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

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2019

Course: Computational Methods in Geoscience **Semester: III**
Program: B.Tech GSE **Time 03 hrs.**
Course Code: PEGS 2015 **Max. Marks: 100**

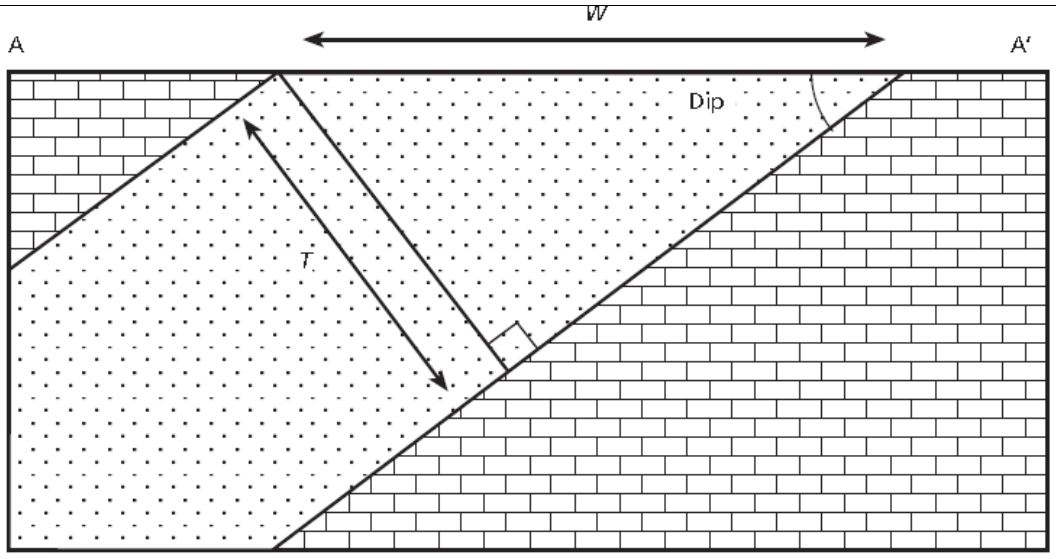
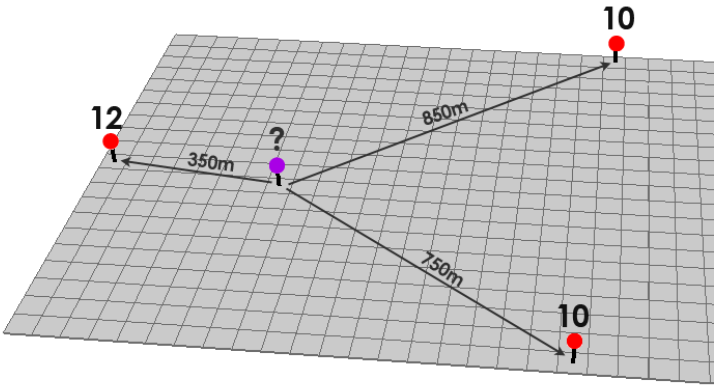
Instructions: Attempt all questions. However, there are internal choice in some question.

SECTION A

S. No.		Marks	CO
Q 1	What is Georeferencing?	**5**	**CO1**
Q 2	Convert the grain sizes of 0.05cm and 4 mm on phi scale	**5**	**CO2**
Q 3	Explain skewness and its relevance in sedimentation study	**5**	**CO1**
Q 4	Why do we need to check for normal distribution of data?	**5**	**CO1**

SECTION B

Q 5	Given the following depth/age data from a dried-up lake bed, estimate the rate of sedimentation and how long ago the lake dried out? Depth (m) Age (years) 6 500 000 10 550 000 18 600 000 20 650 000	**10**	**CO3**
Q 6	Geological study has been carried out along the traverse A-A', to study the exposure. The width (w) of the exposed bed is found to be 100 meter with 45 degree of dip. Find out the thickness (T) of the bed?	**10**	**CO3**

			
Q 7	How different devices can be predicted for accuracy on the basis of repetitive measurements? Develop a suitable algorithms to find out the accuracy of a device.	**10**	**CO3**
Q 8	Rock sample has been collected from a study area to determine its age of formation through Uranium-238 dating. Initial concentration of Uranium-238 was found to be 1000 counts/second through spectrometer and present was estimated to be 900 counts /second. Half-life of Uranium-238 is 4 billion years. Find out the age of rock formation? OR Evaluate the role of Moving window average method in smoothening of data. How this method can be used in delineation of local and regional anomaly?	**10**	**CO4**
	SECTION-C		
Q 9	Demonstrate the IDW method of interpolation and its relevance in Geoscientific applications. Calculate the value of unknown (?) Using IDW method from given figure. 	**20**	**CO4**

Q 10	Analyze the finite element method (FEM) for the quantitative assessment of subsurface fluid flow. How this method is useful in sustainable development of groundwater resource? OR Develop an algorithm for regression analysis for linearly dependent joint variables. Calculate the extent of relationship.	**20**	**CO5**