

Roll No.

3079

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

Examination – May, 2026

ORGANIZATIONAL BEHAVIOUR

Paper : HSMC-02-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 Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Answer the following questions in short: $2.5 \times 6 = 15$

- (a) Explain the nature of Management.
- (b) Define organizational Behavior.
- (c) What is Communication ?
- (d) Define Leadership.
- (e) What is organizational structure ?
- (f) Define Planning.

3079-8950-(P-3)(Q-9)(26)

P. T. O.

UNIT – I

2. What do you understand by Management ? Explain in brief the main functions of Management. 15
3. What is planning ? State what advantages does planning confer to an organization ? 15

UNIT – II

4. Explain the concept of organizational Behaviour. Discuss its importance and relationship with other fields. 15
5. Define perception. Explain their determinants and applications in organizational Behaviour. 15

UNIT – III

6. Define group and Team. Explain the stages of group development and difference between team and group. 15
7. What is Leadership ? Discuss the concept, functions and qualities of an effective Leader. 15

UNIT – IV

8. Define Organizational structure. Explain the types of organizational structure and their impact on human behaviour. 15
9. What is Organizational Change ? Discuss the factors affecting organizational change and resistance to change. 15

Roll No.

3080

**B. Tech. 4th Semester (Civil)
Examination – May, 2026**

HYDRAULIC ENGINEERING

Paper : PCC-CE-202-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 Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

- 1.** Explain following terms : $2.5 \times 6 = 15$
- (a) Momentum correction Factor.
 - (b) Hydraulic mean Depth.
 - (c) State Bernoulli's equation.
 - (d) Define Coefficient of discharge.
 - (e) What is hammer blow ?
 - (f) What is Syphon ?

3080-2050-(P-3)(Q-9)(26)

P.T.O.

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 1.5 m/s. Find the mean velocity and the radius at which this occurs. 7.5
3. Water is flowing through a rough pipe of diameter 500 mm and length 4000 m at the rate of $0.5 \text{ m}^3/\text{sec}$. Find the power required to maintain this flow. Take average height of roughness as 0.04 mm. 15

UNIT - II

4. (a) Define the following terms : 7.5
 - (i) Hydraulic gradient line
 - (ii) Total energy line
- (b) What do you mean by equivalent pipe ? Obtain an expression for equivalent pipe. 7.5
5. A pipe of diameter 0.4 m and length 2000 m long is connected to a reservoir at one end. The other end of pipe is connected to a junction from two pipe of length 1000 m and diameter 300 mm run in parallel. These parallel pipes are connected to another reservoir,

which is high levelling of water 10 m below the water level of the above reservoir. Determine the total discharge if coefficient of friction is 0.015. Neglect minor losses. 15

UNIT - III

6. A flow of water of 100 litre per second flows down in a rectangular flume of width 600 mm and having adjustable bottom slope. If Chezy's constant C is 56, find the bottom slope necessary for uniform flow with a depth of flow of 300 mm. Also find the conveyance K of the flume. 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

Roll No.

3081

**B. Tech. 4th Semester (Civil)
Examination – May, 2026**

DESIGN OF CONCRETE STRUCTURE

Paper : PCC-CE-204-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 : 15
- (a) Limitation of working stress method
 - (b) Two-way slab
 - (c) Limit state of serviceability
 - (d) Shrinkage and creep
 - (e) Factor affecting the workability of concrete

3081-1750-(P-4)(Q-9)(26)

P. T. O.

SECTION - A

2. (a) Explain the principles of concrete mix design. What are the various factors governing the selection of mix proportion according to Indian standard ? 7.5
- (b) Describe the factor on which workability dependent. 7.5
3. (a) What do you understand by over, under and balance reinforced beam section ? 7.5
- (b) Determine the moment of resistance of a singly reinforced 150 mm wide and 350 mm effective depth beam. The reinforcement consists of 4 bars of 12 mm diameter. The material used is M20 concrete and Fe 415 steel. Take $m=18$. If the span of the beam is 6 m, find the maximum distributed load which the beam can carry, inclusive of its own weight. 7.5

SECTION - B

4. A simply supported reinforced concrete beam is 300 mm $\times$ 500 mm is reinforced with 5 bars of 16 mm diameter. If the beam is subjected to a factored shear of 150 kN at the supports and out of 5 bars 2 bars are bent. Find the spacing of stirrups at support. Use M20 concrete and Fe 415 steel. 15

5. Write the design steps of shear reinforcement detailing of beam and also describe the suitable checks to safety of the beam. 15

SECTION - C

6. Describe the steps to be followed as per the IS 456:2000 for two-way slab. 15
7. Design a simply supported slab supported on masonry wall with following details : 15
- Clear span = 4 m
live load = 3000 N/m²
modification factor = 1.4
nominal shear stress = 0.3 N/mm²
angle of response 30°.
Use M20 Concrete and Fe 415 steel. Assume the missing data.

