CBCS SCHEME

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BCV501

Fifth Semester B.E./B.Tech. Degree Examination, June/July 2025
Construction Management and Entrepreneurship

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

<table>
<tr><th colspan="3">Module – 1</th><th>M</th><th>L</th><th>C</th></tr>
<tr><td>Q.1</td><td>a.</td><td>Explain the characteristics and functions of management.</td><td>10</td><td>L2</td><td>CO1</td></tr>
<tr><td></td><td>b.</td><td>Identify and discuss the steps involved in the approval process of a construction layout and building plan.</td><td>10</td><td>L3</td><td>CO1</td></tr>
<tr><td colspan="6">OR</td></tr>
<tr><td>Q.2</td><td>a.</td><td>What do you mean by Gantt chart? Lost the applications and advantages of Gantt chart.</td><td>10</td><td>L2</td><td>CO1</td></tr>
<tr><td></td><td>b.</td><td>Determine the critical path for the network with the following relations:
<table>
<tr><th>Activity</th><th>Predecessor</th><th>Duration</th><th>Activity</th><th>Predecessor</th><th>Duration</th></tr>
<tr><td>A</td><td>-</td><td>5</td><td>G</td><td>D, F</td><td>6</td></tr>
<tr><td>B</td><td>A</td><td>4</td><td>H</td><td>D, F</td><td>8</td></tr>
<tr><td>C</td><td>-</td><td>6</td><td>I</td><td>B, G</td><td>4</td></tr>
<tr><td>D</td><td>C</td><td>3</td><td>J</td><td>B, G</td><td>7</td></tr>
<tr><td>E</td><td>-</td><td>5</td><td>K</td><td>H, I</td><td>5</td></tr>
<tr><td>F</td><td>E</td><td>3</td><td>L</td><td>J, K</td><td>2</td></tr>
</table></td><td>10</td><td>L3</td><td>CO1</td></tr>
<tr><td colspan="3">Module – 2</td><td></td><td></td><td></td></tr>
<tr><td>Q.3</td><td>a.</td><td>What are the factors affecting labor productivity in construction industry? Briefly explain.</td><td>10</td><td>L2</td><td>CO2</td></tr>
<tr><td></td><td>b.</td><td>Estimate the hourly production in bulk volume of a back hoe with bucket capacity 1.4 m^3 employed on excavation of a foundation 3 m deep in hard digging soil. The excavated earth is to be loaded in waiting dump trucks placed at a swing angle 75°. The expected performance efficiency (η) is 81%.
i) Ideal output of loose soil in m^3 = 180 LCM.
ii) Equipment conversion factor operating at optimum depth = 0.8
iii) Correction factors are
• Soil factor for hard digging = 0.67
• Load factor for loading into vehicle = 0.80
• Swing factor 75° angle = 1.07</td><td>10</td><td>L3</td><td>CO3</td></tr>
<tr><td colspan="6">OR</td></tr>
<tr><td>Q.4</td><td>a.</td><td>List out the functions of material management and discuss the class of labor in construction industry.</td><td>10</td><td>L2</td><td>CO2</td></tr>
</table>

	b.	Estimate the number of dumper required for transportation of 1500 m^3 of material per day for an average lead of 4 km. Following data may be considered for estimation. Theoretical capacity of dumper = 18 m^3. Actual capacity = 15 m^3, cycle time = 30 min, working period = 50 min/hr and 6 hour/shift.	10	L3	CO2
		Module – 3			
Q.5	a.	Describe the stages involved in the procurement process in construction management.	10	L2	CO3
	b.	List the different types of procurement in construction management.	10	L1	CO3
		OR			
Q.6	a.	Explain the process of tendering.	10	L2	CO3
	b.	What is meant by breach of contract? List the various forms of breach of construction contract.	10	L1	CO3
		Module – 4			
Q.7	a.	What are the main components of a quality management system?	10	L2	CO4
	b.	Explain the importance of Occupational Health, Safety and Environmental (OHSE) considerations in construction projects.	10	L2	CO4
		OR			
Q.8	a.	What are the steps involved in risk management process?	10	L2	CO4
	b.	Explain the barriers to effective quality management in construction and propose strategies to overcome them.	10	L2	CO4
		Module – 5			
Q.9	a.	What are the key characteristics of a successful entrepreneur?	10	L2	CO5
	b.	List the different entrepreneurial styles identified in the 5 M model.	10	L2	CO5
		OR			
Q.10	a.	Explain a case study of a successful entrepreneur to identify their personality traits and entrepreneurial style.	10	L2	CO5
	b.	Explain the potential risks and benefits of entering international markets versus focusing on domestic growth.	10	L2	CO5

