B.Tech. (Civil) 4th Semester (G-Scheme)

Examination, May–2024

GEOMATICS & AERIAL SURVEYING

Paper–PCC-CE-208G

Time allowed : 3 hours]   [Maximum marks : 75

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. Describe the following :   15

   (a) Applications of total station

   (b) Normal equation

   (c) Zenith and Nadir

   (d) Difference between active and passive remote sensing

   (e) Terrestrial photogrammetry

   (f) Components of GIS

Section–A

2. (a) What do you mean by trilateration? Explain the principle and methods of trilateration.   7

(b) Derive an equation for calculating RL of a point when: base of the object is inaccessible and instrument axis at different levels. Instrument stations in the same vertical plane.   8

3. (a) Define most probable value. Explain in detail various law of weights.   7

(b) Find the most probable values of angles A and B from the following given data: 8

A=20°10'10"   weight = 6

B=30°20'30"   weight = 4

A+B=50°30'50" weight = 2

Section—B

4. (a) The altitudes of a star at upper and lower transits are 72°40' and 25°30'. Both the transits are on the north side of zenith of the place. Find the latitude of the place of observation and declination of the star.   7

(b) Define Napier's rule of circular parts and its applications in   8

(i) Star at elongation

(ii) Star at prime vertical

(iii) Star at horizon

5. (a) What is equation of time? Describe the different time systems in detail. 7

(b) Determine the hour angle and declination of a star from the following data: 8

Altitude of star = 22°31'

Azimuth of star = 48°W

Latitude of the observer = 50°N

Section—C

6. (a) What is aerial camera? Explain briefly the characteristics of different components of aerial camera. 7

(b) The scale of an aerial photograph is 1cm = 100m. The photograph size is 20 cm X 20 cm. Determine the number of photographs required to cover an area of 100 sq. km if the longitudinal lap is 60% and the side lap is 30%. 8

7. (a) Define relief. Derive an expression for determining relief displacement. 7

(b) What is parallax? Derive the parallax equation for determining the height from a pair of vertical photographs. 8

Section–D

8. (a) Describe in detail the different components of a GPS. 　　7

(b) Describe briefly the various methods of GPS surveying. Also give the applicabilty and limitations of each techniques. 　　8

9. (a) What is satellite orbit? Describe different types of satellite orbits. 　　7

(b) What are the different phenomenon take places during EMR propagation through medium? Explain in detail. 　　8

B.Tech. (Civil Engg.), 4th Semester
(G-Scheme) Examination, May-2024
STRUCTURAL ANALYSIS
Paper : PCC-CE-206-G

Time allowed : 3 hours]   [Maximum marks : 75

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 :   15

(a)   Kinematic indeterminacies

(b)   Castigliano's theorem

(c)   Temperature rises on three hinge arch

(d)   ILD for bending moment

(e)   Applications of anchor cable

Section—A

2.   A beam ABCD is simply supported at A and D over a span of 12m. The beam carries point loads 50 KN and 30 KN at a distance of 4 m and 6m from the end A. Neglecting the weight of the beam find the slopes at A, B, C and D and the deflection at C and D. Take $I = 12 \times 10^8$ mm^4 and $E = 200$ KN/mm^2.   15

[P.T.O.

3. Find the vertical and horizontal deflection of joint C of truss shown in fig.. The area of the inclined tie is 1500 mm^2 while the area of the horizontal member is 1200 mm^2. Take E = 210 KN/mm^2 15
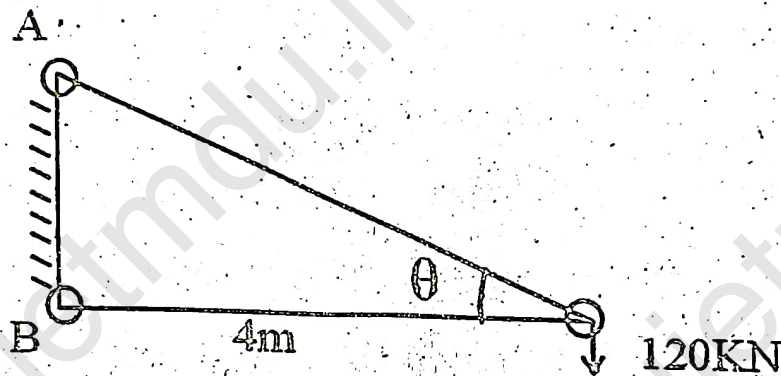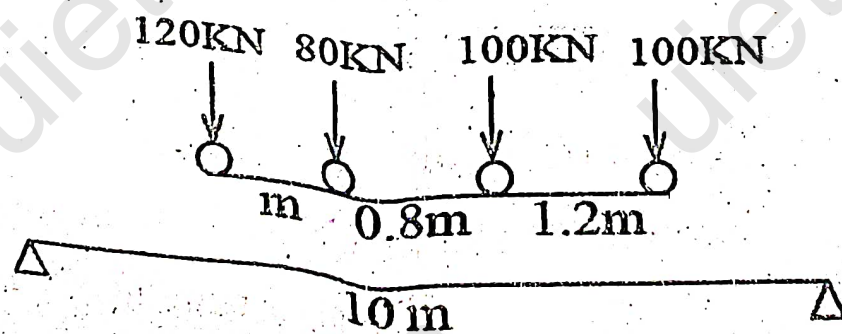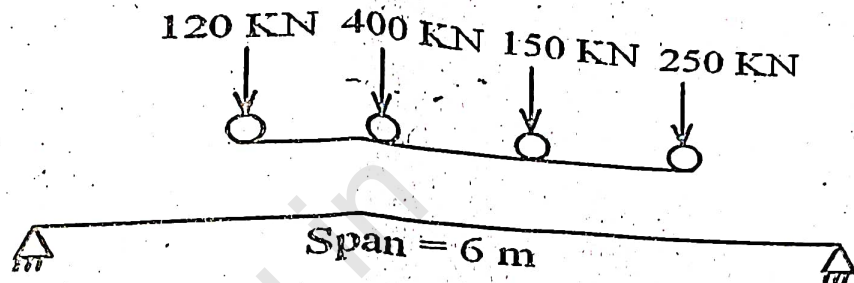

