

Total No. of Questions : 12]

SEAT No. :

P2976

[5154]- 528

[Total No. of Pages : 2

B.E. (Civil)

WAVE MECHANICS

(2012 Pattern) (Semester - II) (Open Elective - (4e)) (401010 DE)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Neat diagrams must be drawn whenever necessary.*
- 2) *Figures to the right indicate full marks.*
- 3) *Use of electronic pocket calculator is allowed.*
- 4) *Assume suitable data, if necessary.*

- Q1)** a) Discuss classification of waves. **[3]**
b) Discuss the process of wave generation and draw a definition sketch of wave propagation. **[4]**

OR

- Q2)** a) Discuss any one numerical model for wave forecasting in detail. **[4]**
b) Enumerate methods for wave measurement. **[3]**

- Q3)** a) Obtain expressions for wave velocity and acceleration. **[4]**
b) Short note on non-linear wave theories. **[3]**

OR

- Q4)** a) Define celerity, group velocity, dynamic free surface boundary condition, kinematic free surface boundary condition. **[4]**
b) Write a note on choice of wave theory. **[3]**

- Q5)** a) Write short notes on wave set up, wave run up. **[2]**
b) A wave of significant height 3.5 m and period 10 sec in deep water travels towards shore parallel to bed contours. If its crest makes an angle of 30° with bed contour of 12 m before refraction calculate wave height after crossing the contour. **[4]**

OR

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- Q6)** a) Write a short note on shoaling. [3]
b) Draw sketches for wave refraction in different cases. [3]

- Q7)** a) Write steps of Gumbel's extreme value distribution method. [6]
b) What is wave spectrum analysis? What is its significance? [4]
c) Discuss JONSWAP wave Spectrum. [6]

OR

- Q8)** a) What is Short term wave statistics and Long term wave statistics. [5]
b) Write short note on Tucker method. [5]
c) Explain Weibull Distribution and Log Normal Distribution. [6]

- Q9)** a) Elaborate in detail the dynamic beach response to the storms with neat figures. [6]
b) Define the terms sea, currents, surges, tides and Tsunamis. [4]
c) What are the man induced causes of coastal erosion? [6]

OR

- Q10)** a) Draw a typical beach profile and explain surf zone. [5]
b) What are the natural causes of shore line erosion. [5]
c) Enlist the coastal protection methods and elaborate any one in detail. [6]

- Q11)** a) Explain the effect of extreme events on littoral processes. [6]
b) Explain the effect of offshore wave climate on littoral transport. [6]
c) Explain all the consolidated rock materials in littoral processes. [6]

OR

- Q12)** a) Enlist different factors affecting the littoral process and explain any one in detail. [6]
b) Explain the changes in the littoral zones with respect to time and space. [6]
c) Write a note on classification of littoral materials. [6]

