

Subject Code: R16CE2201

**II B.Tech II Semester Regular Examinations, April - 2018**  
**STRUCTURAL ANALYSIS-I**  
(CE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.  
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B  
All questions carry equal marks of 12.

**PART-A**

1. (a) What do you mean by Degree of freedom
- (b) What are the advantages of Macaulay's method
- (c) State Mohr's theorem-I
- (d) State Castigliano's theorem-I
- (e) Calculate the degree of determinacy for 3-hinged parabolic arch
- (f) What are assumptions involved while drawing ILD's

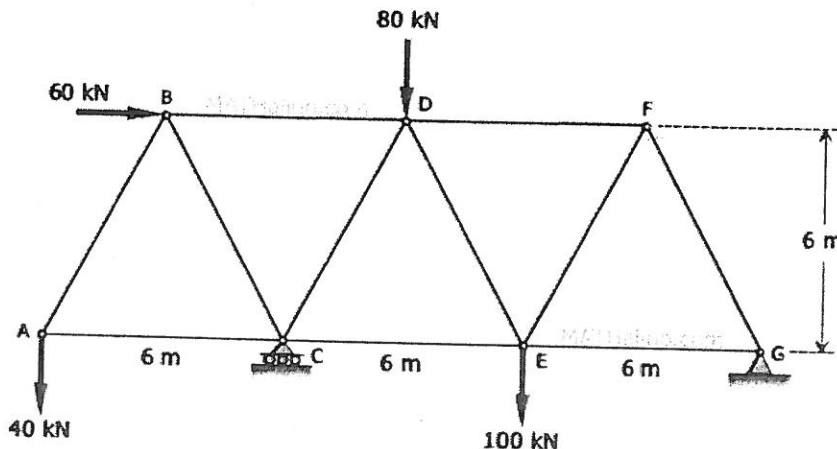
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**PART-B**

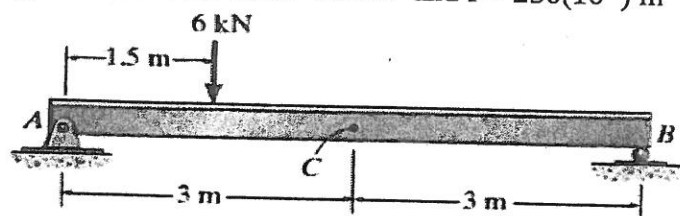
2. Compute the force in each member of the truss

4 X 12 = 48

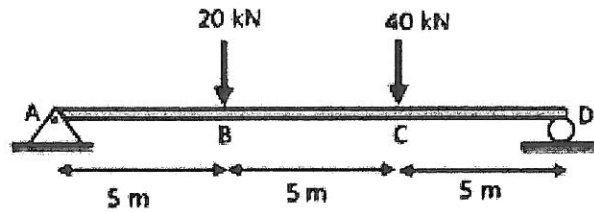
(12)



3. A beam AB of length 5m simply supported at the ends carries a point load 50 kN at a distance 3.5m from left end.  $I_{xx} = 55 \times 10^{-6} \text{ m}^4$  and  $E = 200 \times 10^6 \text{ KN/m}^2$ . Find (a) The deflection under the load (b) The position and amount of maximum deflection (12)
4. Use the conjugate beam method to determine the slope at A and deflection at point C of the beam shown in the below fig. Take  $E = 200 \times 10^6 \text{ KN/m}^2$  and  $I = 250(10^{-6}) \text{ m}^4$  (12)



5. Determine the slope and deflection at points C of the beam shown in the fig. Take  $E = 200 \times 10^6$   $\text{KN/m}^2$  and  $I = 250(10^{-6}) \text{ m}^4$  (12)



6. A UDL of 6  $\text{KN/m}$  covers left half span of 3-hinged parabolic arch of span 54m and central rise 9m . Solve for the horizontal thrust also find (a) BM and Shear force (b) Normal thrust (c) Radial shear at the loaded quarter point (12)
7. Four point loads 9  $\text{KN}$ , 16  $\text{KN}$ , 16  $\text{KN}$  and 12  $\text{KN}$  have centre to centre spacing of 2m between consecutive loads and they traverse a girder of 32m span from left to right with 10  $\text{KN}$  load leading. Calculate the maximum bending moment and shear force at 7m from the left support (12)

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**Subject Code: R16CE2202**

**II B.Tech II Semester Regular Examinations, April – 2018.**  
**HYDRAULICS AND HYDRAULIC MACHINERY**  
**(CE)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B  
All questions carry equal marks of 12.

**PART-A**

- 1 a) Write the various types of flow in open channels?
- (b) Define distorted model
- (c) Define impact of jet
- (d) Define specific speed of a turbine.
- (e) What is meant by priming of pumps?
- (f) Define load factor