Section-B

4. The load system as shown in fig. moves from left to right on a girder of span 10 meters. Find the maximum bending moment which can occur under the 100 KN load..   15

5. The wheel load system shown in fig. can move a girder of span of 6m. Find the maximum positive and negative force for the girder. 15

120 KN 400 KN 150 KN 250 KN

Span = 6 m

Section-C

6. A three hinged parabolic arch has a span of 35m and rise of 6m. It subjected to a uniformly distributed load of 75 KN acting at 12m from the right support, find the : 15

   (i) Horizontal thrust and vertical reaction on supports

   (ii) Normal thrust and radial shear

7. The three hinged stiffened girder of a suspension bridge of span 130m is subjected to a two point loads of 200 KN and 250 KN at a distance of 25m and 70m from left end. Find the shear force and bending moment for the girder at a distance of 40m from left end. The supporting cable has a central dip of 10m. Find also the maximum tension in the cable. 15

[P.T.O.

Section-D

8. Analysis the following beam using slope and deflection method and draw its bending moment diagram.   15
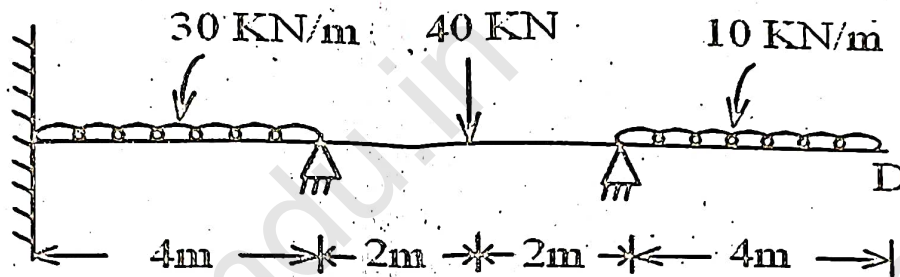
9. Analysis the following frame using Kani's Method.   15
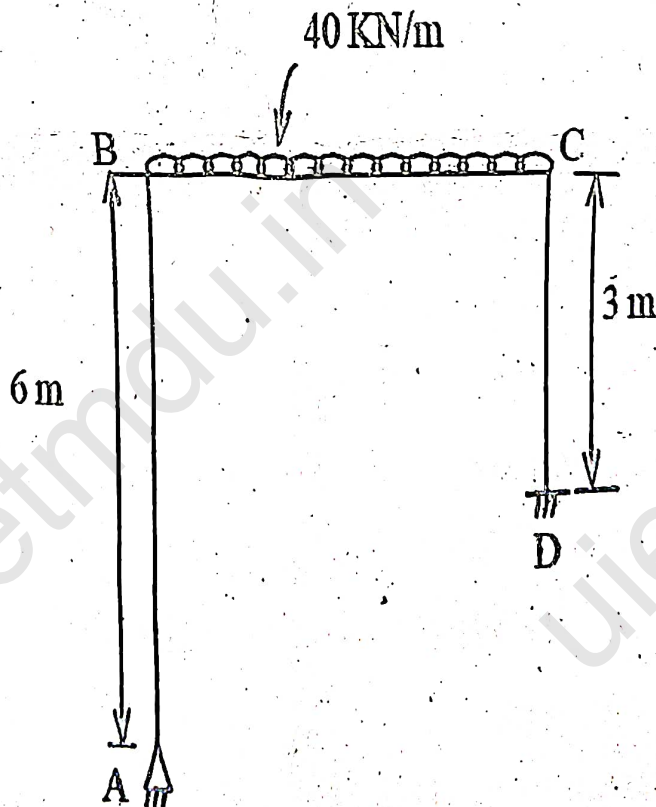
B. Tech. 4th Semester, (Civil Engg.) G-Scheme

Examination, May–2024

MATERIAL TESTING AND EVALUATION

Paper–PCC-CE-210-G

Time allowed : 3 hours]   [Maximum marks : 75

Note : Attempt five questions in total by selecting one from each unit. Q. No. 1 is compulsory.

