

UPES SAP ID No.: _____



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

Examination, July 2020

Programme: B. Tech Geoinformatics

Semester: IV

Course Name: Methods of Petroleum Exploration

Max. Marks: 100

Course Code: PEGS2019

Attempt Duration: 2 Hrs. for sect A

No. of page/s: 08

Note:

1. Read the instruction carefully before attempting.
2. This question paper has two section, Section A and Section B.
3. There are total of seven questions in this question paper. **One** in **Section A** and **six** 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)
12. Both section A & B should have questions from entire syllabus.
13. The COs mapping, internal choices within a section is same as earlier

SECTION A [60 MARKS]

Which of the following is the fundamental constituent of humic coal	Mineral matter	Maceral	Lithotype	Kerogen
Where was oil discovered for the first time in India	Digboi	Numaligarh	Bongaigaon	Barauni
KEROGEN TYPE III can produce	oil	gas	oil and gas	gas and coal
If TOC is > 3%, the source potential is considered as	fair	good	very good	excellent
S ₂ in pyrolysis is	free gas quantity	pyrolysed gas qu	Co ₂	o ₂
curved, arc shaped sand mound with horns facing downwind formed in arid regions is called	parabolic	barchan	star	none
Fossils of burrows and footprints are known as	pseudo fossils	coprolites	body fossil	trace fossils
Horst and graben structures are typically formed by	normal faulting	strike-slip faulting	reverse faulting	thrust faulting
Turbidites commonly form in	fluvial environment	marine environment	tidal flat environment	each environment
Which type of kerogen has the highest H-C atomic ratio	type I	TYPE II	TYPE III	TYPE IV
Out of the following list, which one is an inorganic chemical paleothermometer	Carbon ratio	Pyrolysis	Vitrinite ref	Fluid inclusions
Which of them is used in extraction of metals	Coal gas	Coke	Coal tar	Petroleum
ment travels out of the delta into the sea, high tides and flood tides confine sediment on the delta plain	Tide dominated delta	wave dominated	fluvial delta	none
When the density of river water is equal to density of standing water in the basin, the flow type in a delta is known as	Homopycnal	Hyperpycnal	Hypopycnal	None
Era dominated by the dinosaurs	Precambrian	Jurassic	Quaternary	none
Cambay Basin is	rift	backarc	forearc	foreland
Sedimentary basin comprising himalayan sediments is	foreland	backarc	rift	other
Higher ratio of pristane/phytane indicates environment	marine	fluvial	mix	none
one of the commercially producing siliciclastic reservoir in Assam Arakan Basin is	Tipam	barail	both	none
Mark the controlling factors of petroleum generation in source rock	TOC	maturity	kerogen type	all
GR Log is to measure	GRAVIMETRIC RADIOACTIVITY	RESISTIVITY	POROSITY	ALL
Which formation is an effective source rock in Cambay basin	Cambay	Kalol	Tarapur	None
What is the type of petroleum reservoir in Bombay high	siliciclastic	carbonate	both	none
High resistivity is indicator of	oil	gas	both	none
The temperature window for significant oil generation	10-60°C	100-160°C	100-260°C	>260°C
What type of map is prepared by obtaining difference in elevation between the gas-water contact and the top of the hydrocarbon bearing zone.	Isopay	Isolith	Isochron	all
There are major sedimentary basins in India	13	23	26	16
Which of following is not an elements of petroleum system	trap	reservoir	cap	none
Thermal maturity > 1% is indicative of Hydrocarbon	biogenic	thermogenic	immature	mature
When the TOC in shale greater than.....wt % , it is excellent source rock	2	3	4	10
The Nile River forms an as it empties into the Mediterranean Sea .	arcuate delta	bird foot	both	none
Crevasse Splay is Formed when river breaksand deposits sediments on floodplain	natural levees	meander	tidal flat	none
The effect of Diagenesis can enhance or reduce Reservoir quality by effecting	mineralogy	porosity	environment	none
Stronger waves form a.....delta, which is more pointed than the arcuate delta, and is tooth-shaped	cusped	bird foot	accuate	none
which is/are stratigraphic traps	pinchout	salt dome	fault	anticline