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BCV502

Fifth Semester B.E./B.Tech. Degree Examination, June/July 2025
Geotechnical Engineering

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	With the help of 3-phase diagram, Explain voids ratio, specific gravity, water content and degree of saturation.	8	L2	CO1
	b.	With usual notations, derive the relationship. $Y_d = \frac{(1-n_a)G \cdot Y_w}{1+WG}$	6	L2	CO1
	c.	With the help of particle size distribution curve, explain well graded soil, uniformly graded soil and gap grade soil.	6	L3	CO1
		OR			
Q.2	a.	Explain determination of In-Situ density of soil by sand replacement method.	8	L2	CO1
	b.	Define Stoke's law. What are its assumptions and limitations?	6	L2	CO1
	c.	Define liquid limit, plastic limit and shrinkage limit.	6	L2	CO1
		Module – 2			
Q.3	a.	Explain with neat sketches the various soil structures.	6	L2	CO1
	b.	Explain any two clay minerals with the help of neat sketches.	8	L2	CO2
	c.	List and explain factors affecting compaction.	6	L2	CO1
		OR			
Q.4	a.	What are the differences between standard and modified Proctor's compaction test methods?	6	L2	CO2
	b.	Explain electrical diffused double layer and adsorbed water.	6	L2	CO2
	c.	A soil in the borrow pit is at a dry density of 16.67 kN/m^3 with water content of 12%. If the soil of 2000 m^3 is excavated from it and compacted in an embankment with porosity of 0.32. Calculate the volume of embankment which can be constructed out of this material, Take G = 2.70.	8	L3	CO2
		Module – 3			
Q.5	a.	Derive the equation for average co-efficient of permeability's in vertical and horizontal directions.	8	L2	CO3

	b.	Explain with a neat sketch the method of locating the phreatic line in a homogeneous earth dam with horizontal filter.	6	L2	CO3
	c.	If during a variable head permeability test on a soil sample, equal time intervals are noted for drops of head from h_1 to h_2 and again from h_2 to h_3. Find the relationship between h_1, h_2 and h_3.	6	L2	CO3
		OR			
Q.6	a.	State the characteristics and uses of flownets.	6	L2	CO1
	b.	Explain the terms: i) Total stress ii) Effective stress iii) Neutral stress.	6	L2	CO1
	c.	Compute the quantity of water seeping under a weir per day for which the flow net has been satisfactorily constructed, the coefficient of permeability is 2×10^{-2} mm/s, $n_f = 5$ and $n_d = 18$. The difference in water level between upstream and downstream is 3.0 m. The length of the weir is 60 m.	8	L3	CO1
		Module – 4			
Q.7	a.	Explain Mohr-Coulomb theory of shear strength.	6	L2	CO1
	b.	What are the advantages and disadvantages of direct shear test and over triaxial test?	6	L2	CO1
	c.	A direct stress test was carried out on a cohensive soil sample and following results were obtained: Normal stress (kN/m^2) 150 250 Shear stress (kN/m^2) 110 160 A triaxial test is carried out on the same soil with cell pressure of 150 kN/m^2. What would be the deviator stress @ failure?	8	L3	CO2
		OR			
Q.8	a.	What are the factors affecting the shear strength of soil?	6	L2	CO1
	b.	A cylindrical specimen of saturated clay 40 mm in diameter and 80 mm in length is tested in an unconfined compression test. Find shear strength of clay, if the specimen fails under an axial load of 360 N. The change in length of the specimen @ failure is 8 mm. Also find the shear parameters if the angle made by the failure plane with horizontal is 50°.	8	L3	CO1
	c.	What are the advantages of triaxial shear test over direct shear test?	6	L2	CO1
		Module – 5			
Q.9	a.	Enamurate the assumptions and limitations of Terzaghi's consolidation theory.	6	L2	CO1

	b.	Briefly explain: i) Normally consolidated ii) Under consolidated iii) Over consolidated soils.	6	L2	CO1
	c.	A soil sample 20 mm thick takes 20 minutes to reach 20% consolidation. Find the time taken for a clay layer 6 mm thick to reach 40% consolidation. Assume double drainage in both cases.	8	L3	CO1
		OR			
Q.10	a.	Explain square root of time fitting method.	6	L2	CO1
	b.	Explain mass spring analogy.	6	L2	CO1
	c.	A 20 mm thick isotropic clay layer overlies on impervious rock. The coefficient of consolidation of soil is 50×10^{-2} mm^2/sec. Find the time required for 50% and 90% consolidation. Time factor are 0.2 and 0.85 for 50% and 90% consolidation, respectively.	8	L3	CO2

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