. Inversion d. Contango V. According to the agreement on an International Energy Programme (I.E.P.), each International Energy Agency (IEA) country has an obligation to hold emergency oil stocks equivalent to at least 120 days of net oil imports. a. TRUE b. FALSE VI. Over-the-counter contracts for oil and gas are... a. Unique futures contracts between buyers and sellers b. Standard futures contracts marketed by NYMEX and ICE c. Another term for spot transactions d. Futures contracts involving the U.S. Federal Government		
Q. 6	Please select the correct answer for each question among the given options- I. Which of the following is the most important factor governing the market value of an oil/gas exploration company? a. Its current reserves b. Its projected acreage holdings c. Its volume of past production d. Its most recent revenues II. The "net pay" of a reservoir differs from it "gross pay" in that the former is... a. The potential amount of revenue from oil/gas sales after cost and taxes b. The percentage of reservoir volume containing oil/gas c. One minus the water saturation in the reservoir d. The reservoir porosity divided by the formation volume factor III. For an oil & gas company listed on a U.S. stock exchange, what type of reserves can the company claim as being producible in their financial reports? a. P2 b. P1 c. P4 d. P3 IV. A decrease in the price of oil does what? a. Decreases technically recoverable resources b. Reduces economically recoverable reserves	**13** **(1*9+2*2)**	**6**

c. Decreases total resources
d. Decreases undeveloped reserves

V. When oil/gas prices are very low, a cost effective way for an exploration and production company to increase its oil/gas reserves may be to what?
   a. Merge with another company
   b. Increase its exploration for new oil and gas reservoirs
   c. Buy oil/gas on the open market
   d. Drill more wells into its developed oil and gas reserves

VI. A national oil company like Saudi Aramco differs from an international oil company like Chevron in which of the following ways?
   a. Its majority owner is the national government
   b. It owns the the country's oil and gas resources
   c. It is an integrated oil company
   d. It is technically more advanced in exploration and production

VII. Shale gas can be considered a form of what?
   a. Gas hydrates
   b. Coal-bed methane
   c. Bitumen
   d. Tight gas

VIII. What region of the world that may contain significant oil and gas resources remains poorly explored?
   a. Australia
   b. The China Seas
   c. Indonesia
   d. West Africa

IX. What is/are the problem with NELP? (Select all correct answers)
   a. Separate policies and licenses for different hydrocarbons
   b. The Production Sharing Contracts (PSCs) under NELP are based on the principle of “profit sharing”.
   c. Exploration is confined to blocks that have been put on tender by the govt.
   d. The process of approval of activities and cost gives the govt a lot of discretion and has become a major source of delays and disputes.

X. What are/is the benefit/benefits with HELP? (Select all correct answers)
   a. There will be a uniform licensing system, which will cover all hydrocarbons, under a single license and policy framework.
   b. Contracts will be based on ‘biddable revenue sharing’.
   c. An ‘Open Acreage Licensing Policy’ will be implemented whereby a bidder may apply to the Government seeking exploration of any block not already covered by exploration.
   d. The contractor will have freedom for pricing and marketing of gas produced in the domestic market on arms length basis.

XI. Select all correct answers regarding Indian Strategic Petroleum Reserves (ISPR)

	a. India's strategic crude oil storages are currently located at Visakhapatnam (Andhra Pradesh), Mangaluru (Karnataka), and Padur (Karnataka). b. The government has also given approval for setting up of two additional facilities at Chandikhol (Odisha) and Padur (Karnataka). c. The construction of the Strategic Crude Oil Storage facilities in India is being managed by Indian Strategic Petroleum Reserves Limited (ISPRL). d. ISPRL is a wholly owned subsidiary of Oil Industry Development Board (OIDB) under the Ministry of Petroleum & Natural Gas.		
SECTION-B **40 Marks** **Maximum 500 words**			
Q 7	Explain the future of Natural Gas market globally as well as regionally with the help of data given in Annexure 1. Except this, provide the relationship between gas demand and its use by various sectors.	**20 (10+10)**	**CO2 & CO3**
Q 9	Provide your interpretation on the oil demand and its role in global energy for the future also provide the impact of US tight oil on OPEC production. Please use the data from Annexure 2.	**20 (10+10)**	**CO5 & CO4**

