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R18

Course Code: A30013



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: BUSINESS MANAGEMENT & FINANCIAL ANALYSIS
(Civil Engineering)

Date: 09.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. Define Management. 2 M
2. Explain about planning. 2 M
3. Define production. 2 M
4. Explain about layout. 2 M
5. Explain about managerial Economics. 2 M
6. Define business cycle. 2 M
7. Define cost. 2 M
8. Define markets. 2 M
9. Explain about balance sheet 2 M
10. What is meant by liquidity ratios 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Discuss about Nature and scope of Management. 10M
- OR**
11. B). Explain about Henry Fayol Contributions to Management human relations approach to Management. 10M
12. A). What do you know about financial management objectives and goals? 10M
- OR**
12. B). Explain about scope and functions of HR management. 10M
13. A). Discuss about demand forecasting methods in detail. 10M
- OR**
13. B). Define law of demand and explain about factors influencing law of demand. 10M
14. A). Explain about types of cost concepts in detail. 10M
- OR**
14. B). Discuss about theory of pricing and objectives of pricing. 10M
15. A). Explain about Trading about along with the format. 10M
- OR**
15. B). Discuss on leverage and activity ratios. 10M

H.T No:

R18

Course Code: A30115



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: **DESIGN & DRAWING OF RCC STRUCTURES**

(Civil Engineering)

Date: 11.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. What is characteristic load? 2 M
2. What are the three methods of design of reinforced concrete structural elements? 2 M
3. Define bond. 2 M
4. What are the types of reinforcement used to resist shear? 2 M
5. Distinguish the between one way slab and two slab. 2 M
6. What is the function of providing distribution steel in slab? 2 M
7. Mention the types of columns based on loading. 2 M
8. What are braced and unbraced columns? 2 M
9. What are the types of footing? 2 M
10. When will you select the combined footing? 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Explain about balanced, under reinforced and over reinforced sections with neat sketches as per limit state method. 10M

OR

11. B). Design a rectangular simply supported reinforced concrete beam over a clear span of 4m. if the super imposed load is 20kN/m and support width is 300mm. Use M20 grade concrete and Fe415. 10M

12. A). Explain the procedure for design of shear reinforcement. 10M

OR

12. B). A RCC section 200x400mm is subjected to the following: Factored torsional moment of 25kNm and a transverse shear of 60kN. Assume M25 grade concrete and Fe415 bars. Determine the reinforcement required as per IS456 using the following data: Over all depth 400mm; Effective depth 350mm; $b=150\text{mm}$ and $d=300\text{mm}$. 10M

13. A). A simply supported floor slab 6.5m x 3m has to carry a half brick partition wall of reinforced brick work 3m height built along the full 3m span at the centre of the slab in addition to an imposed load of 2.5kN/m². Design the floor slab. Use M20 grade concrete and Fe415 steel. 10M

OR

13. B). Design the R C floor slab for a room inside dimensions 3m x 6m. The thickness of wall is 300mm. The slab carries 100mm thick weathering course of 16kN/m³ at its top and the live load is 2.5kN/m². Assume that the slab is simply supported at the ends. Use M15 grade concrete and Mild steel. 10M

(P.T.O.)

14. A). Design an axially loaded column with an unsupported length of 3m to carry a factored load of 2000kN. Use M 20 concrete and Fe 415 steel. 10M

OR

14. B). A short column located at the corner of a multistoried building is subjected to an axial factored load of 2000kN together with factored moments of 75kNm and 60kNm. The size of the column is 450x450mm. Design the reinforcement for the column. Use M20 concrete and Fe 415 steel. 10M

15. A). Design the footing for an R C column size 300 x 500 mm supporting a factored Load of 1500 kN. Assume SBC of soil as 200 kN/m². Use M20 Concrete and Fe 415 Steel. 10M

OR

15. B). Discuss the step by step procedure for the design of rectangular combined footing with neat sketches. 10M

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Course Code: A30116



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: GEOTECHNICAL ENGINEERING

(Civil Engineering)

