R13

Set No. 1

IV B.Tech I Semester Supplementary Examinations, February - 2019
WATER RESOURCES ENGINEERING - II
(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A(22 Marks)

1. a) What is sprinkler irrigation? What are the conditions favouring sprinkler irrigation? [4]
    b) Distinguish between Kennedy's theory and Lacey's theory. [4]
    c) What are the objectives of river training? [4]
    d) What is a weir and barrage? Distinguish between them. [3]
    e) Differentiate between: (i) elementary profile and practical profile of gravity dam and (ii) low and high gravity dams [4]
    f) Draw a neat diagram of zoned embankment. Describe the functions of each component. [3]

PART–B(3x16 = 48 Marks)

2. a) What is water logging? Explain ill effects and control measures of water logging. [8]
    b) A water course has a culturable commanded area of 1500 hectares. The intensity of irrigation of crop A is 50% and for B is 40%. Crop A is a Kharif crop and crop B is a Rabi crop. Crop A has a kor period of 21 days and crop B has kor period of 14 days. Calculate the discharge of the water course if the kor depth for crop A is 15 cm and for B it is 20 cm. [8]

3. a) Design an irrigation channel to carry 45 cumecs of discharge. Take silt factor as 1.1 and side slope as ½ : 1. Also determine the longitudinal slope. [8]
    b) Design a lined canal to carry a discharge of 180 cu.m/s on a slope of 1 in 2200. The maximum permissible velocity is 1.8 m/s and rugosity coefficient is 0.012 in Manning's formula and the side slope is 1.25 H: 1 V. [8]

4. a) Design an aqueduct for the following data.
       Canal: (i) full supply discharge = 35 cumecs (ii) Full supply level = 200.00 m (iii) Canal bed level = 198.5 m (iv) Depth of water = 1.5 m, (v) Bed width = 22 m (vi) Side slope = 1.5 : 1, Drainage: (i) High flood discharge = 350 cumecs, (ii) High flood level = 196.5 m(iii) Bed level = 193.5 m (iv) General ground level = 199.0 m, Take Manning's rugosity coefficient as 0.015 and Lacey's silt factor as 1.0. Assume any other data needed suitably. [10]
    b) What are the functions of cross-regulator and head-regulator? [6]

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5. a) Explain Khosla's method of independent variables. How do you apply corrections for interference of piles and inclination of floor? [8]
   b) Discuss the causes of failures of weirs on permeable foundations and suggest suitable control measures for each type of failure. [8]

6. a) Classify various types of dams. Discuss the factors that affect the selection of type of dam. [8]
   b) Discuss the modes of failures and criteria for structural stability of gravity dams. [8]

7. a) Explain the method of stability analysis of downstream slope during steady seepage. [8]
   b) Discuss briefly various types of energy dissipaters that are used for energy dissipation below overflow spillway, under different relative positions of TWC and JHC. [8]

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IV B.Tech I Semester Supplementary Examinations, February - 2019
FINITE ELEMENT METHODS
(Common to Aeronautical Engineering, Automobile Engineering and Mechanical Engineering)

Time: 3 hours   **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) Write the advantages and applications FEM. [4]
    b) Discuss the local and global coordinates. [4]
    c) Derive the equivalent load vector of beam element for UDL case. [3]
    d) Discuss the plane stress and plane strain case. [4]
    e) Discuss the axisymmetric formulation. [3]
    f) Discuss the consistent mass matrix and lumped mass matrix. [4]

PART–B *(3x16 = 48 Marks)*

2. a) By using stress strain relations derive the D matrix for three dimensional case. [8]
    b) Derive the expression to calculate the maximum deflection in a beam of length L with a point load P acting at the center by using Rayleigh Ritz method. Take moment of inertia as I and young's modulus as E. [8]

3. a) Discuss how penalty approach is used in handling specified displacement boundary conditions. [8]
    b) In the figure 3 (b) shown, a load $P = 60 \times 10^3$ N is applied. Determine the displacement field , stress and support reactions in the body. Take $E = 20 \times 10^3$ N/mm^2.
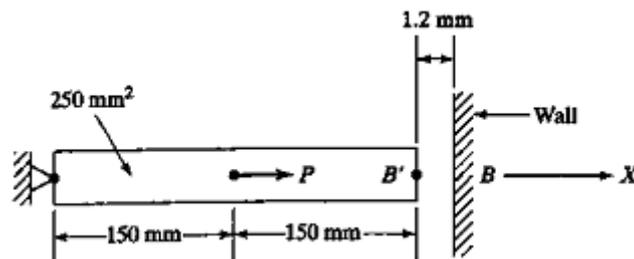

Figure 3 (b)

[8]