1. Describe the following :   15

    (a) M-Sand

    (b) Prestressed Concrete

    (c) Creep

    (d) Shrinkage of material

    (e) Dams

Section-A

2. (a) Explain the light weight concrete and high performance concrete in detail.   7.5

    (b) Explain the function of bitumen and asphalt in construction industry.   7.5

3. (a) Explain the different types of cement used along with their suitability.   7.5

    (b) Explain the different test used for cement in laboratory.   7.5

Section-B

4. (a) Explain the properties of fresh concrete. 7.5

   (b) Explain the durability characteristics of concrete.

   7.5

5. (a) Explain in detail the principle of mix design. 7.5

   (b) Explain ACI mix design method and USBR method for the design of concrete mix. 7.5

Section-C

6. (a) Explain the tensile test of steel used in laboratory. 7.5

   (b) Explain the procedure of bending test and torsional test of steel. 7.5

7. (a) Explain the principle and characteristics of elasticity of steel. 7.5

   (b) Explain the different types of steel used in civil engineering. 7.5

Section-D

8. Explain the fracture toughness of different material and procedure to determine the fracture toughness. 15

9. Explain all the heavy equipment used in the construction of multistorey building. 15

B.Tech. 4th Semester, (Civil. Engg.) G-Scheme
Examination, May–2024
HYDRAULICS ENGINEERING
Paper–PCC-CE-202-G

Time allowed : 3 hours] [Maximum marks : 75

Note : Question 1st is compulsory. Attempt total five questions selecting one question from each section. All questions carry equal marks.

1. Explain following terms (2.5×6)
   (a) Total Energy Line
   (b) Momentum Correction Factor
   (c) Hydraulic mean Depth
   (d) Sketch the Shear stress distribution across a section of pipe.
   (e) Gradual varied flow
   (f) Name the different forces present in fluid flow

Unit-I

2. (a) Prove that the maximum velocity in the circular pipe for viscous flow is equal to two times the average velocity of flow. 7.5
   (b) A laminar flow is taking place in a pipe of diameter 200 mm. The maximum velocity is 1.5m/s. Find the mean velocity and the radius at which this occurs. 7.5

3. Obtain an Expression for velocity distribution in turbulent flow for (i) smooth pipe and (ii) rough pipes. 15

3080-P-2-Q-9 (24)

Unit-II

4. Find the maximum power transmitted by a jet of water discharging freely out of nozzle fitted to a pipe = 300 m long and 100 mm diameter with co-efficient of friction as 0.01. The available head at the nozzle is 90 m. 15

5. A horizontal pipe line 40 m long is connected to a water tank at one end and discharges freely into the atmosphere at the other end. For the first 25 m of its length from the tank, the pipe is 150 mm diameter and its diameter is suddenly enlarged to 300 mm. The height of water level in the tank is 8 m above the centre of the pipe. Considering all losses of head which occur, determine the rate of flow. Take f = 0.01 for both sections of the pipe. 15

Unit-III

6. Determine the maximum discharge of water through a circular channel of diameter 1.5 m when the bed slope of the channel is 1 in 1000. Take C = 60. 15

7. Derive an expression for Depth of hydraulic jump. 15

Unit-IV

8. Prove that the loss of energy head in a hydraulic jump is equal to $(d_2-d_1)^3/d_1 d_2$, where d_1 and d_2 are the conjugate depths. 15

9. A 300 mm diameter pipe carries water under a head of 20 meters with a velocity of 3.5 m/s. If the axis of the pipe turns through 45°, find the magnitude and direction of the resultant force at the bend. 15

B.Tech (Bio-Tech.), 4th Semester G-Scheme
Examination, May–2024
ORGANISATIONAL BEHAVIOUR
Paper–HSMC-02-G

Time allowed : 3 hours]   [Maximum marks : 75

Note : Attempt any five questions. First question is compulsory and attempt atleast one question from each unit. All questions carry equal marks.

1.   Write short notes on the following :   2½×6=15

   (a)   Scope of management
   (b)   Channels of communication
   (c)   Challenges of Organisational behaviour
   (d)   Conflict management
   (e)   Importance of motivation
   (f)   Effect of Organisational structure on human behaviour

Unit-1

2.   What do you understand by management? Explain its nature, its levels, roles and functions in context with business.   15

3.   Write short note on following :   7½×2=15

   (a)   Administration
   (b)   Scope and importance of management

Unit-2

4. What do you understand by Motivation? What can an organisation do to motivate its workers for better performance? Explain its techniques and importance. 15

5. Write short notes on following : 7½×2=15

   (a) Relationship of Organisation behaviour with other fields

   (b) Concept of learning

Unit-3

6. Write short note on following : 7½×2=15

   (a) Leadership and its qualities

   (b) Qualities and functions of leadership

7. Define communication. What are the different channels by which we can communicate in modern industrial fields? Why it is important for modern industrial organisations. Explain with example. 15

Unit-4

8. What do you understand by organisational change? Explain in detail its concept, types and factors affecting it with example. 15

9. Write short notes on the following : 7½×2=15

   (a) Meaning of organisational structure

   (b) Factors affecting organisational culture