

Roll No. ....

**3701**

**B. Tech. 8th Semester (Civil Engg.)  
Examination – May, 2023**

**ESTIMATION, COSTING AND VALUATION**

**Paper : PCC-CE-402-G**

*Time : Three Hours ]*

*[ Maximum Marks : 75*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

*Note : Attempt five questions in all, selecting one question from each Section. Question No. 1 is compulsory. All questions carry equal marks.*

1. Describe the following :

2.5 × 6 = 15

- (a) Security Money
- (b) Cashbook
- (c) Retention Money
- (d) Depreciation

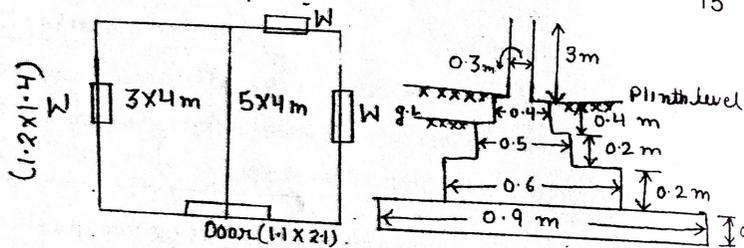
3701- 1400 -(P-4)(Q-9)(23)

P. T. O.

- (e) Scrap Value and Salvage Value
- (f) Valuation

**SECTION - A**

- 2. (a) What do you mean by estimation and also explain different method of estimation? 7
- (b) Explain the process of plastering and pointing. 8
- 3. Estimate the quantity by the long and short wall method of the following figure: 15



**SECTION - B**

- 4. (a) Explain the specification for different class of brick. 7
- (b) Explain the detail specification of Brickwork and Plastering. 8
- 5. (a) Explain different types of tool and equipment used in construction. 8

3701- (P-4)(Q-9)(23) (2)

- (b) Explain modular material in detail. 7

**SECTION - C**

- 6. Workout the quantity of earthwork for an embankment 150 m long and 10 m wide at the top. Side slope is 2 : 1 and depth at each 25 m as follows : 15  
0.6, 1.2, 1.4, 1.6, 1.4, 1.6, 1.5m and length of road is 150 m.
- 7. (a) What is the procedure to maintain measurement book? 7
- (b) Explain the process of preparation of final bill. 8

**SECTION - D**

- 8. (a) Explain what do you mean by tender and its acceptance? 7
- (b) Define contract and also explain type of contract. 8
- 9. Calculate the standard rent of a government residential building constructed from the following data: 15  
Cost of land = Rs. 10,000  
Cost of construction of building = Rs. 40,000

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P. T. O.

Cost of road with in the compound and fencing  
= Rs. 2,000

Cost of electric installation including fans = 8% of cost  
of building

House tax = Rs. 400 per annum

Water tax = Rs. 250 per annum

Property tax = Rs. 140 per annum

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**3704**

**B. Tech. 8th Semester (Civil Engg.)  
Examination – May, 2023**

**GEOTECHNOLOGY**

**Paper : PEC-CEEL-408-G**

*Time : Three Hours ]*

*[ Maximum Marks : 75*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** (i) Question No. 1 is *compulsory*. Attempt *one* question from each section.

(ii) All questions carry equal marks.

(iii) Assume missing data, if any, suitably.

1. (a) Enumerate different factors affecting slope stability.

(b) Necessity of braced cuts

(c) Differentiate cantilever and anchored sheet piles.

3704-950-(P-4)(Q-9)(23)

P. T. O.

- (d) Degree of freedom in machine foundation.
- (e) Define soil stabilization.
- (f) Components of a finite and infinite slope. 15

### SECTION - A

- 2. (a) What are the different types of slopes ? Describe the stability of finite slopes by method of slices. 7
- (b) Derive an expression for the factor of safety of an infinite slope in a cohesionless soil. 8
- 3. (a) Briefly describe total stress analysis and effective stress analysis for stability of slopes. 7
- (b) What is Stability number ? Describe its uses. 8

### SECTION - B

- 4. (a) Draw the apparent pressure distribution diagrams recommended by Terzaghi and Peck for cuts in sand, firm clay and soft clay. Also determine how the load can be calculated in each case ? 7
- (b) What is sheeting and bracing system ? Describe the different types of sheeting and bracing systems. 8

- 5. (a) Describe in detail the stability analysis of cellular coffer dam on rocks. 7
- (b) What is the necessity of coffer dam ? Differentiate between braced cuts and coffer dam. 8

### SECTION - C

- 6. (a) Find the depth of embedment to penetrate a cantilever sheet pile granular soil. The height of backfill is 5 m, with water table standing to mid height on either side. Take  $\gamma = 20 \text{ kN/m}^3$  and  $\Phi = 30^\circ$ ;  $\gamma = 9 \text{ kN/m}^3$  and  $\Phi = 30^\circ$ . Use approximate method. 10
- (b) What are the different types of sheet pile ? Explain briefly. 5
- 7. An excavation 8 m deep is to be made in cohesionless soil having  $\gamma = 16 \text{ kN/m}^3$ ,  $\Phi = 35^\circ$ . Determine the minimum depth of embedment for equilibrium. The anchors and water table are at a depth of 2.5 m and 3 m below the ground surface. Assume free earth support conditions. 15

### SECTION - D

- 8. (a) What do you mean by soil improvement ? Enumerate the different methods to stabilize the soil. 7

- (b) Describe in brief the cement stabilization. What are the factors affecting the stability of soil cement ?  
Discuss construction methods. 8
9. (a) Describe the characteristics elements of a vibratory system. 8
- (b) Define natural frequency for machine foundation. Analyse Barken's method for determining natural frequency of a block foundation subjected to oscillation. 7

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**3705**

**B. Tech. 8th Sem. (Civil Engg.)**

**Examination – May, 2023**

**ADVANCED STRUCTURE ANALYSIS**

**Paper : PEC-CEEL-410-G**

*Time : Three Hours ]*

*[ Maximum Marks : 75*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

*Note : Attempt five questions in all, selecting one question from each Section. Question No. 1 is compulsory. All questions carry equal marks.*

1. (i) Mention the characteristics of the stiffness matrix method.
- (ii) Maxwell-Betti's theorem.
- (iii) What is sub-structure analysis ?
- (iv) Define band matrix and semi band width.