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4.   For the beam shown in the figure 4, determine the slopes at node 2 and node 3 and vertical deflection at the midpoint of the distributed load.
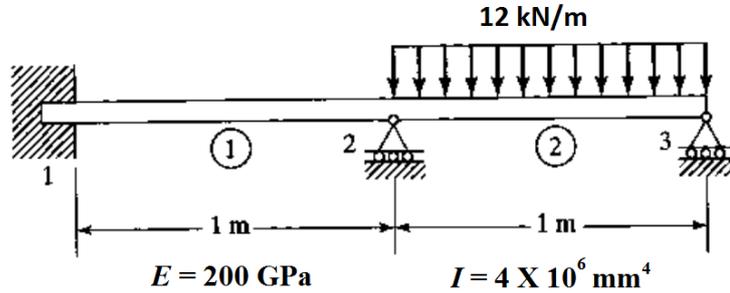
12 kN/m

$E = 200$ GPa $I = 4 \times 10^6$ mm^4

[16]

Figure 4

5. a)   Derive the strain displacement matrix of a constant strain triangle element.   [8]
   b)   For the triangular element shown in the figure 5 (b), obtain the strain – displacement relation matrix and determine the strains ε_x, ε_y and γ_{xy}.

$q_1 = 0.001$ $q_2 = -0.004$
$q_3 = 0.003$ $q_4 = 0.002$
$q_5 = -0.002$ $q_6 = 0.006$

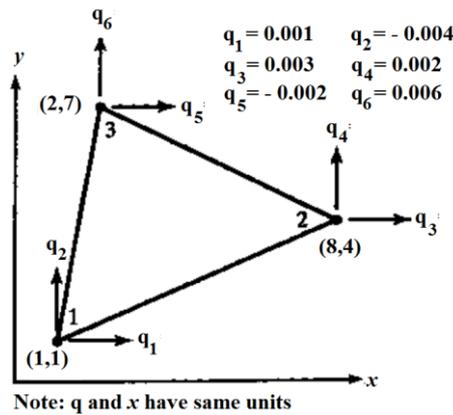Note: q and x have same units
Figure 5 (b)

[8]

6. a)   Derive the stiffness matrix of one dimension quadratic element.   [10]
   b)   Discuss the Isoparametric, subparametric and super parametric elements.   [6]

7.   Determine the Eigen values and Eigen vectors of the bar shown in figure 7
     Take E=200 GPa, $\rho = 2800$ kg/m^3, A=0.258 m^2, and L=0.4 m.
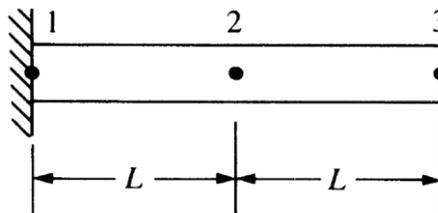

Figure 7

[16]

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IV B.Tech I Semester Supplementary Examinations, February- 2019
COMPUTER ARCHITECTURE AND ORGANIZATION
(Common to Electronics and Communication Engineering and Electronics and Instrumentation Engineering)

Time: 3 hours   Max. Marks: 70

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) What is Mainframe Computer? Write IEEE standard for floating point format. [4]
   b) Give the instruction format of Vector instruction. [3]
   c) What are the advantages and disadvantages of micro programming? [3]
   d) Define the term LRU and LFU. [4]
   e) Explain the significance of cache memory. [4]
   f) Write down the expressions for speedup factor in a pipelined architecture. [4]

PART–B *(3x16 = 48 Marks)*

2. a) Discuss about Error Detection codes. [8]
   b) State the Non –restoring division technique. [8]

3. a) What are addressing modes? Explain the various addressing modes with examples. [8]
   b) Discuss about logic micro operations. [8]

4. a) Explain the differences between hard wired control and micro programmed control. [8]
   b) Explain how control signals are generated using micro programmed control. [8]

5. a) Discuss the different mapping techniques used in cache memories and their relative merits and demerits. [8]
   b) Discuss about memory management hardware. [8]

6. a) Describe the data transfer method using DMA. [8]
   b) Discuss the design of a typical input or output interface. [8]

7. a) Describe in detail about pipeline processing. [8]
   b) Write short notes on Interprocessor Communication and Synchronization. [8]

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IV B.Tech I Semester Supplementary Examinations, February - 2019
SOFTWARE PROJECT MANAGEMENT
(Commom to Computer Science and Engineering and Information Technology)

Time: 3 hours   **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THEE questions from Part-B
*****

PART–A(22 Marks)

1. a) How to analyze project characteristics? [3]
   b) Discuss about process artifacts. [3]
   c) What is usecase-based estimation? [4]
   d) Describe Monte Carlo simulation. [4]
   e) Give the formula for earned value analysis. [4]
   f) Define quality measures. [4]

PART–B(3x16 = 48 Marks)

2. a) What are the problems with software projects? Explain. [8]
   b) Who are stakeholders? Explain management control. [8]

3. a) What are software process workflows? Discuss in detail. [8]
   b) Discuss in detail about choosing technologies. [8]

4. a) Explain about the COCOMO. [8]
   b) How to formulate a network model? Explain. [8]

5. a) Discuss about the risk assessment. [8]
   b) What is a risk? How to manage risks? [8]

6. a) How to identify resource requirements? Explain. [8]
   b) What is a defect tracking? Discuss about resource scheduling. [8]

7. a) Explain the Product vs process quality. [8]
   b) What is CMM? Describe about the ISO 9126. [8]

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