Code: 4G655

III B.Tech. I Semester Supplementary Examinations November 2018
Design & Drawing of Reinforced Concrete Structures
(Civil Engineering)

Max. Marks: 70   Time: 3 Hours
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(IS:456-2000 code is permitted)
PART-A
Answer *any One* questions (1 x 28 = 28 Marks)

1. A rectangular reinforced concrete beam is simply supported on two masonry walls 230 mm thick and 6m apart. The beam has to carry, in addition to its own weight, a distributed live load of 10kN/m and a dead load of 5 kN/m. Design the beam section for maximum moment at mid span. Assume M20 concrete and Fe 415 steel. Draw to a suitable scale
   a) Longitudinal section showing the reinforcement details.
   b) Cross section of the beam showing reinforcement details.   28M

2. Design a simply supported slab to cover a room with internal dimensions 4.0 m x 5.0 m and 230 mm thick brick walls all around. Assume a live load of 3 kN / m^2 and a finish load of 1 kN/m^2. Use M20 concrete and Fe 415 steel. Assume that the slab corners are free to lift up. Draw to a suitable scale
   (a) Longitudinal section showing the reinforcement details.
   (a) Cross section of the slab showing reinforcement details   28M

PART-B
Answer *any Three* questions (3 x 14 = 42 Marks)

3. a) Explain the concept involved in the working stress method of design.   7M
   b) Explain the role of Partial load and safety factors in the design of RC elements.   7M

4. Describe the shear transfer mechanisms in beams with shear reinforcements and beams without shear reinforcements.   14M

5. A rectangular reinforced concrete beam is simply supported on two masonry walls 230 mm thick and 6.5m apart (centre to centre).The beam has to carry, in addition to its own weight, a distributed live load of 10 kN/m and a dead load of 5kN/m. Design the beam section for maximum moment at mid span. Assume M20 concrete and Fe 415 steel.   14M

6. Design the reinforcement in a column of size 450 mm x 600 mm, subject to an axial load of 2000 kN under service dead and live loads. The column has an un supported length of 3.0m and is braced against side way in both directions. Use M20 concrete and Fe 415 steel.   14M

7. A rectangular simply supported beam of clear span 5 m is 300 mm x 450mm size, reinforced with 4 bars of 16 mm diameter. Use M25 grade concrete and Fe 415 steel. Calculate the short term and long term deflections in the beam.   14M

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Code: 4G654

R-14

III B.Tech. I Semester Supplementary Examinations November 2018
Environmental Engineering-I
(Civil Engineering)

Max. Marks: 70 Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Draw the flow chart of water supply scheme. 7M
   b) Discuss the characteristics of river water 7M

OR

2. a) How will you estimate the quantity of water required by a town while arranging a water supply scheme for the same? 7M
   b) What is meant by design periods and population forecasts? Why the population forecast is necessary in the design of public water supply schemes? 7M

UNIT–II

3. a) What are intakes? What are the important considerations which govern the selection of site of an intake? 7M
   b) Discuss in brief various methods of water distribution. Which method do you prefer? 7M

OR

4. a) Write a note on various water borne diseases. 7M
   b) Describe in brief various important tests conducted for chemical examination of water. 7M

UNIT–III

5. a) Draw the schematic layout of a water treatment plant. 7M
   b) List out the different aeration processes used for water treatment and discuss in brief any two with sketches. 7M

OR

6. a) Explain the working of a rapid sand gravity filter. 7M
   b) Name various disinfecting agents and explain the action of any one of these in detail. 7M

UNIT–IV

7. a) What are the sources of sanitary sewage? Explain the factors affecting sanitary sewage. 7M
   b) Write a note on the hourly variation in the sewage flow. What factors directly affect it? 7M

OR

8. a) Why is it necessary to provide sewer appurtenances on the sewer lines? With the help of neat sketches, explain the working of any two types of sewer appurtenances. 7M
   b) Why explosions occur in the sewer lines and how they can be prevented. 7M

UNIT–V

9. a) What are the various methods of sewage disposal? What do you understand by dilution and under what circumstances it is most suitable. 7M
   b) The B.O.D. of a sewage incubated for 5 days at 30^0C is 125 mg/lit. Calculate the B.O.D. at 20^0C. Assume k_{20}=0.1. 7M

OR

10. a) Discuss the effect of recirculation on the trickling filters with the help of sketches. 7M
    b) With the help of a neat sketch, explain the activated sludge process. 7M

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III B.Tech. I Semester Supplementary Examinations November 2018
Engineering Geology
(Civil Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. Outline the significance of Geology in Civil Engineering?   14M

OR

2. What is weathering? Explain various types of weathering? What is the
    significance of weathering in civil engineering?   14M

UNIT–II

3. Summarize the physical properties of the minerals studied for their
    identification?   14M

OR

4. a) Distinguish between a mineral and rock?   2M

    b) Describe the physical properties of following rock forming minerals
        i. Quartz
        ii. Feldspar   12M

