Total No. of Questions :8] *[Total No. of Printed Pages :2*

 Roll No .....

MVSE-302(C)

M.E/M.Tech., III Semester

Examination, June 2017

Design of Offshore Structures

(Elective - II)

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.
ii) All questions carry equal marks.
iii) Assume missing data suitably.

1. a) Discuss various loads and structural forms of offshore structures.
   b) Discuss with example elements of SDOF system subjected to forced vibration.

2. a) Explain the physical and environmental aspects of offshore structures.
   b) What is an Eigen value problem? Discuss in detail.

3. a) Explain how the analysis of transient force is carried out.
   b) Discuss various sources of non linearity in vibration system.

4. A column of water tank is 90m high and is made of reinforced concrete with a tabular cross section of inner diameter 2.5m and outer diameter 3.0m. The tank weights 15×10^6 N. Find the natural frequency of transverse vibration of the water tank by neglecting the mass of the column.
   Assume $E_C = 18\times10^3$ N/mm^2.

5. a) Discuss Fourier series method for response of single degree of freedom.
   b) Explain the following:
      i) Mode superposition
      ii) Response spectra

6. a) Discuss in detail the behavior of concrete gravity platform.
   b) Discuss about the vibrations considering soil as half space.

7. Discuss the following:
   a) Aerodynamic admittance function and Gust factor
   b) Wave loads by Morison's equation

8. Write notes on any two of the following:
   a) Static and Dynamic analysis of fixed structures
   b) Use of approximate methods
   c) Helicoptor load.

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