Section - B (Attempt all the questions) (4 × 10 =40 marks)

- Elaborate different types of petroleum traps with sketch.
- A limestone bed is dipping in a dam site at the rate of 1 in 4 along N15° W. Find its apparent dip along N50° W.
Scale 1 unit = 1cm. State Strike
Differentiate between anomaly and background in geochemical prospecting.
- The following data are derived from Facies A and are measurements of foresets of large-scale trough cross stratification. Interpret and analyze the palaeocurrent direction with the help of rose diagram.
[Data Set 1(degree of measurement): 103 151 148 119 134 101 152 119 130 87 99 116 92 71 142 106 135 138 65 115 107.

4. Refer the log image and answer the following questions:

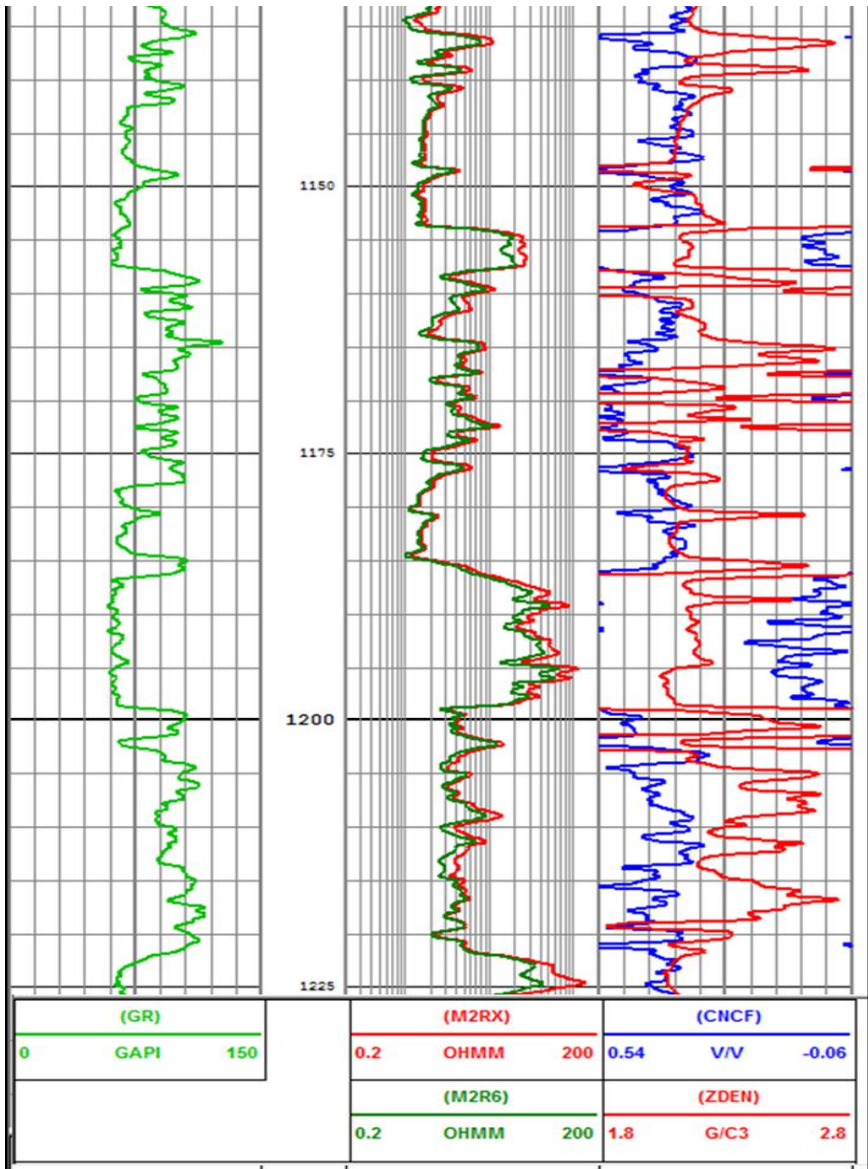


Fig 1

- a) Identify lithology and mark in the log section below.
- b) Interpret the hydrocarbon bearing zone and assess the reservoir quality based on shaliness
