

Roll No.

3079

**B. Tech. 4th Semester (Bio-Tech)
Examination – May, 2025**

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 function of Management.
- (b) What are the different sources of conflict ?
- (c) What are the different Channels of communication ?
- (d) Explain Organizational Structure.
- (e) Explain the Concept of Motivation.
- (f) Differentiate between Management and Organization.

3079-6750-(P-3)(Q-9)(25)

P. T. O.

UNIT - I

2. What do you understand by management ? Explain the various functions of management. How the various functions of management are helpful in achievement of organizational objectives ? 15
3. Explain the difference between management and administration. Also discuss the scope and importance of Management. 15

UNIT - II

4. Define perception and explain the process of perception from the point of view of Organizational Behaviour. 15
5. 'Motivation is the core of management'. Comment. What suggestion would you offer to the management to motivate its staff in an industrial organization ? 15

UNIT - III

6. Explain the concept of team ? How is a team different from a group ? Explain the stages in group development and their implications. 15
7. Identify the leadership styles describing the situation under which each style is useful. What factors influence the choice of leadership style ? 15

3079-6750-(P-3)(Q-9)(25) (2)

UNIT - IV

8. What do you understand by Organizational structure? Explain the different types of Organizational structure and also discuss their effect on human behaviour. 15
9. What is Organizational Change ? Explain the types and factors affecting Organizational Change. 15

3079-6750-(P-3)(Q-9)(25) (3)

Roll No.

3080

**B. Tech. 4th Semester (Civil)
Examination – May, 2025**

HYDRAULIC ENGINEERING

Paper : PCC-CE-202G

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) What do you understand by laminar flow ?
- (b) Momentum Energy correction Factor.
- (c) State continuity equation.
- (d) Hydraulic gradient line.
- (e) What is the function of Pitot tube ?
- (f) What is water hammer ?

3080-1950-(P-3)(Q-9)(25)

P. T. O.

UNIT - I

2. For the Laminar flow through a circular pipe. Prove that: 15
- (i) Shear stress variation across the section of the pipe is linear
- (ii) Velocity variation is parabolic
3. Obtain an Expression for velocity distribution in turbulent flow for (i) smooth pipe and (ii) Rough Pipes. 15

UNIT - II

4. Find an expression for power transmission through pipes. What is the condition for maximum transmission of power and corresponding efficiency of transmission? 15
5. Consider all the minor losses and take coefficient of friction is 0.009. Determine the rate of flow of water through a pipe of diameter 20 cm and length 50 m when one end of the pipe is connected to a tank and other end of the pipe is open to atmosphere. The pipe is horizontal and height of water in the tank is 4 m above the centre of pipe. 15

UNIT - III

6. A flow of water of 100 liter 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. Obtain a relationship between the Froude Numbers of flow before and after the hydraulic jump in horizontal rectangular channel. 15

UNIT - IV

8. A hydraulic jump forms at the downstream end of spillway carrying $17.93 \text{ m}^3/\text{s}$ discharge. If the depth before jump is 0.08 m determine the depth after the jump and energy loss. 15
9. A pipe through which water is flowing having diameter 40 cm and 20 cm at the cross-sections 1 and 2 respectively. The velocity of water at section 1 is given 5 m/s. Find the velocity head at the section 1 and 2 and also rate of discharge. 15

Roll No.

3081

**B. Tech. 4th Semester (Civil)
Examination – May, 2025**

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: 3 × 5 = 15
- (a) Slenderness ratio
 - (b) Assumption of limit state
 - (c) Water cement ratio
 - (d) Limit state of serviceability
 - (e) Factor affecting the strength of concrete

3081-J750-(P-3)(Q-9)(25)

P. T. O.

SECTION - A

2. Explain the stress-strain relationship of steel and concrete with graphically representation. 15
3. Determine the moment of resistance of a singly reinforced 250mm wide and 350mm deep (effective) beam. The reinforcement consists of 4 bars of 16mm diameter. The material used is M15 concrete and Fe 250 steel. Take $m=18$. 15

SECTION - B

4. (a) Write a short note on steel beam theory. 7.5
- (b) A rectangular beam section is reinforced on both side is 350mm wide and having 600mm depth. The centre of steel on both side is 40mm away from respective edges. Determine the steel area on both side for a bending moment of 70KN. Solve by working stress method. 7.5
5. Design a simply supported beam to carry a load of 14500N/m. The clear span of beam is 5.5m. The bearing on each end is 300mm. Assume permissible nominal shear stress as 0.3N/mm^2 . Solve it by limit state. 15

3081- (P-3)(Q-9)(25) (2)

SECTION - C

6. Design a RC slab for a room of clear dimension $4\text{m} \times 5\text{m}$. The slab is supported all around walls of width 300mm. The slab has to carry a live load of 4KN/m^2 . Use M20 concrete and Fe415 steel. Assume corner are held down. Sketch the details of reinforcement. 15
7. What are retaining wall ? Explain the types of retaining wall and all specifications as per IS 456:2000 with neat and clean sketch. 15

SECTION - D

8. Design a short axially loaded square column $500\text{mm} \times 500\text{mm}$ for a service load of 2000KN. Use M20 Concrete and Fe415 steel. 15
9. Write down the design steps of combine raft footings and also explain types of footings. 15

3081- (P-3)(Q-9)(25) (3)

Roll No.

3082

**B Tech. 4th Semester (Civil)
Examination – May, 2025**

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.

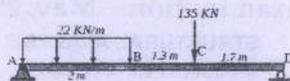
1. (a) Why is it necessary to compute deflections in structures? $2.5 \times 6 = 15$
- (b) What is the absolute maximum bending moment due to a moving udl longer than the span of a simply supported beam ?
- (c) State Eddy's theorem.
- (d) State the limitations of slope deflection method.
- (e) In a member AB, if a moment of -10 KNm is applied at A, what is the moment carried over to B ?
- (f) What are the moments induced in a beam member, when one end is given a unit rotation, the other end being fixed. What is the moment at the near end called ?