Date: 13.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. Classify soil based on weathering process. Name the various weathering process involved in each type of the soil. 2 M
2. A soil sample is tested in the lab and the following results were obtained LL = 60%, PL = 40%, SL = 25% $W_{nat} = 30%$, $I_f = 27%$, % finer than $2\mu = 20%$. Do you recommend this soil sample where a highly plastic & semi solid type soil is required? 2 M
3. List out the various validation of Darcy law. 2 M
4. The depth of water in a river was 10m, 15m & 8m during months of February, July & December. The γ_{bulk} of soil is 20KN/m^3 & $\gamma_w = 10\text{KN/m}^3$. Calculate the effective stress at a depth of 10m below the river bed during these months. 2 M
5. A rectangular area 2 m x 4 m carries a uniform load of 80 kN/m^2 at the ground surface. Find the vertical pressure at 5 m below the centre and corner of the loaded area. 2 M
6. What are the factors affecting compaction? 2 M
7. Define: i) Compression index, ii) Coefficient of consolidation. 2 M
8. What are the uses of consolidation test data? 2 M
9. Construct the Mohr's circle diagram for UCC test and mention the salient features. 2 M
10. Classify the types of shear test. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). i) Determine a relationship between specific gravity of soil solids, moisture content, percentage air voids and dry unit weight. 5M
- ii) Determine the voids ratio and shrinkage limit of an oven dried sample whose volume is 397.5 cm^3 and a mass of 684 g. Consider the specific gravity of soil solids as 2.7. What will be the water content which will fully saturate the soil sample and also cause an increase in volume equal to 8% of the original dry volume. 5M

OR

- 11.B). A soil sample is coated with paraffin wax and total mass is 700 gm. The mass of soil sample alone is 690 gm. The soil sample coated with wax is immersed in water, due to which the volume of water displaced is 350 cc. The dry weight of the sample is 670 gm. Determine degree of saturation, dry unit weight, bulk unit weight and water content. Take specific gravity of soil solids as 2.7 and specific gravity of wax as 0.89. 10M

(P.T.O..)

12. A). List all the factors affecting permeability. What are its effects on permeability? Derive a relationship between each factor that affects permeability. 10M

OR

12. B). i) Analyze the boiling condition of soil particles with a help of a neat sketch demonstrating the phenomenon of boiling condition. Derive a relationship between the head and the void ratio of the soil particles considered in the demonstration. 5M

ii) List out the properties of flow net and the steps followed to sketch a flow net. 5M

13. A). i) A laboratory compaction test on soil having specific gravity equal to 2.68 gave a maximum dry density of 1.82 g/cm^3 and a water content of 17%. Calculate the degree of saturation, air content and percentage air voids at the maximum dry density. What would be theoretical maximum dry density corresponding to zero air voids at the optimum water content? 7M

ii) Work out theoretical maximum dry density for a soil sample having specific gravity of 2.7 and OMC of 16%. Also explain the difference in OMC value in case of proctor test and modified proctor test for cohesive soils and granular soils. 3M

OR

13. B). Discuss the Boussinesq and Westergaard's theories for point loads with neat diagram. 10M

14. A). i) Explain Terzaghi's theory of one dimensional consolidation. 6M

ii) Classify the methods of consolidation settlement. 4M

OR

14. B). An undisturbed sample of clay, 24 mm thick, consolidated 50% in 20 minutes, when tested in the laboratory with drainage allowed at top and bottom the clay layer, from which the sample was obtained, is 4 m thick in the field. How much time will it take to consolidate 50%, with double drainage? If the clay stratum has only single drainage, calculate the time to consolidate 50%. Assume uniform distribution of consolidation pressure. 10M

