

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

Examination, July-2022

ORGANIZATIONAL BEHAVIOUR

Paper- HSMC-02G

Time allowed : 3 hours]

[Maximum marks : 75

Note : Section-A is compulsory. Attempt total five questions, selecting at least one question from each unit. All questions carry equal marks.

Section-A

1. Attempt all the six questions: 2.5×6 = 15
- (i) Explain the difference between management and administration.
 - (ii) What do you mean by Learning?
 - (iii) Explain the scope of Perception.
 - (iv) What do you mean by Organizational Development?
 - (v) Define the concept of conflict management.
 - (vi) Define the importance of organization structure.

Section-B

Unit - I

2. What do you mean by management? Discuss the characteristic and importance of management in present scenario in India.

[P. T. O.]

3. What role are performed by the Managers? Explain each role in the context of a business enterprise.

Unit - II

4. What do you mean by Organizational Behavior? Explain the importance of OB in present scenario in an industrial environment.
5. "Motivation is the core management". Discuss. What can management do to motivate the worker in an industrial organization?

Unit - III

6. Define communication. Why has communication assumed importance in modern industrial organization? Explain with suitable examples.
7. Give a comprehensive definition of leadership. Enumerate the traits of a good leader.

Unit - IV

8. Describe the nature and significance of organizational culture. What is an organic culture?
9. Why is change resisted in organization? What can the management do to overcome it?

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

Examination, July-2022

HYDRAULIC ENGINEERING

Paper- PCC-CE-202-G

Time allowed : 3 hours]

[Maximum marks : 75

Note : Attempt five questions selecting one question from each unit and Question no. 1 is compulsory.

1. Define any six from the following:- $6 \times 2.5 = 15$

- (i) Shear stress in turbulent flow
- (ii) Loss of head due to sudden expansion and sudden contraction
- (iii) Uniform and non-uniform flow
- (iv) Length of hydraulic jump
- (v) Equivalent Pipe
- (vi) Laminar and turbulent flow
- (vii) Location of hydraulic jump
- (viii) Chezy's and Manning's formula

Unit - I

2. (a) Derive any two of following for flow of laminar fluid through a circular pipe:- 10

- (i) Velocity distribution

3080-P-4-Q-9 (22)

[P. T. O.]

(2)

- (ii) Ratio of maximum velocity to average velocity
- (iii) Drop of pressure for a given length of a pipe
- (b) Write a short note on Stoke's law.
3. (a) Explain Reynold's experiment with a sketch.
- (b) A smooth pipe of diameter 400 mm and length 800 m carries water at the rate of $0.04 \text{ m}^3/\text{s}$. Determine the head lost due to friction, wall shear stress, centre-line velocity and thickness of laminar sub-layer. Take the kinematic viscosity of water as 0.020 stokes.

Unit - II

4. (a) Explain various energy losses through pipes.
- (b) The rate of flow of water through a horizontal pipe is $0.25 \text{ m}^3/\text{s}$. The diameter of the pipe which is 200 mm is suddenly enlarged to 400 mm. The pressure intensity in the smaller pipe is 11.772 N/cm^2 . Determine:

- (i) Loss of head due to sudden enlargement
- (ii) Pressure intensity in the large pipe
5. (a) Explain Water hammer process in brief with a neat sketch. 5
- (b) A Pipe line of 0.6 m diameter is 1.5 km long. To increase the discharge, another line of the same diameter is introduced parallel to the first in the second half of the length. Neglecting minor losses, find the increase in discharge if $4f = 0.04$. The head at inlet is 300 mm. 10

Unit - III

6. (a) Define most economical section. Derive conditions for most economical rectangular channel section. 7
- (b) A Trapezoidal channel has side slopes of 3 horizontal to 4 vertical and slope of its bed is 1 in 2000. Determine the optimum dimensions of the channel, if it is to carry water at $0.4\text{m}^3/\text{s}$. Take Chezy's constant as 70. 8
7. Explain:-
- (a) Specific energy and specific energy curve 7
- (b) Critical depth 4
- (c) Critical Velocity 4

Unit - IV

8. (a) Define Hydraulic jump. Write different types of hydraulic jump and various applications of hydraulic jump.
- (b) The depth of flow of water, at a certain section in a rectangular channel of 2 m wide, is 0.3 m. If the discharge through the channel is 1.5 m³/s. Determine whether a hydraulic jump will occur and if so, find its height and loss of energy per unit weight of water.
9. (a) What is surge in an open channel? Derive an expression for positive surge due to sudden reduction of flow.
- (b) Explain momentum principle.