3082-1900-(P-4)(Q-9)(25)

P. T. O.

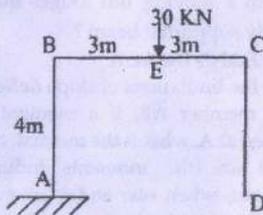
SECTION - A

2. (a) State the comparison of Castiglione's first theorem and unit load method. 8
- (b) Determine the maximum deflection for the beam shown by double integration method. 7



$EI = \text{constant}$
 $E = 16.5 \text{ GPa}$
 $I = 6325 \times 10^6 \text{ mm}^4$

3. (a) Write down the two methods of determining displacements in pin jointed plane frames by the unit load concept. Explain anyone in detail. 10
- (b) The horizontal displacement of the end D of the portal frame is required. Determine the relevant equations due to the unit load at appropriate point. 5



SECTION - B

4. (a) What is the absolute maximum bending moment due to a moving udl longer than the span of a simply supported beam? 5
- (b) With the help of neat sketch explain shear force and bending moment of simply supported beam with a uniformly distributed load. 10
5. (a) Draw the Influence line diagram for shear force and bending moment for a section at 5m from left support of a simply supported beam, 20m long. Hence calculate the maximum B.M and S.F. at the section. Due to uniformly distributed rolling load of length 8m and intensity 10kN/m run. 10
- (b) Where do you have the absolute maximum bending moment in a simply supported beam when a series of wheel loads cross it? 5

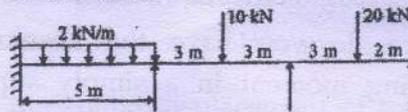
SECTION - C

6. (a) A three hinged circular arch of span 16m and rise 4m is subjected to two point loads of 100kN and 80kN at left and right quarter span points respectively. Find the reaction at the supports. Find also BM, radial shear and normal thrust at 6m from the left support. 10
- (b) How will you calculate the horizontal thrust in a two hinged parabolic arch if there is a rise in temperature? 5

7. A suspension bridge of 250 m span has two nos. of three hinged stiffening girders supported by cables with a central dip of 25 m. If 4 point loads of 300 kN each are placed at the centre line of the roadway at 20, 30, 40 and 50 m from left hand hinge. Find the shear force and bending moment in each girder at 62.5 m from each end. Calculate also the maximum tension in the cable. 15

SECTION - D

8. (a) Draw the bending moment diagram and shear force diagram for the continuous beam shown in figure, below using moment distribution method. EI is constant. 10



- (b) Explain slope deflection for analysis of continuous beams in detail. 5
9. Analyze the continuous beam by Kani's method. 15

Roll No.

3083

**B. Tech. 4th Semester (Civil)
Examination – May, 2025**

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) Normal equation
- (c) Flight planning
- (d) Principle of Photo-interpretation

3083-1850-(P-4)(Q-9)(25)

P. T. O.

- (e) Spatial data analysis
- (f) Applications of remote sensing

SECTION – A

2. (a) Two triangulation stations A and B are 130 km apart. The elevation of A is 500 m and that of B is 790 m. An intervening peak is 75 km from A and has an elevation of 392 m. Check the intervisibility from A to B. Find the height of the signal required at B if line of sight is required to pass at least 2.5 m above ground.
- (b) What is the principle of trilateration ? Describe the different methods of trilateration with their characteristics.
3. (a) What do you mean by most probable value ? Describe different law of weights to obtain most probable value.
- (b) Find the most probable values of angles A, B and C if $A = 46^{\circ}12'34''$, $B = 22^{\circ}18'36''$, $A + B + C = 68^{\circ}31'13''$.

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.

3083- (P-4)(Q-9)(25) (2)

- (b) What are the different time systems ? Describe the different time systems in detail.

5. (a) Describe in detail the Napier's rules of circular parts with its applicability.
- (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) Derive the parallax equation for determining the height from a pair of vertical photographs.
- (b) A vertical photograph was taken at an altitude of 1200 m above mean sea level. Determine the scale of photograph for terrain lying at elevations of 80 m and 300 m if the focal length of camera is 15 m.
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.
- (b) What are the functions of an aerial camera ? Describe in detail the different components of aerial camera.

3083- (P-4)(Q-9)(25) (3)

P. T. O.

SECTION - D

8. (a) What do you mean by polarization of EMR ? Describe in detail the Sources of EMR for remote sensing.
- (b) What are the types of remote sensing ? Describe in detail the systems and components.
9. Write short notes on the following :
- (a) Types of satellite orbits.
- (b) Objectives and components of GIS.
- (c) EMR source and characteristics.

Roll No.

3084

**B. Tech. 4th Semester (Civil)
Examination – May, 2025**

MATERIAL TESTING AND EVALUATION

Paper : PCC-CE-210G

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 :

3 × 5 = 15

- (a) High Performance Concrete
- (b) Prestressed Concrete
- (c) Lime
- (d) Shrinkage of material
- (e) Fatigue of material

3084-1500-(P-3)(Q-9)(25)

P. T. O.

SECTION - A

2. (a) Explain the Polymer concrete and fiber-reinforced concrete in detail. 7.5
(b) Explain the function of Ceramic and Refractories in construction industry. 7.5
3. (a) Explain the different proportioning of mortars for masonry and plastering. 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 the factors considered in the choice of mix design. 7.5
(b) Explain British 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 impact test and transition temperatures impact during the concrete testing. 15
9. Explain all the steps taken care of during the construction of multistorey building. 15