Annexure 1

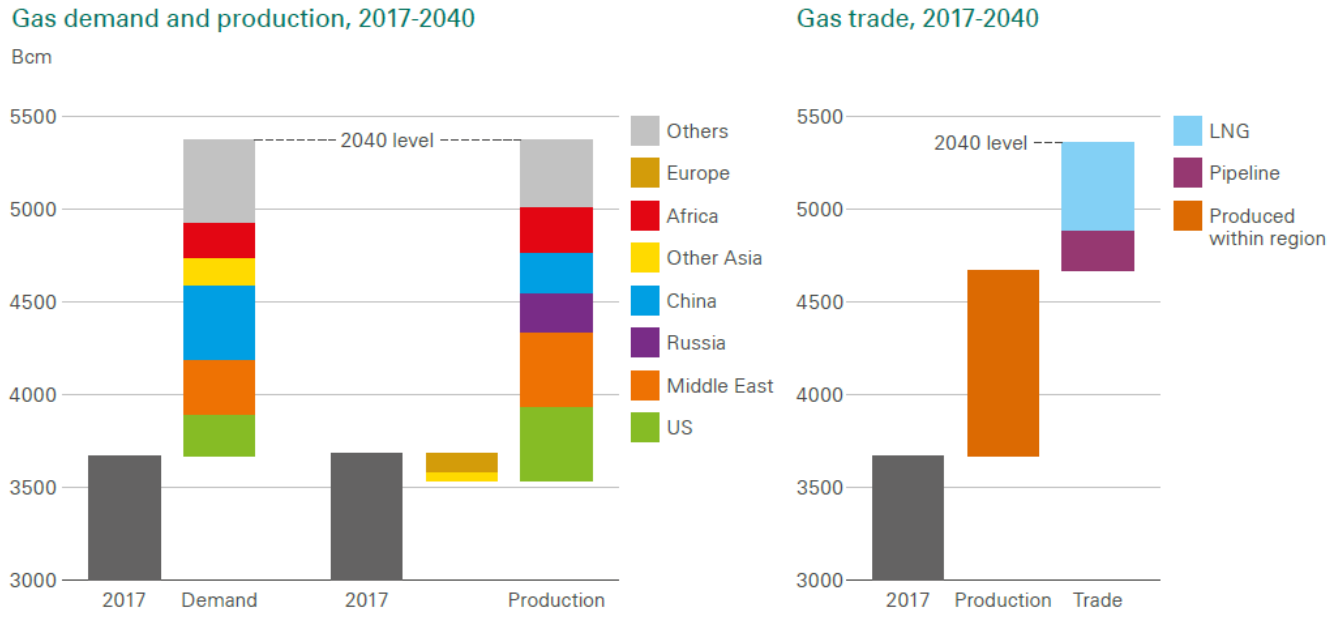

Figure 1.1