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B.Tech. (Civil) 4th Semester (G-Scheme)
Examination, July-2022

DESIGN OF CONCRETE STRUCTURE

Paper- PCC-(CE-204-G)

Time allowed : 3 hours]

[Maximum marks : 75

Note : Question No. 1 is compulsory.

- (a) Differentiate between Limit State and Working Stress Methods. 5×3=15
- (b) Write down the assumptions made in RC member subjected to bending.
- (c) Describe the unbalanced sections.
- (d) Write the equations of N.A. of flanged beam.
- (e) Write down all the effective lengths of compression members.

Section - A

Draw and explain the stress-strain relationship of steel and concrete in details. 15

Design a rectangular beam section for an ultimate moment of 150kNm. Use M20 concrete and Fe 415 steel. Assume suitable data. 15

(2)

Section - B

4. A simply supported reinforced concrete beam is 300 mm wide, 500 mm effective depth and is reinforced with 4 bars of 18 mm diameter as tensile steel. If the beam is subjected to a factored shear of 140 kN at the support and two of the main bars are bent up at 45° , find the spacing of 2-legged 6 mm diameter stirrups at support. Use M 20 concrete and Fe 25 steel.
5. Describe the deflection and moment relationships for a simply supported beam. Give the limiting values of span to depth.

Section - C

6. Describe the steps to be followed in the design of a one way slab.
7. Design a reinforced concrete cantilever type retaining wall having a 5 m tall stem. The wall retains soil with its top, the soil weighs 18000 N/m^3 and has an angle of repose of 30° . The safe bearing capacity of the soil is 200 kN/m^2 . Use M20 concrete and Fe 25 steel.

Section - D

8. A reinforced concrete column of 2.75m effective length carries an axial load of 1600 kN. Design the column using M20 concrete and Fe 415 steel. 15
9. A square column $400\text{mm} \times 400\text{mm}$ carries an axial load of 1500 kN. Design the column and a square footing for the column. The safe bearing capacity of the soil is 150mm^2 . Use M20 concrete and Fe 250 steel. 15

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**B.Tech. (Civil) 4th Semester (G-Scheme)
Examination, July-2022
STRUCTURAL ANALYSIS
Paper- PCC-CE-206-G**

Time allowed : 3 hours

[Maximum marks : 75]

Note : Question No. 1 is compulsory.

1. (a) Explain moment-area method. $3 \times 5 = 15$
- (b) Describe Shear force and Bending moment diagrams of moving loads.
- (c) A three-hinged arch has a span of 30m and a rise of 10m. The arch carries a udl of 60kN/m on the left half of its span. It also carries two concentrated loads of 160 kN and 100 kN at 5m and 10m from the right end. Determine the horizontal thrust at each support.
- (d) Differentiate between statically determinate and statically indeterminate structures.
- (e) Describe the principle of Virtual work.

Section - A

2. Derive the 1st and 2nd theorems of Castigliano. 15

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[P. T. O.]

(2)

3. A beam AB of span 6m carries a point load of 45kN at a distance of 4m from the left end A. Find, (i) Slope at A, (ii) deflection under the load, (iii) section where deflection is maximum & (iv) maximum deflection.