**[2+2+2+2+2+2]**

**PART-B**

**4 X 12 = 48**

2. (a) Find the discharge through a rectangular channel of width 2m, having a bed slope of 4 in 8000. The depth of flow is 1.5m. Use Chezy's formula, Take  $C=76$ .  
(b) Derive the expressions for the most economical depths of flow terms of the diameter of the channel of circular cross-section for maximum velocity?
3. (a) Describe Rayleigh's method for dimensional analysis?  
(b) What is meant by geometric, kinematic and dynamic similarities? Are these similarities truly attainable? If not why?
4. (a) Find the force exerted by a jet of water of diameter 100 mm on a stationary plate, when the jet strikes the plate normally with a velocity of 30m/sec?  
(b) Obtain the expression for force exerted by a jet of water on a fixed vertical plate in the direction of the jet
5. (a) Define Draft tube and write its function.  
(b) A Pelton wheel is required to develop 8825 kW when working under the head of 300m. The speed of the Pelton wheel is 540 rpm. The coefficient of velocity for the jet is 0.987, speed ratio is 0.46. Assuming the jet ratio as 10 and overall efficiency as 84%. Estimate the
  - i. Number of jets
  - ii. Diameter of the wheel
  - iii. Quantity of water required
6. (a) Discuss the construction details and working principles of a centrifugal pump  
(b) A centrifugal pump is to discharge 0.118 m<sup>3</sup>/s at a speed of 1450 rpm against a head of 25 m. The impeller diameter is 250 mm, its width at outlet is 50 mm and manometric efficiency is 75%. Estimate the vane angle at the outer periphery of the impeller.
7. (a) Describe the classification hydro power plants  
(b) Explain estimation of hydro power potential





# Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CE2203

**II B.Tech II Semester Regular Examinations, April-2018.**

**ENGINEERING GEOLOGY**

**(CE)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

## **PART-A**

1. (a) What do you mean by River Erosion
- (b) Define Rock and how it is formed
- (c) Define Dip and Strike
- (d) Discuss the terms i) Water Table      ii) Cone of depression
- (e) Give the classification of Exploration geophysics
- (f) What are the effects of tunnels

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## **PART-B**

**4 X 12 = 48**

2. (a) Explain the importance of Geology in Civil Engineering (6)
- (b) Write a short notes on Weathering of Rocks (6)
3. (a) Write notes on texture and structures of Sedimentary Rocks (6)
- (b) Explain physical properties of rocks (6)
4. (a) What is Fault? Explain the classification of faults (6)
- (b) Explain the classification of joints in brief (6)
5. (a) Explain Ground water exploration techniques (6)
- (b) Explain causes, effects and measures to be taken to prevent the occurrence of Landslides (6)
6. (a) Write a note on Importance of Geophysical methods (4)
- (b) Write an essay on Seismic refraction method of exploration (8)
7. (a) Explain the types of Dams (8)
- (b) What is the purpose of Dam construction (4)

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# Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CE2204

II B.Tech II Semester Regular Examinations, April-2018.

SURVEYING-II  
(CE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B  
All questions carry equal marks of 12.

## PART-A

1. (a) State the uses of tachometry
- (b) What is the application of gale's table
- (c) What are the elements of simple circular curve
- (d) State the types of vertical curves in surveying
- (e) Compare stadia tachometry and tangential tachometry
- (f) Define hydrographic surveying

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## PART-B

4 X 12 = 48

2. (a) Explain how you would measure with a theodolite
  - i) The horizontal angle by repetition
  - ii) The vertical angle
- (b) Explain briefly temporary adjustment of theodolite
3. (a) What are the different methods of adjusting a traverse? Explain any two of them in detail.
- (b) The following lengths and bearings were recorded in running a theodolite traverse in the counter clockwise direction, the length of CD and bearing of DE having been omitted.

Line	Length in m	R.B
AB	281.4	S 69° 11' E
BC	129.4	N 21° 49' E
CD	?	N 19° 34' W
DE	144.5	?
EA	168.7	S 74° 24' W

Determine the length of CD and the bearing of DE

4. (a) What is compound curve. Explain the step by step procedure for setting out a compound curve
- (b) Tabulate the necessary data to set out a right handed simple circular curve of 600 meters radius to connect two straight intersecting at a chain age of 3605 meters by Rankine's method of deflection angles. The angle of deflection of the curve is  $25^\circ$  and peg interval is 30 meters.
5. (a) Explain the various methods of determining the length of a transition curve.
- (b) Discuss computations and setting out of vertical curves

6. (a) What are the different methods employed in tachometric survey? Describe the method most commonly used

(b) Two distances of 50 and 80 metres were accurately measured out, and the intercepts on the staff between the outer stadia webs were 0.496 at the former distance and 0.796 at the latter. Calculate the tachometric constants.

7. (a) What is total station? Explain in detail the features of total station and merits and demerits of a total station

(b) Describe the following in total station

- i) Horizontal angle    ii) Vertical angle    iii) Slope distance

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# Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CE2205

**II B.Tech II Semester Regular Examinations, April-2018.**

**HYDROLOGY AND IRRIGATION ENGINEERING**

**(CE)**

**Time: 3 hours**

**Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

## **PART-A**

1. (a) What are the different types of raingauges?
- (b) What is runoff?
- (c) State the components of hydrograph
- (d) What is lift irrigation?
- (e) Differentiate b/w kharif crops & rabi crops?
- (f) Write the classification of canals

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## **PART-B**

**4 X 12 = 48**

2. (a) what are the precautions to be taken in selecting a site for the location of a rain gauge
- (b) What is hydrological cycle? Draw a diagram showing the hydrological cycle?
3. (a) Explain the various factors which affect the runoff
- (b) Discuss flow mass curve and flow duration curve
4. (a) what does the word unit refer to in the unit hydrograph? Explain with sketches what do you understand by the principle of linearity and principle of time invariance in the unit hydrograph theory?
- (b) Explain the factors effecting flood
5. (a) What are the various types of irrigation? Explain in detail.
- (b) Describe the necessity of irrigation in India.
6. (a) Discuss classification of Indian soils
- (b) Discuss about the factors affecting the consumptive use of water.
7. (a) State the drawbacks of Kennedy's theory
- (b) Using Lacey's theory design a channel section with the following data.

Discharge = 50 cumecs

Mean silt particle size= 2mm

Side slope= 1 horizontal to 1 vertical

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