

<b>Name:</b>	
<b>Enrolment No:</b>	

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**

**End Semester Examination, December 2018**

**Course: Petroleum Exploration-Geological & Geophysical Methods**

**Semester: V**

**Programme: B.Tech APE-UP**

**Course Code: GSEG 323**

**Time: 03 hrs.**

**Max. Marks: 100**

**Instructions:**

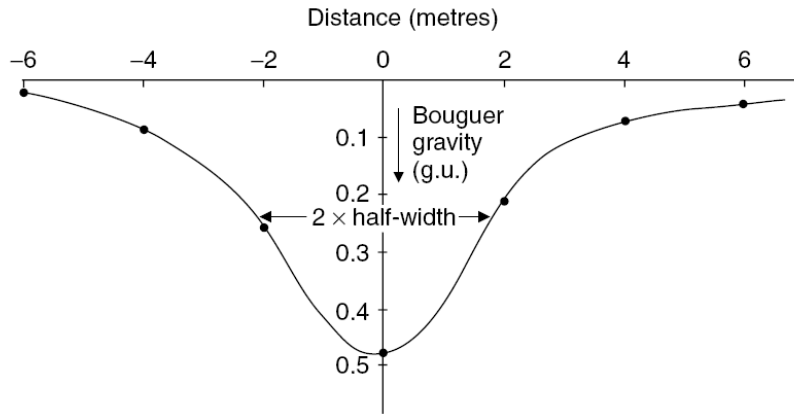
**SECTION A**

**All Questions Compulsory**

S. No.		Marks	CO
Q.1	List reasons in support of organic origin of petroleum.	[4]	CO5
Q.2	Differentiate between sediments deposited under fluvial and beach environment.	[4]	CO5
Q.3	Explain the remanent magnetization in igneous, sedimentary and metamorphic rocks.	[4]	CO4
Q.4	Differentiate between 1D, 2D, 3D, 4D, 3C and VSP seismic survey.	[8]	CO6

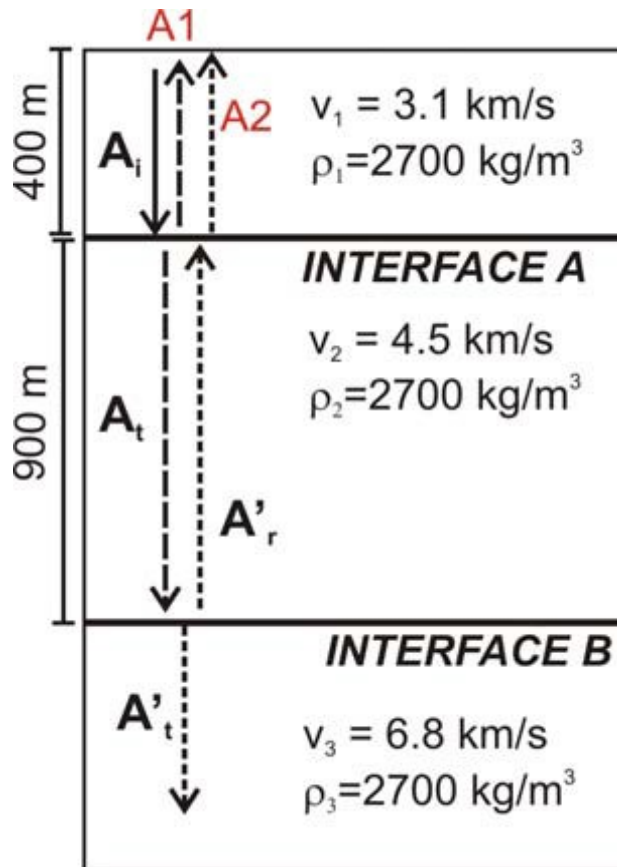
**SECTION B**

Q.5	Explain with illustration secondary migration and accumulation of hydrocarbons in a system.	[10]	CO5
Q.6	Describe a scheme to identify between conventional and unconventional hydrocarbon accumulations in a trap.  <b>Or</b> Describe the general scheme of petroleum formation.	[10]	CO5
Q.7	Estimate the depth and size of a buried spherical body having density of 2.12 gm/cc with host rock density of 2.52 gm/cc from the given gravity measurement data ( <b>Fig 1</b> ). (1g.u. =0.1mgal). Gravity measurement formula for spherical body is given as, $g(x) = GM_E z/(x^2+z^2)^{3/2}$ .	[10]	CO2



**Fig 1**

Q.8 Evaluate the amplitude and arrival time of multiple reflections (A1, A2) coming as signal from a normal incidence as per given diagram (**Fig 2**).



**Fig 2**

[10]

CO6

**SECTION-C**

Q.9	Explain: a) Effect on porosity of grain size under unconsolidated sediments vs consolidated sediments condition. (6 marks) b) For clay-free sands, the reduction in porosity with increasing sorting coefficient is greater for coarse sand than for fine sand. (7 marks) c) Post burial changes in porosity. (7 marks)  <b>Or</b>  Evaluate different factors critical to formation of hydrocarbons. (20 marks)	<b>[20]</b>	<b>CO5</b>
Q.10	Derive the equations of normal move-out and dip move-out for two-layer case. Evaluate the effect of assuming higher or lower velocity than actual velocity on NMO correction. Explain the methods to migrate the seismic data.	<b>[20]</b>	<b>CO6</b>

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