15. A). Two dimensional specimens, 4 cm in diameter and 8 cm high, of partly saturated compacted soil are tested in a triaxial cell under undrained conditions. The first specimen failed at an additional axial load of 720 N under a cell pressure of 100 kN/m^2 . The second specimen failed at an additional axial load of 915 N under a cell pressure of 200 kN/m^2 . The increase in volume of the first specimen at failure is 1.2 ml and its shorten by 0.6 cm at failure. The increase in volume of the second specimen at failure is 1.6 ml, and it shortens by 0.8 cm at failure. Calculate the value of cohesion and the angle of shearing resistance by analytically and graphically by constructing a Mohr's circle. 10M

OR

15. B). i) How do you find the shear test of soil using "vane shear test"? Derive the formula used to calculate the shear strength. Where is the test mostly used? 7M

ii) A vane 10cm long and 8 cm in diameter, was pressed into soft clay at the bottom of a bore hole. Torque was applied and gradually increased to 45 N-m when failure took place. Subsequently, the vane rotated rapidly so as to completely remold the soil. The remolded soil was sheared at a torque of 18 N-m. Calculate the cohesion of the clay in the natural and remolded states and also the values of the sensitivity. 3M

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Course Code: A30142



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: ENVIRONMENTAL IMPACT ASSESSMENT

(Civil Engineering)

Date: 16.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. Write the guiding principles of good EIA practice. 2 M
2. Explain regional EIA. 2 M
3. Enumerate the various techniques adopted for EIA in development activities. 2 M
4. Outline the good practices for social impact mitigation due to EIA. 2 M
5. Briefly write about the standard format of EIA. 2 M
6. Define deforestation. 2 M
7. List out the types of environmental audit. 2 M
8. What do you mean by audit protocol. 2 M
9. Mention the stages of environmental audit. 2 M
10. Write any four water pollution act. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). i) Discuss about basic concepts of EIA and its activities. 5M
ii) How an initial environmental examination helps for a full scale EIA? 5M

OR

11. B). Discuss the Ad-hoc and matrix methods of EIA methodologies in detail. 10M

12. A). Describe in detail the various effects of deforestation. 10M

OR

12. B). Describe the assessment of impact of development activities on vegetation. 10M

13. A). Discuss the mitigation measures to be taken up for reducing the impact on soil by industrial activity. 10M

OR

13. B). Explain the assessment of impact significance of soil report and also discuss about the impact of pipe line construction on the soil environment. 10M

(P.T.O.)

14. A). Summarize the various stages of environmental audit also discuss about post audit activities. 10M

OR

14. B). Describe in detail the procedures involved in environmental auditing and write a note on audit protocol. 10M

15. A). With a case study explain the wild life act and its mitigation measures in detail. 10M

OR

15. B). Enumerate the preparation of Environmental impact assessment statement for tannery industry in detail. 10M

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Course Code: A30118



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: **STRUCTURAL ANALYSIS-II**

(Civil Engineering)

Date: 18.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

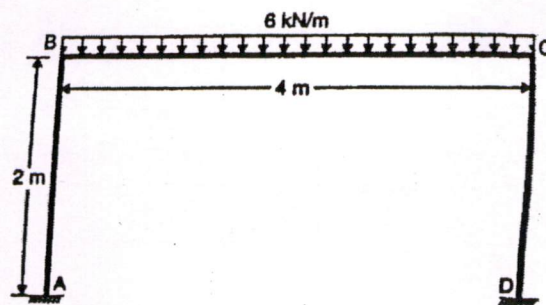
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|--|-----|
| 1. What is the difference between absolute and relative stiffness? | 2 M |
| 2. Define Rotation factor. | 2 M |
| 3. Write note on classification of two hinged arches. | 2 M |
| 4. State the limitations of slope deflection method. | 2 M |
| 5. What are the different methods of approximate methods of analysis? | 2 M |
| 6. Write short notes on factor method. | 2 M |
| 7. Define Stiffness matrix method. | 2 M |
| 8. What is meant by static indeterminacy? | 2 M |
| 9. What is the method used for calculating ILD for indeterminate structures? | 2 M |
| 10. How do you analyze indeterminate structures? | 2 M |

PART-B

Answer the following. Each question carries TEN Marks.