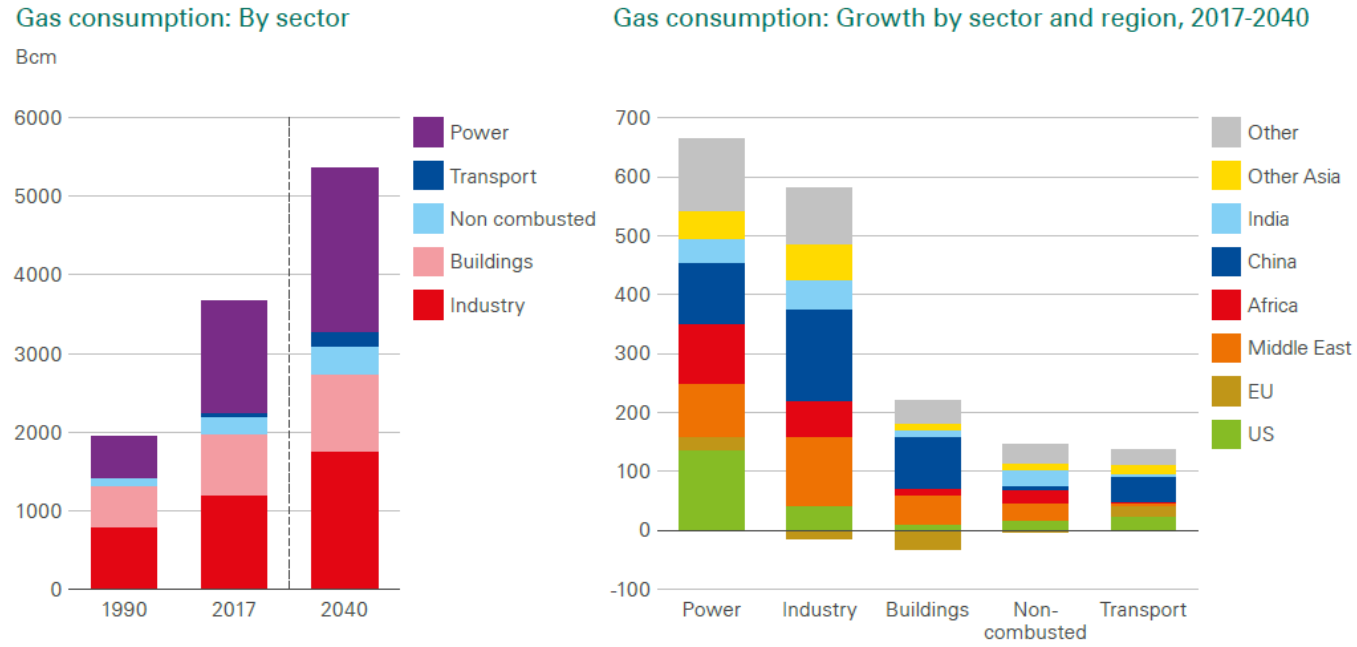

Figure 1.2

Annexure 2

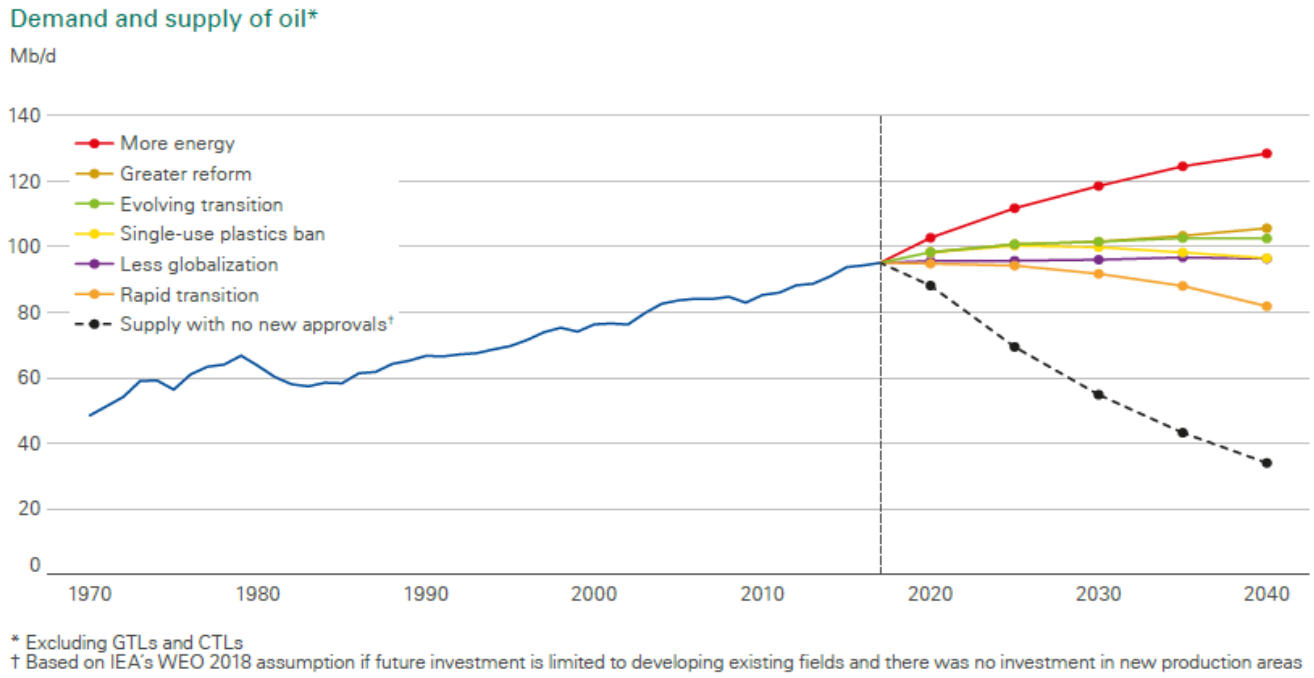