UNIT–III

5. a) List the major types of rocks? Explain how are these rocks types formed? 12M

    b) Distinguish between a dyke and sill?   2M

OR

6. Explain strike and dip with neat sketch? Explain classification of faults and
    their importance in civil engineering?   14M

UNIT–IV

7. Give a brief about hydrological properties of rocks?   14M

OR

8. a) Explain the causes of occurrence of earthquakes?   10M

    b) What do you understand about seismic zones in India?   4M

UNIT–V

9. Give a brief about geological considerations in selection of a dam site with
    appropriate sketches?   14M

OR

10. a) Explain in brief about effects of tunneling on the ground?   10M

    b) What do you understand about over break in tunneling and lining of tunnels? 4M

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III B.Tech. I Semester Supplementary Examinations November 2018
Managerial Economics and Financial Analysis
(Common to CE, ME & ECE)

Max. Marks: 70   Time: 3 Hours
Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT-I

1. Define Price elasticity, Income elasticity and Cross price elasticity of demand. What are the different methods of measuring Price Elasticity of demand? Derive relationship between Price Elasticity of Demand and Marginal Revenue?

OR

2. Define Managerial Economics. Discuss the nature and scope of Managerial Economics. What is the relationship of Managerial Economics with Microeconomics?

UNIT-II

3. What is the shape of long-run average cost curve and explain why? Differentiate between Economies of Scale and Economies of Scope with suitable examples.

OR

4. Define and show graphically the Break even point of a firm. Find out the break even output (Q*) of a firm if total cost (TC) = Rs. 6310; total revenue (TR) = Rs. 4130; fixed cost (FC) = Rs. 4980; variable cost (VC) = Rs. 1330 and present output (Q) = 5.

UNIT-III

5. Compare and Contrast the Short-run and Long-run equilibrium conditions under Perfect competition and Monopoly market.

OR

6. Define Oligopoly market structure. Describe how price and output is determined under Stackelberg Duopoly model.

UNIT-IV

7. Why is capital important for a firm? What are the various sources of raising capital? Elaborate.

OR

8. What is capital budgeting? Define Net Present Value and Discount Rate. Write a brief note on Pay Back Method.

UNIT-V

9. What do you understand by the term 'Ledger' and 'Trial Balance'? Name two methods of preparing a Trial Balance. Prepare a purchase book from the following information:
    a) Purchase of goods costing Rs. 5000/- from M/s Ramesh & Co. vide invoice no. 120 dated 15/09/2017.
    b) Purchase of Fixed Assets costing Rs. 8000/- from M/s Renu & Co. vide invoice no. 016 dated 20/09/2017.
    c) Paid wages of Rs. 600/- in cash vide receipt no.16 dated 25/09/2017.

OR

10. What is the meaning of Accounting Ratios? What are the objectives of ratio analysis? List out the advantages and limitations of ratio analysis.

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III B.Tech. I Semester Supplementary Examinations November 2018
Structural Analysis-II
(Civil Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Determine the expression for horizontal reaction in a two hinged arch using
   i)   First theorem of Castigliano ii)Unit Load Method

   b) Determine the horizontal thrust developed in two-hinged semi-circular arch subjected to a UDL on only one half of the arch , given that EI is constant throughout

OR

2. A circular Arch to Span of 23 m with a central rise is hinged at the crown and springing. It carries a paint load of 100 kN at 6mtrs from the left support. Calculate
   a) The reactions at the supports and the reactions at crown
   b) Radial Shear, Thrust and Moment at 5m from the left support
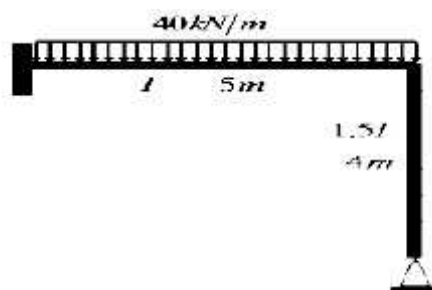
UNIT–II