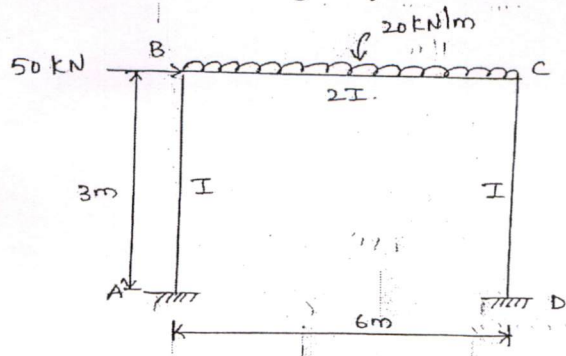
5x10=50M

- 11.A). Analyse the portal frame shown in figure by moment distribution method. The frame is fixed at A and D and has rigid joints at B and C. Draw the bending moment diagram. 10M



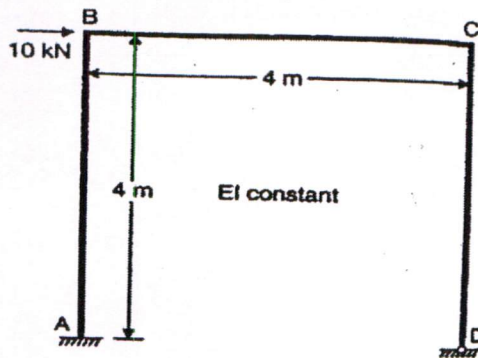
OR

- 11.B). Analyse the rigid jointed frames shown in figure by Kanis method. 10M



(P.T.O..)

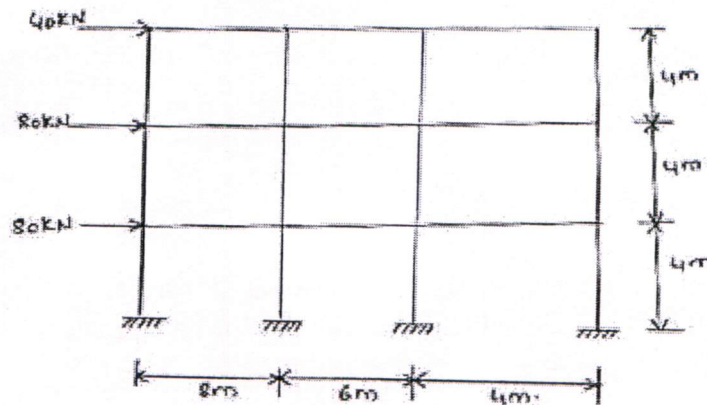
12. A). Analyse the portal frame shown in figure by Slope deflection method. Also sketch the deflected shape of the frame. The end A is fixed and end D is hinged. 10M



OR

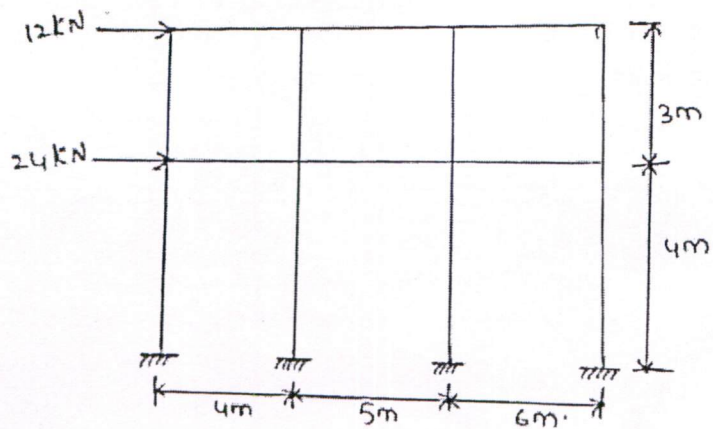
12. B). A two hinged parabolic arch of span 40 m and rise 8 m is subjected to a temperature rise of 22 K. Calculate the maximum bending stress at the crown due to the temperature rise if per 1 K and N/mm^2 . The rib section is symmetrical and 1 m deep. Assume relevant data. 10M

