Name: **Enrolment No:**	UPES

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

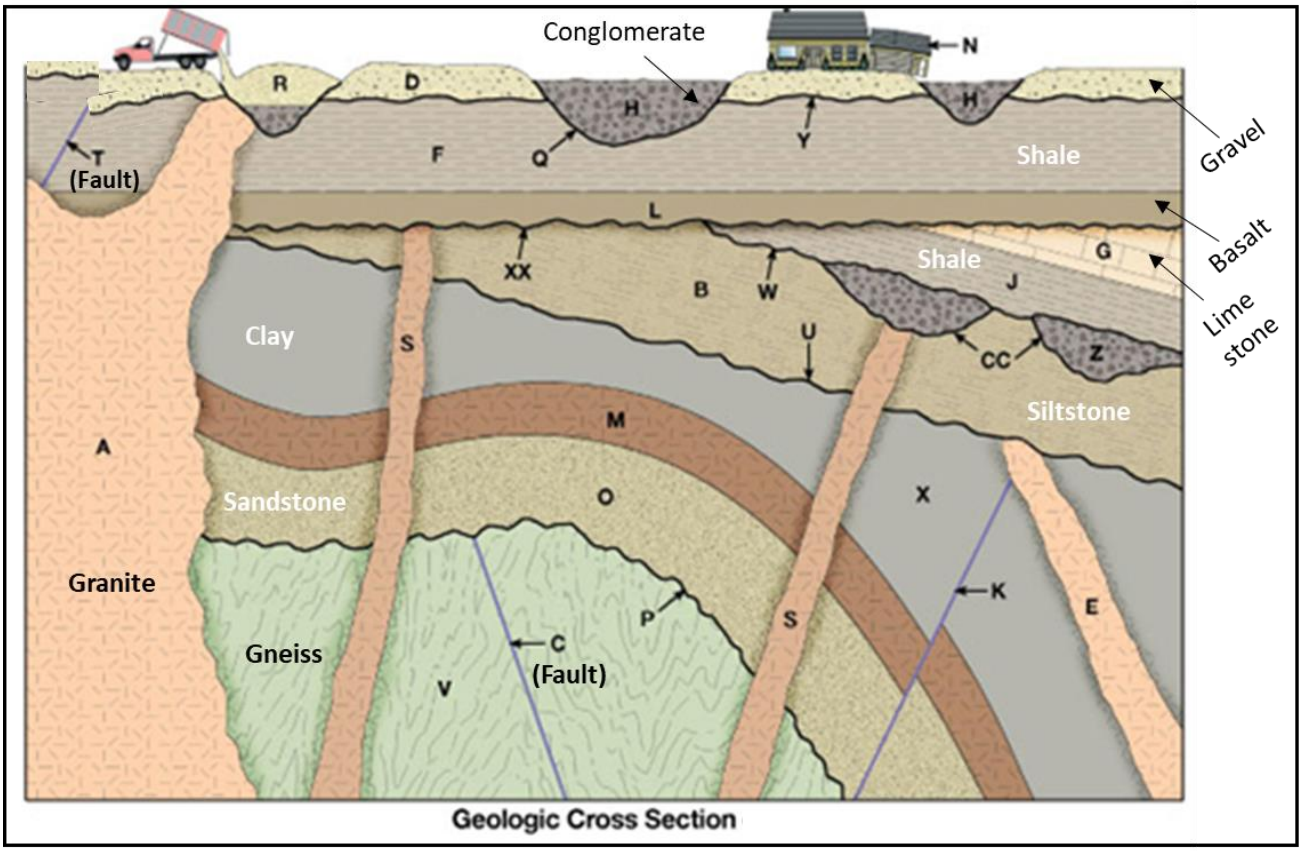
Course: **Introduction to Geology** **Semester: III**
Programme: B.Tech APE-UP **Course Code: PEGS 2012**
Time: 03 hrs. **Max. Marks: 100**

Instructions: This paper is only for B.Tech_APE-UP (3rd Sem) students. **Total three pages.**

SECTION A (All Questions Compulsory)

S. N.		Marks	CO
Q 1	Define micropaleontology and explain its applications in Oil & Gas industries.	**5**	**CO1**
Q.2	Define magma. Add a note on classification of Igneous rock based on mode of occurrence and associated structures.	**5**	**CO2**
Q.3	**True or false:** **a)** Mantle convection causes tectonic plates to get stable. **b)** The surface trace of an axial plane is called the hinge line. **c)** Mid-Oceanic ridges (MOR) are formed in convergent tectonic boundaries. **d)** Batholiths is a smallest igneous intrusive body. **e)** Drag folds are produced by movement of competent beds in opposite directions.	**5**	**CO3**
Q.4	Define the Index fossil and process of fossilization and Petrification.	**5**	**CO4**
	SECTION B		
Q.5	Explain the process of formation of sedimentary rocks. Outline the basis of its classification with appropriate examples.	**10**	**CO2**
Q.6	Discuss the geological work by river. Give an overview on the erosional and depositional land forms made by rivers in various stages.	**10**	**CO1**
Q.7	Illustrate a brief overview upon which the theory of Isostasy has been based. Explain various assumption behind this theory.	**10**	**CO3**
Q.8	Classify and describe different type of faults in rocks based on apparent movement of the blocks. Explain the important evidences for recognition of faults in the field.	**10**	**CO5**
	OR		
	Draw different geometric elements of a fold and classify various types of folds in rocks. Add a note on rock deformation and reasons of folding.	**5+5**	

SECTION-C			
Q.9	**Stratigraphic Principles:** **a)** Illustrate the fundamental principles of stratigraphy that are used in Geoscience studies. **b)** Draw labelled diagrams. **c)** Explain the objectives of stratigraphic studies in Oil & Gas industries.	**(10+5 +5)**	
	OR		
	Unconformity and it's types: **a)** Discuss the importance of unconformity in stratigraphy. **b)** Illustrate and explain the formation of four different types of unconformities and how are they recognized in the field? **c)** Draw appropriately labelled diagram of each types.	**(5+10 +5)**	**CO4**
Q.10	Deeper Earth Imaging (DEI) is an Oil & Gas service provider for geological mapping and modelling. They acquired subsurface data using deeper imaging techniques. The preliminary observations of basin DX are presented in geological cross section given below. They want more accurate geoscientific model to ensure best quality results and for that, they contacted you for geological reconstruction of this area. **Apply the concepts of Geology & principles of stratigraphy to study the below given geologic cross section and prepare a report based on following points:** **a)** Establish the relative order of geological events and identify various rock types and write their names against (Igneous/ Sedimentary and Metamorphic). **b)** Reconstruct the above given section and determine the correct sequence of the geological events from oldest to youngest with reason. *(Hint: cross-cutting relationship)* **c)** Identify various structural/ stratigraphic features present on section and give their definition. **d)** Illustrate geological history of the area with all events occurred in order. *Geologic cross section is given below-*	**(5x4)**	**CO5**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Geologic Cross Section