Figure 2.1

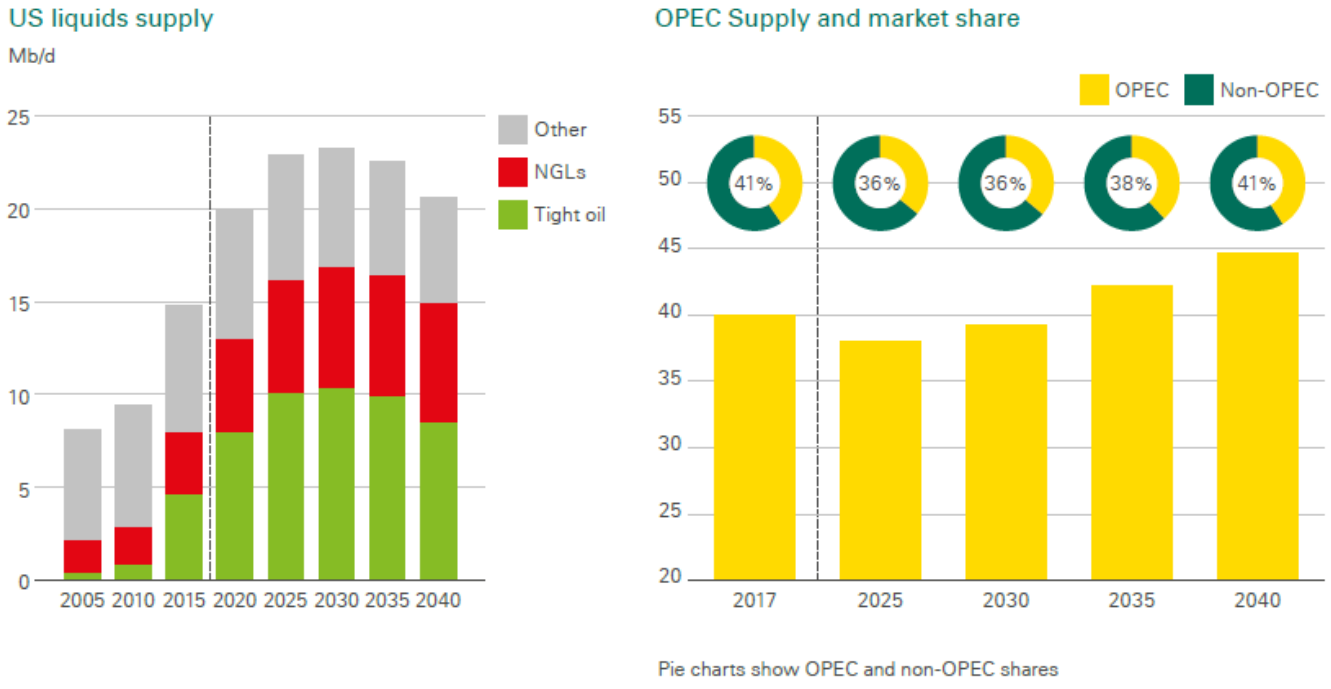

Figure 2.2