

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

Course: B.Tech CS OGI **Semester: VII**
Programme: Geophysical Data Acquisition, Processing & Interpretation (GSEG- 403)
Time: 03 hrs. **Max. Marks: 100**

SECTION A

S. No.	Question	Marks	CO
Q 1	A wire of resistance R is stretched to n times of its original length what is the new resistance and resistivity?	04	CO1
Q 2	What will be the signal to noise ratio, if the fold of the seismic data is 16?	04	CO2
Q 3	What do you understand by magnetic inclination? At what point on earth the horizontal component of earth's magnetic field is zero?	04	CO5
Q 4	In Wenner configuration a current of 50mA is passed through a current electrodes and a voltage of 10V is measured across the potential electrodes. What is the apparent resistivity if the spacing between the current electrodes is 90 m	04	CO6
Q 5	Draw KH type four layer master curve and also give the relationship between the resistivities	04	CO6


SECTION B

Q 6	How integration of gravity and magnetic will be useful in detection of basement in hydrocarbon exploration?	10	CO5
Q 7	What is a gravimeter? Compute the relationship between the time period of oscillation and sensitivity of the gravimeter.	10	CO4
Q 8	Critically explain free air and Bouguer correction in gravity method. [5+5]	10	CO4
Q 9	What are Direct Hydrocarbon Indicators? Give a brief explanation about bright spot, flat spot and pull down in seismic section	10	CO3

SECTION-C

Q 10	Describe the following terms in relation to seismic data acquisition [05+05+05+05] a. CDP shooting b. Fold of seismic data c. Body waves and surface waves d. Poisson's ratio	20	CO3
Q 11	a. Derive an expression for apparent resistivity using four electrode configuration for	20	CO6

	<p>Wenner Configuration. [10]</p> <p>b. What is the difference between electrical sounding and profiling method? [06]</p> <p>c. Draw all four types of three layer master curves. [04]</p>		
--	--	--	--

Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2018			
Course: B.Tech CS OGI		Semester: VII	
Programme: Geophysical Data Acquisition, Processing & Interpretation (GSEG- 403)			
Time: 03 hrs.		Max. Marks: 100	
SECTION A			
S. No.		Marks	CC
Q 1	What is Hockey stick effect? How it is corrected?	04	CC
Q 2	What is the SI unit of the gravity data? What is the relationship between the SI unit and the practical unit of gravity data?	04	CC
Q 3	What do you understand by magnetic declination and at what point on earth the inclination angle is zero?	04	CC
Q 4	What do you understand by passive geophysical methods?	04	CC
Q 5	Draw HA type four layer master curve and also give the relationship between the resistivities	04	CC
SECTION B			
Q 6	Using Ohm's law, derive an expression for apparent resistivity using 4-electrode general configuration.	10	CC
Q 7	Draw a ray diagram to represent the seismic data acquisition with CDP shooting and hence explain what do you understand by the fold of seismic data?	10	CC
Q 8	Briefly explain the gravity processing steps which are required to shift a gravity data taken over a mountain with an elevation of 'h' m with density contrast with the country rock as 200 kg/m ³ .	10	CC
Q 9	Write short note about different types of seismic waves,	10	
SECTION-C			
Q 10	a. Briefly explain all the three methods of velocity analysis. [15 marks] b. How interval velocity is estimated from the rms velocity. [05 marks]	20	CC
Q 11	a The following table shows a series of measurements made with Wenner configuration over a layered Earth. [06 marks]	20	CC

	a (m)	5	10	20	30	40	60	80	100			
	Rho(ohm-m)	1.0	1.0	1.2	1.6	1.6	1.2	1.1	1.1			
	<p>i. Does the data represent electrical sounding or profiling? ii. Which type of curve do the data represents?</p> <p>b. What is the difference between electrical sounding and profiling method? [06] c. Explain why AH type of four layer master curve is not possible? [04] d. Why subsurface resistivity is measured instead of resistance? [04]</p>											