3. A portal frame ABCD is fixed at A and D, and has rigid joints at B and C. The column AB is 3m long. The beam BC is 2m long, and is loaded with uniformly distributed load of intensity 6 kN/m. The moment of inertia is 2I and that of BC and CD is I (Fig). Plot B.M. diagram
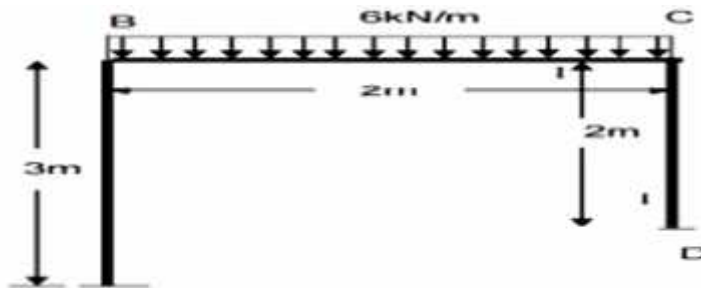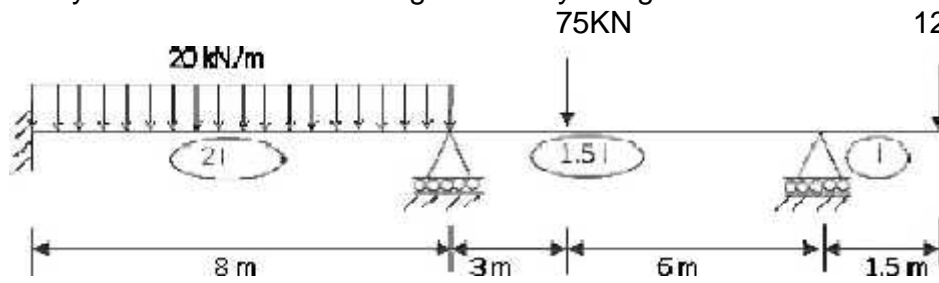

OR

4. Analyze the frame shown in figure by moment distribution method and by taking advantage of symmetry. Draw BMD
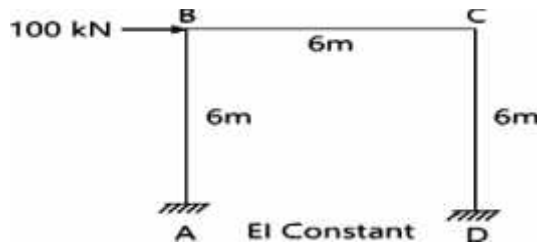
UNIT–III

5. a) Compare the advantages and disadvantages of Moment distribution method over Kani's method

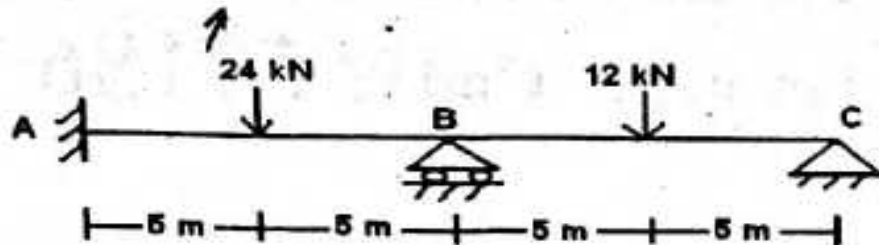   b) Analyse the 2D frame shown in figure using Kani's method and Draw BMD

OR

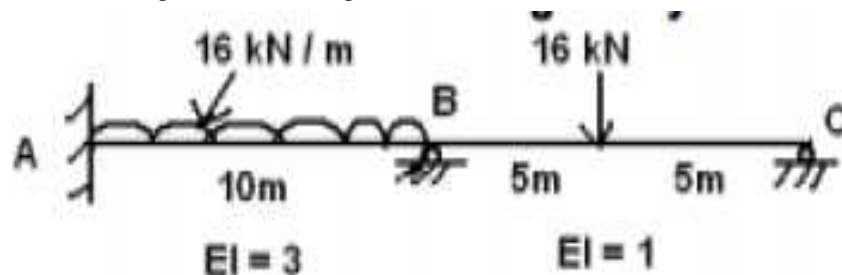6. Analyse the beam shown in fig. below by using Kani's method. EI=Constant

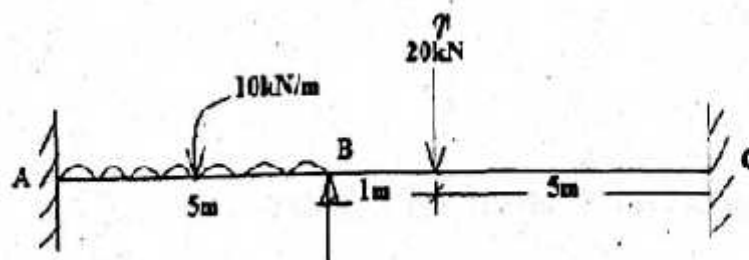7. a) Analyze the beam shown in figure by flexibility matrix method

b) Analyse the continuous beam ABC shown in Fig below by flexibility matrix method and draw the bending moment diagram. R_B and R_C are redundant

OR

8. Analyze the continuous beam shown in figure using stiffness matrix method and draw the bending moment and shear force diagrams

9. a) Write the assumptions made in plastic analysis.

   b) A two span continuous beam od section is fixed at A and hinged at B and C. span AB is 8m and BC is 6 m long. Two point loads of 50 kn each are acting on AB at 2m from A and B. Span BC is loaded with UDL of intensity 10kN/m. Determine Plastic Moment

OR

10. a) Calculate the shape factor for i) triangle a centroid lying at d/3 from the base of depth "d" and breadth "b". ii) circular section of dia „D".

    b) Examine the shape factor of the T-section of depth 100 mm and width of flange 100mm, flange thickness and web thickness 10 mm.

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