

**M.E. CIVIL ENGINEERING FIRST YEAR SECOND SEMESTER EXAM 2018****COASTAL AND OFFSHORE GEOTECHNOLOGY****Time: Three hours****Full Marks 100**

Use a separate Answer-Script for each part

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1. Answer ALL questions.
2. Maintain neatness.
3. No code etc. will be needed to answer the questions of this part

No. of Question	Part –I (40 Marks)	Marks
Q.1 a)	What are the differences between terrestrial and ocean sediments?	6
b)	Distinguish between lithogenous and biogenous sediments.	4
Q.2	Illustrate the effect of undrained cyclic loading on both contractive and dilative soils and bring out their differences with neat sketches.	10
Q.3	Illustrate bathymetry and seismic vertical profiling in connection with marine geotechnical investigation.	10
Q.4	Illustrate the principle of limiting equilibrium analysis for stability analysis for stability of a gravity platform with the help of a neat sketch.	10

**MASTER OF CIVIL ENGINEERING EXAMINATION 2018**  
(First Year, Second Semester)

**COASTAL AND OFFSHORE GEOTECHNOLOGY**

Time: Three Hours

Full Marks: 100

 PART I: 40 Marks  
 PART II: 60 Marks

*Use a separate Answer-Script for each part*

No. of questions	PART II (60 Marks)	Marks
<p><i>Answer any THREE questions from this PART.</i> <i>Assume suitable values for the parameters if not supplied</i></p>		
1	(a) Draw a neat sketch of general profile of 'Coastal Zone' and indicate all labels. (b) What are the different types of natural shore protections? Indicate the equivalent artificial shore protection. (c) Discuss the utility and disadvantages of seawall and groin as coastal structures.	8 8 4
2	(a) What is littoral drift in ocean? What are the parameters on which littoral drift depends? (b) Define: Point source and sink, Line source and sink, Littoral cell, Balanced littoral cell. (c) Draw a schematic diagram of the coastal cell for its sediment budgeting. (d) What are the steps involved for coastal sediment budgeting? Explain briefly.	2+4=6 4x1=4 4 6
3	(a) What are the assumptions made in tide theory? (b) What are the forces responsible for tide generation? (c) Define 'Equilibrium tide' and 'Daily inequality in tide'. (d) On the line joining Earth and Moon, A and B are diametrically opposite two points on the Earth's surface, on equator. Prove that the tide producing force at A and B would be same in magnitude but opposite in direction. Neglect the Sun's Gravitational attraction.	2 2 3x2=6 10
4	(a) What is littoral drift in ocean? What are the parameters on which littoral drift depends? (b) Define: Point source and sink, Line source and sink, Littoral cell, Balanced littoral cell. (c) Draw a schematic diagram of the coastal cell for its sediment budgeting. (d) What are the steps involved for coastal sediment budgeting? Explain briefly.	2+4=6 4x1=4 4 6
5	(a) What is called the artificial shore protection works? Give some examples, which are generally adopted? Explain briefly there functions with neat sketches. (b) Design a seawall in three layers, having the cross sectional compound slope, at the lower end 1(V):12(H) and upper end 1(V):6(H), for HTL=3.25m RL and wave height=1.85m. Provide a detail sketch of the designed section. Assume freeboard 1.5m and combined value of composite slope factor and friction factor 0.75.	2+6=8 12