Section - B

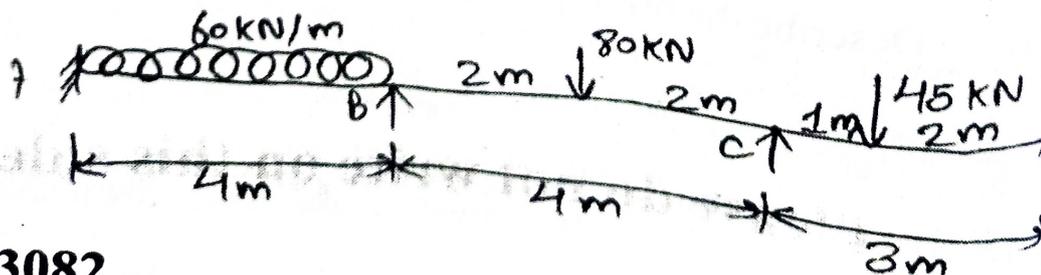
4. Two wheel loads 20kN and 10kN, 3meters apart cross a girder of 8m span with the 10kN load leading, from left to right. Draw the max. Shear and max. bending moment diagram.
5. Describe the Muller Breslau's Principle in detail.

Section - C

6. A 3-hinged parabolic arch of span l has its abutment depths h_1 and h_2 below the crown. The arch carries a U.D.L. of w per unit run over the whole span. Determine the horizontal thrust, at each support.
7. Describe the column analogy method in detail.

Section - D

8. Find the support moments at A, B, C, D for a continuous beam using Kani's method.



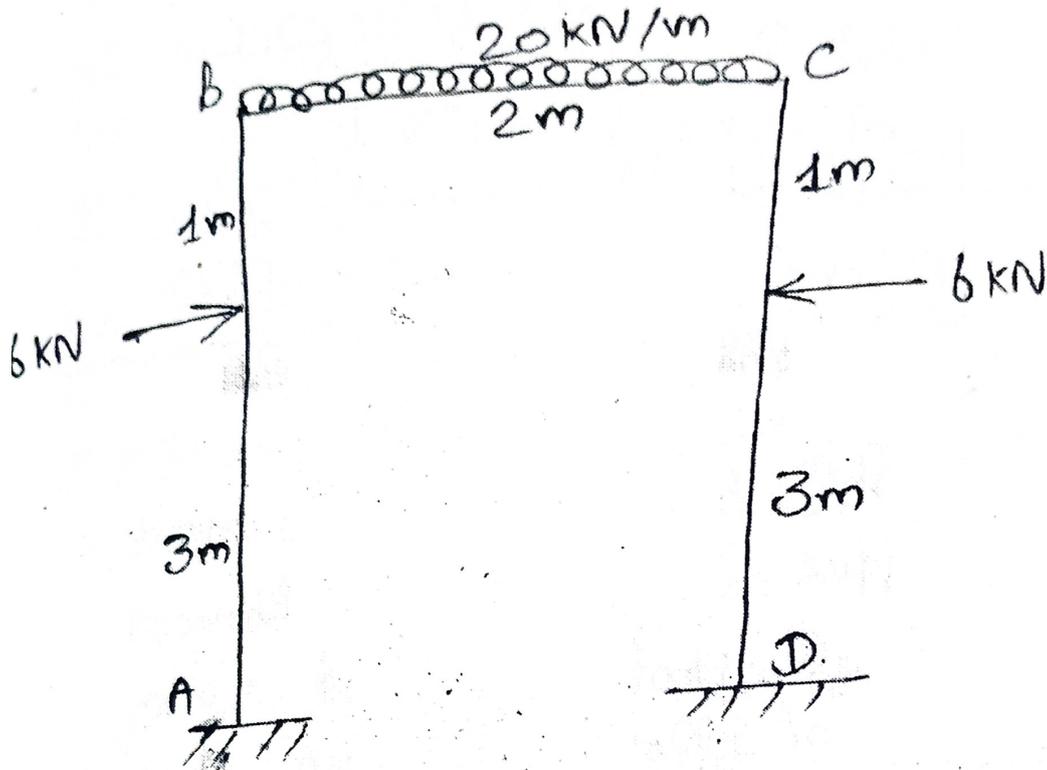
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(3)

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15

Analyse the portal frame shown



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B.Tech. (Civil) 4th Semester (G-Scheme)
Examination, July-2022

GEOMATICS AND AERIAL SURVEYING
Paper- PCC-CE-208-G

Time allowed : 3 hours]

[Maximum marks : 75

Instruction: Attempt five questions, selecting one question from each unit and question no. 1 is compulsory.