SECTION - D

8. A square column 400 mm $\times$ 400 mm supports a total load of 1500 kN. Design the column and a square footing for this column. The safe bearing capacity of soil is 250 kN/m². 15

9. Determined the reinforcement for a square column for the following data : 15

Column size : 350 mm $\times$ 350 mm

$P_u = 1000$ kN.

Use M20 Concrete mix and Fe 415 Steel, the safe bearing capacity of the soil is 150 mm².

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3082

**B. Tech. 4th Semester (Civil)
Examination – May, 2026**

STRUCTURAL ANALYSIS

Paper : PCC-CE-206-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 any *five* questions, selecting *one* question from each Section. Question No. 1 is *compulsory*. All questions carry equal marks. Assume missing data, if any suitably.

1. (a) Distinguish between pin jointed and rigidly jointed structure.
- (b) Name the type of rolling loads for which the absolute maximum bending moment occurs at the midspan of a beam.
- (c) Which of the two arches, viz. circular and parabolic is preferable to carry a uniformly distributed load ? Why ?
- (d) What are the quantities in terms of which the unknown moments are expressed in slope deflection method ?

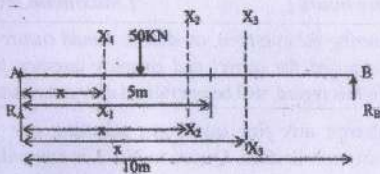
3082-1850-(P-4)(Q-9)(26)

P. T. O.

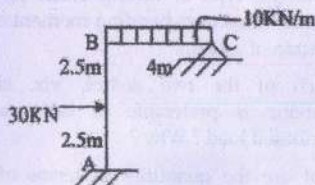
- (e) Draw the influence line for reaction at support A of a simply supported beam using the Müller-Breslau principle.
- (f) What are the advantages of Continuous beam over simply supported beam? $2.5 \times 6 = 15$

SECTION - A

2. (a) Name any *four* methods used for computation of deflections in structures. Explain any *one* in detail. 10
- (b) Write down the equations for moments due to the external load for beam shown in fig. below 5



3. (a) Using the method of virtual work, determine the horizontal displacement of a point C of the frame shown in fig. Take, $E = 2 \times 10^5 \text{ N/mm}^2$, $I = 4 \times 10^6 \text{ mm}^4$. 10



- (b) Explain Maxwell's laws of reciprocal theorem. 5

SECTION - B

4. (a) What is meant by absolute maximum bending moment in a beam? Where do you have the absolute maximum bending moment in a simply supported beam when a series of wheel loads cross it? 7
- (b) With the help of neat sketch explain shear force and bending moment of simply supported beam with a single concentrated load 'w' moving from the left end to right 8
5. (a) Using Influence line diagram, find : (i) maximum Bending moment (ii) maximum positive and negative shears at 4 m from left support A of a simply supported girder of span 10 m, when a train of 4 wheel loads 10 kN, 15 kN, 30 kN and 30 kN spaced at 2 m, 3 m and 3 m respectively cross the span with the 10 kN load leading. 10
- (b) State Muller-Breslau principle. 5

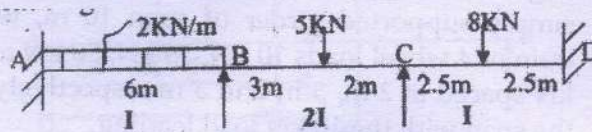
SECTION - C

6. (a) A three hinged parabolic arch of span 40 m and rise 8 m carries a udl of 30 kN/m over the left half span. (i) Analyse the arch and draw the bending moment diagram. (ii) Also evaluate the thrust and shear force at a section 10 m from left hinge. 10
- (b) Explain with the aid of a sketch, the normal thrust and radial shear in an arch rib. 5
7. (a) What is the difference between the basic action of an arch and a suspension cable? 5

- (b) A three hinged stiffening girder of a suspension bridge of 100 m span subjected to two point loads 10 kN each placed at 20 m and 40 m respectively from the left hand hinge. Determine the bending moment and shear force in the girder at section 30 m from each end. Also determine the maximum tension in the cable which has a central dip of 10 m. 10

