

**M. Tech.-IV (Civil-Hydraulic Engineering) (CBCS – 2015 Course) :**  
**SUMMER - 2019**

**SUBJECT: SELF STUDY PAPER-II OFFSHORE STRUCTURES**

Day: Thursday  
Date: 13/06/2019

**S-2019-3439**

Time: 11.00 AM TO 02.00 PM  
Max. Marks: 60

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answer to both the sections should be written in **SAME** Answer book.
- 4) Assume suitable data if **NECESSARY**.

**SECTION – I**

- Q.1** Write short notes on: [10]  
i) Single buoy mooring  
ii) Design of gravity platform

**OR**

Describe the classification of offshore structures based on depth, material used and function.

- Q.2** Brief the history of development of platforms with the global demand for crude oil. [10]

**OR**

Sketch and name the various types of offshore structures and brief their function.

- Q.3** Elaborate the design criteria for unbraced platform based on wave length (L) and spacing of piles (S). [10]

**OR**

What is the concept of drag and lift related to the design offshore structures? Explain the method of estimation of  $C_M$  and  $C_D$ .

**SECTION – II**

- Q.4** Write short notes on: [10]  
i) Analysis of wave spectra to control vibrations in platform  
ii) Design aspect of floating structures

**OR**

Describe the various modes of transport of crude oil from deep draft oil tanker upto refinery at port with neat sketches.

- Q.5** Elaborate various factors affecting safety of oil platform due to manmade activities and natural processes. [10]

**OR**

Explain with sketches the wave forces acting on the pipeline laid along sea bed.

- Q.6** What are adverse effects on the aquatic life and fisheries activities on the beach due to oil leakage from the ship in the coastal area? [10]

**OR**

Brief how the maintenance of offshore platforms affects the smooth operation as well as life of structures.