13. A). Analyze the frame shown in fig by portal frame method. Assume relevant data. 10M



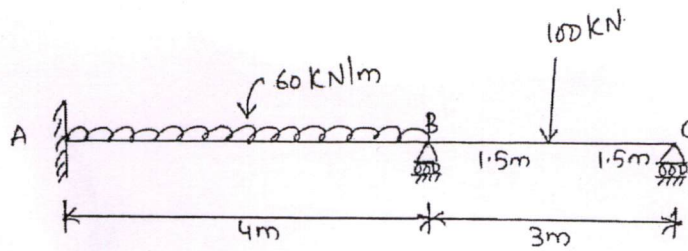
OR

13. B). Analyse the frame shown in figure by cantilever method. Take cross-sectional area of all columns as the same. Assume relevant data. 10M



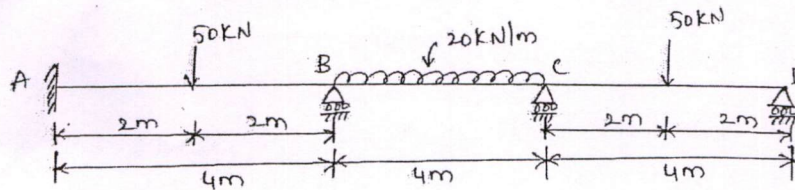
(P.T.O.)

14. A). Analyse the continuous beam shown in below fig. by flexibility matrix method. Assume relevant data. 10M



OR

14. B). Analyse the continuous beam shown in figure by stiffness matrix method. Assume relevant data. 10M



15. A). Draw the Influence line diagram for SF and BM for a section of 5m from left hand support of a simply supported beam, 20 m long. Hence, calculate the maximum bending moment and SF at a section, due to UDL of 8m length and intensity of 10 kN/m run. Assume relevant data. 10M

OR

15. B). i) Define static and kinematic indeterminacy. 4M
ii) Explain Castigliano's second theorem. 6M

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Course Code: A30117



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech V Semester Supplementary Examinations May-2023

Course Name: **TRANSPORTATION ENGINEERING-I**

(Civil Engineering)

Date: 20.05.2023 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. List the elements in horizontal alignment of road. 2 M
2. Mention the classification of roads. 2 M
3. Identify the purpose of providing camber. 2 M
4. Discuss the need for extra-widening at curves. 2 M
5. Illustrate any two methods of on-street parking. 2 M
6. What is meant by desire line diagram? 2 M
7. Infer the purpose of traffic islands. 2 M
8. Explain the importance of rotary intersection. 2 M
9. Choose a suitable pavement for static load parking areas, with an example. 2 M
10. Classify the aggregates based on their size in flexible pavement layers. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Elaborate on how horizontal alignment and vertical alignment is done for a highway. 10M
- OR**
11. B). Explain on various maps, drawings and reports required for planning a new highway construction. Also list out the surveys that has to be taken. 10M
12. A). Examine the stopping sight distance and overtaking sight distance for a two-way undivided roadway. Assume the speed of overtaking vehicle as 80 kmph and speed of slow-moving vehicle as 40 kmph. Assume all other data suitably. 10M
- OR**
12. B). Identify the procedure in providing the superelevation of a high speed national highway with derivation for attaining an expression. 10M
13. A). Explain in brief of various parameters involved in the geometric design of highway. 10M
- OR**
13. B). Classify and write a note on various types of signs used in highways. 10M
14. A). Examine the requirements and types of at-grade intersection in detail. 10M
- OR**
14. B). Classify channelized and un-channelized intersection with neat sketches. Also list out the grade separated intersections. 10M

(P.T.O.)

15. A). Model the formula for calculating quantity of discharge due to surface runoff. Also elaborate on types of surface and sub-surface drainage system. 10M

OR

15. B). Discuss the step by step construction procedure of cement concrete roads. 10M