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P. T. O.

- (v) Structures may be solved by either stiffness matrix method or flexibility method. Generally, stiffness matrix is preferred. Explain.

$3 \times 5 = 15$

**SECTION - A**

2. (a) Explain the Maxwell-Bettis theorems. 5  
 (b) Determine the reaction at A and the moment at B as shown in below Fig. 1 by using strain energy method: 10

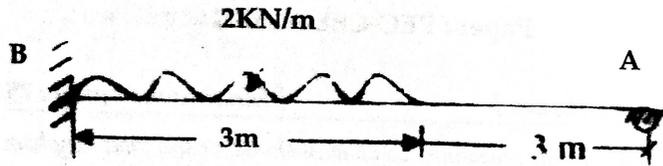


Fig. 1

3. (a) Explain the Maxwell law of reciprocal theorems. 7  
 (b) Explain Static indeterminacy, Kinematic Indeterminacy and Degree of Indeterminacy. 8

**SECTION - B**

4. Analysis the continuous beam given below in Fig. 2 using flexibility method. 15

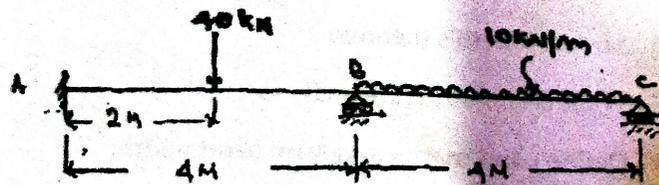


Fig. 2

3705- (P-4)(Q-9)(23) (2)

5. A two-span continuous beam ABC is simply supported over the supports B and C. Span AB = 6m and BC = 6m. Moment of inertia is constant throughout. A singly concentrated load of 10 tons acts on AB and a uniformly distributed load of 1 ton/m acts over BC. Analysis the beam by matrix method.

**SECTION - C**

6. Analyze the beam in Fig. 3 by flexibility method. Assume EI is same for all members. Assume stiffness of spring k at support 2 = 10000 KN/m. EI = 20000 KN/m<sup>2</sup>.

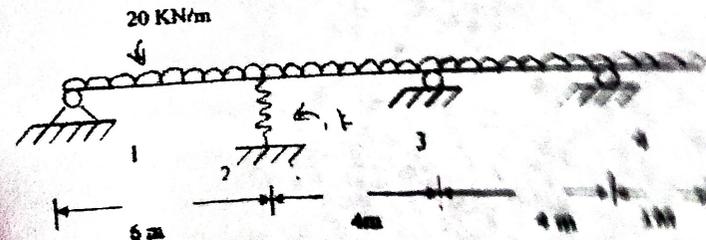


Fig. 3

7. What is sub-structure technique? Derive an expression for the effects of axial forces on flexible stiffness.

3705- (P-4)(Q-9)(23) (3)

## SECTION - D

8. A curved beam AB of uniform cross section is horizontal in plan and in the form of a quadrant of a circle of radius R. The beam is fixed at A and free at B. It carries a udl of  $w$ /unit run over the entire length of the beam. Calculate the shear force, BM and TM values @ A and B and sketch the variable of the same. Also, determine the deflection at the free end B. 15
9. Calculate the axial element stiffness matrix for single element. 15

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**3711**

**B. Tech. 8th Semester (Computer Science  
& Engg.) Examination – May, 2023**

**QUALITY ENGINEERING**

**Paper : PEC-ME-410-G**

*Time : Three hours ]*

*[ Maximum Marks : 75*

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**Note :** Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is *compulsory*. All questions carry equal marks.

1. (a) Explain Quality Traits.
- (b) Elements of TQC.
- (c) Discuss Poisson Distribution.
- (d) Discuss Industrial Inspection.
- (e) Explain TQM philosophies.
- (f) Discuss about importance of quality in industry.

$2.5 \times 6 = 15$

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3711-1600(P-3)(Q-9)(23)

### SECTION - A

2. Define and explain the objectives of quality control. 15
3. Explain in brief : 15
  - (a) Role of feedback in quality control
  - (b) Quality function

### SECTION - B

4. Compute the average and the standard deviation of the following distribution which shows the result of distribution of resistance of 500 unit of electrical product : 15

Resistance Ohms	Frequency
2.7 - 2.9	02
3.0 - 3.2	16
3.3 - 3.5	46
3.6 - 3.8	88
3.9 - 4.1	138
4.2 - 4.4	113
4.5 - 4.7	71
4.8 - 5.0	22
5.1 - 5.3	04

5. Explain how you will find out the probability of obtaining  $x$  defectives in a sample of  $n$  items by using Hypergeometric distribution. 15

### SECTION - C

6. Describe briefly the ISO : 9000 series standard in general. 15
7. Describe the various steps necessary for obtaining ISO : 9000 standard registration. 15

### SECTION - D

8. Give various definition of TQM and explain Juran's ten steps to quality improvement. 15
9. Discuss and explain the concept of Parameter Design and Robust Design according to Taguchi philosophy. 15