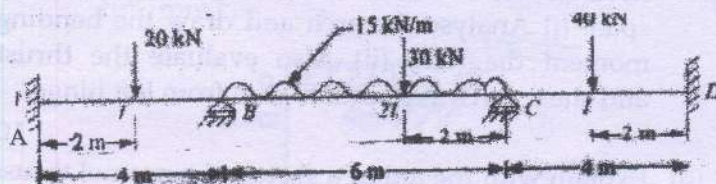
SECTION - D

8. (a) Analyse the continuous beam shown in Fig. by moment distribution method and draw the bending moment diagram. 8



- (b) What are the different methods of analysis of indeterminate structures ? Explain any *one* in detail with example. 7

9. Analyze the continuous beam by Kani's method. 15



Roll No.

3083

**B. Tech. 4th Semester (Civil)
Examination – May, 2026**

GEOMATICS & AERIAL SURVEYING

Paper : PCC-CE-208-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*. Assume missing data if any suitably. All questions carry equal marks.

1. Describe the following :

- (a) Selection of triangulation station
- (b) Characteristics of a total station
- (c) Celestial co-ordinate system
- (d) Photogrammetric monitoring

3083-1850-(P-4)(Q-9)(26)

P. T. O.

- (e) Spatial data models
- (f) Active and passive remote sensing

SECTION - A

2. (a) What are the different law of weights ? Describe each with examples.

- (b) Find the most probable values of the angles A, B and C from the following data :

$A = 68^{\circ}12'40.8''$. All measurements have equal weights.

$A + B = 140^{\circ}40'48.2''$

$B + C = 109^{\circ}16'29.2''$

$A + B + C = 177^{\circ}29'8.2''$

3. (a) Two triangulation stations A and B are 90 km apart. The elevation of A is 418.85 m and that of B is 702.63 m. An intervening peak is 66 km from A and has an elevation of 524 m. Check the intervisibility from A to B and also the required height of the signal at B for clear visibility. The line of sight must pass at least 2.5 m above ground at all points.

- (b) What is the principle of trilateration ? Explain different methods of trilateration with their advantages.

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(2)

SECTION - B

4. (a) Calculate the hour angle and altitude of the sun at sunset if the latitude is 52° N and declination is $28^{\circ}30'$ N.

- (b) Explain, "Napier's rules of circular parts" with diagram. Also describe the Star at elongation.

5. (a) What are the different time systems ? Describe the different time systems in detail.

- (b) Find the azimuth and altitude of a star if latitude = 42° N, hour angle = 19h 30 m, and declination = $22^{\circ}15'$ S.

SECTION - C

6. (a) What do you mean by relief displacement ? Derive the formula for relief displacement for a vertical photograph.

- (b) What are the stereoscopic vision and stereoscopes ? Describe its characteristics in detail.

7. (a) The scale of a photograph of size 250×250 mm is $1/12,000$. Determine the number of photographs required to cover an area 250 sq. km if the longitudinal and side overlaps have to be 60% and 30%, respectively.

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(3)

P. T. O.

- (b) Describe in detail the flight planning and its different components in detail.

SECTION - D

8. (a) What do you mean by polarisation of EMR ?
Describe in detail the Sources of EMR for remote sensing.
- (b) Describe the objectives and components of GIS.
9. (a) Write a short note on spatial data analysis.
- (b) Describe in detail the different parameters required to locate a satellite in space.

Roll No.

3084

**B. Tech. 4th Semester (Civil)
Examination – May, 2026**

MATERIAL TESTING AND EVALUATION

Paper : PCC-CE-210-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 : 15
- (a) Ceramics and Refractories
 - (b) Mortar
 - (c) Creep
 - (d) Shrinkage of material
 - (e) Lime

3084-1852-(P-3)(Q-9)(26)

P. T. O.

SECTION – A

2. (a) Explain the Plain concrete and reinforced 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 proportion of lime and cement mortar used for masonry and plastering. 7.5

SECTION – B

4. (a) Explain the properties of fresh concrete. 7.5
- (b) Explain the freezing and thawing effect of concrete. 7.5
5. (a) Explain in detail British mix design method along with Indian Standard guide lines. 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 strength of ceramics used in civil engineering. 7.5

7. (a) Explain the brittle failure of steel by the temperature transition approach. 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 the working of crusher and dozer in field. 15