Total No. of Questions : 12]

SEAT No :

P2152

[Total No. of Pages : 2

[5059]-528
B.E.(Civil)
WAVE MECHANICS
(2012 Course) (4e) (401010) (Open Elective) (Semester - II)

Time : 2 ½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever 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 the process of wave generation and draw a definition sketch of wave propagation. **[3]**

b) Write a short note on wave rider buoy. **[4]**

OR

Q2) a) What are the phase resolving and phase averaging models. Give suitable examples. **[4]**

b) Define finite amplitude wave, significant wave height, zero cross wave period. **[3]**

Q3) a) Short note on Stokes wave theory. **[3]**

b) Enlist assumptions made in wave theories. **[4]**

OR

Q4) a) Derive expression for group wave velocity. **[4]**

b) Define celerity, group velocity, dynamic free surface boundary condition. **[3]**

Q5) a) What is wave breaking? **[2]**

b) A wave has 3m height and 7 seconds period in deep water. It travels towards shore over parallel bed contours. If its crest line makes an angle of 30 with the bed contour of 10m before refraction. Calculate the wave height after crossing this contour line. **[4]**

OR

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Q6) a) Draw sketches for wave refraction in different cases. **[3]**

b) Write a short note on shoaling. **[3]**

Q7) a) Write steps of Gumbel's extreme value distribution method. **[6]**

b) Define random process or stochastic process. What do you mean by weekly stationary process? **[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) Draw a typical beach profile and explain surf zone. **[4]**

b) What are the natural causes of shore line erosion. **[6]**

c) Enlist the coastal protection methods and elaborate any one in detail. **[6]**

OR

*Q10)*a) Define the terms sea, currents, surges, tides and Tsunamis. **[5]**

b) Explain the near shore beach system with sketch **[5]**

c) Enlist the different dynamic beach responses to the sea and explain any one in detail **[6]**

*Q11)*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]**

OR

*Q12)*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]**

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