Define the following:-

- (i) What is triangulation figure and name the common figures or systems? 2.5
- (ii) Define most probable value and weight of an observation. 2.5
- (iii) Define circumpolar stars, right ascension and celestial sphere. 2.5
- (iv) Define flying height, exposure station and flight line. 2.5
- (v) What are the different components of GIS? 2.5
- (vi) Define relief displacement. 2.5

Unit - I

- (a) What do you mean by reconnaissance? Explain the different operations under the reconnaissance. 7.5

[P. T. O.]

33-P-3-Q-9 (22)

- (b) What is triangulation? Describe the classic of triangulation system in detail.
3. (a) Explain in detail various law of weights.
(b) Find the most probable value of the angle the following observation equations:
- $$A = 30^{\circ}28'40'' \quad \text{weight 2}$$
- $$3A = 91^{\circ}25'55'' \quad \text{weight 3}$$

Unit - II

4. (a) Describe star at elongation and star at vertical.
(b) The altitudes of a star at upper and lower of a star are $70^{\circ}20'$ and $20^{\circ}40'$, both the being on the north side of zenith of the Find the declination of the star and the latitude the place of observation.
5. (a) Define astronomical triangle and its different parts.
(b) A star having a declination of $56^{\circ}10' N$ upper transit in the zenith of the place. Find altitude of the star at its lower transit.

Unit - III

7. (a) Describe the advantages of aerial photography over mapping. What are its limitations? 8
- (b) A line AB, 2000 m long, lying at an elevation of 500 m measures 8.65 cm on a vertical photograph for which focal length is 20 cm. Determine the scale of the photograph in an area the average elevation of which is about 800 m. 7

Unit - IV

8. (a) Describe briefly the various methods of GPS surveying. Also give the applicability and limitations of each technique. Also describe the three segments of GPS. 8
- (b) Write a note on applications of remote sensing. 7
9. (a) Describe the raster and vector data structures. What are the advantages and disadvantages of these two data structures? 8
- (b) Write a short note on linkage of GIS to remote sensing. 7

B.Tech. (Civil) 4th Semester (G Scheme)
Examination, July-2022

MATERIAL TESTING AND EVALUATION
Paper- PCC-CE-210-G

allowed : 3 hours]

[Maximum marks : 75

: Attempt five questions selecting one question from each unit. Question no. 1 is compulsory.

Define any six of the following:- $6 \times 2.5 = 15$

- (i) Differentiate between PCC and RCC.
- (ii) Define High alumina cement.
- (iii) Define Rapid hardening portland cement.
- (iv) Define Fire resistance of concrete.
- (v) Classify aggregates.
- (vi) Define elasticity and plastic deformation.
- (vii) Define elastic deformation.
- (viii) Name various heavy construction equipments.

Unit-I

- (a) Name and explain the various physical properties of cement. 8
- (b) Write down various advantages and disadvantages of concrete. 7

4-P-3-Q-9 (22)

[P. T. O.]

(2)

3. (a) Explain in detail classification of lime on the basis of their composition and preparation and their properties.
- (b) What are the various uses of lime?

Unit-II

4. (a) Define Workability. Explain various factors affecting workability.
- (b) What are the requirements of workability?
5. Describe the principles of concrete mix design. What are the different factors on which selection of concrete design depends? Also explain the variation of concrete strength.

Unit-III

6. (a) Explain the different types of steel.
- (b) Write a short note on mechanical behavior and mechanical characteristics of steel.
7. (a) What are the various tests that can be conducted on a steel rod? Explain the tensile test of steel rod in detail.
- (b) Write short note on any **one** tests of steel
- (i) Bending test
- (ii) Torsion test

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Unit-IV

8. (a) Explain in detail elastic and plastic deformation of materials. 8
- (b) Define the following terms:- 7
- (i) Fatigue of material
 - (ii) Shrinkage
 - (iii) Creep
9. (a) What do you understand by term heavy construction? Also explain the precautions taken care during the construction of bridges in detail. 10
- (b) Write a short note on " Hot mix plant". 5

