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B.M.S College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

May 2024 Semester End Main Examinations

Programme: B.E. **Semester: VIII**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 21CV8HSCEP **Max Marks: 100**
Course: Construction Project Management, Economics and Professional Ethics

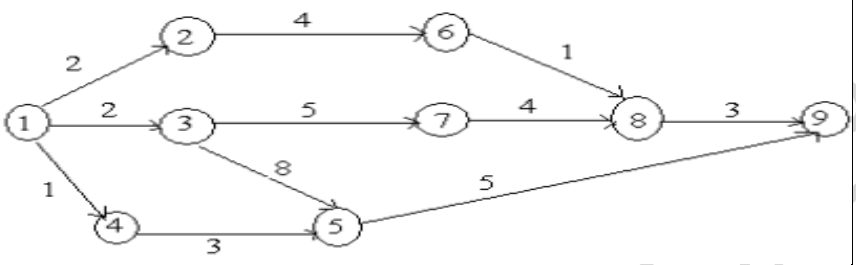
Instructions: 1.Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT – I	*CO*	*PO*	Marks
1	a)	Discuss the merits & demerits of using bar charts for project Scheduling.	*CO*1	*PO11*	**10**
	b)	Explain how a Work Breakdown Structure (WBS) contributes to project planning, scheduling, and resource allocation.	*CO*1	*PO11*	**10**
		UNIT – II			
2	a)	Define the following terms with respect to CPM : i. Duration ii. Earliest start time iii. Earliest finish Time iv. Total float	*CO*1	*PO11*	**8**
	b)	Develop the network diagram and identify the critical path using CPM for the following activity data in Table 1. Table 1	*CO*1	*PO1*	**12**

Activity	**1-2**	**2-3**	**2-4**	**3-5**	**3-6**	**4-5**	**4-7**	**5-8**	**6-8**	**7-8**
Duration (Days)	**5**	**2**	**6**	**4**	**4**	**2**	**3**	**7**	**8**	**2**

OR

	3	a)	Develop the network diagram and identify the critical path for the data provided in Table 2. Compute EST, EFT. LST, LFT and Total Float for each activity Table 2 **Activity** | **1-2** | **1-3** | **2-4** | **3-4** | **4-5** **Duration (Days)** | **2** | **4** | **1** | **6** | **7**	***CO*** 1	***PO11***	**8**
		b)	Establish the critical path and calculate the slack time for each activity in the following network shown in Figure 1.  Figure 1	***CO*** 1	***PO11***	**12**
			UNIT - III			
	4	a)	Discuss the objectives of cost control in construction projects.	***CO*** 2	***PO11***	**10**
		b)	Why do construction firms implement Materials Management System? Highlight any five key benefits.	***CO*** 2	***PO11***	**10**
			UNIT – IV			
	5	a)	Explain the key objectives of financial management in the context of civil engineering firms.	***CO*** 2	***PO11***	**10**
		b)	A man is planning to build his own house. He plans to divert his bonus of Rs. 40,000/- as investment every year for the next 10 years. The bank gives 12% interest rate compounded annually. Find the maturity value of his account after 10 years.	***CO*** 2	***PO11***	**10**
			OR			
	6	a)	Discuss in detail on how the concept of time value of money influences decisions regarding project financing in civil engineering.	***CO*** 2	***PO11***	**10**

		b)	A contractor has two alternatives for purchasing a mini earth excavator; The alternatives are from two different manufacturing companies. The cash flow details of the alternatives are as follows: **Alternative 1 :** Initial Purchase cost is Rs. 3,00,000/- Annual operating and maintenance cost is Rs. 20,000/- Expected salvage value is Rs. 1,25,000/- Useful life is 5 years. **Alternative 2 :** Initial Purchase cost is Rs. 2,00,000/- Annual operating and maintenance cost is Rs. 35,000/- Expected salvage value is Rs. 70,000/- Useful life is 5 years. **Using present worth method**, find out which alternative should be selected, if the rate of interest is 10% per year.	***CO*** 2	***PO11***	**10**
			UNIT – V			
	7	a)	Why is it important for civil engineers to adhere to professional ethics in their practice? Support your answer with details on consequences.	***CO*** 2	***PO8***	**10**
		b)	Discuss the personal and professional benefits of maintaining high ethical standards in civil engineering.	***CO*** 2	***PO8***	**10**

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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

May 2024 Semester End Main Examinations

Programme: B.E. **Semester: VIII**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 21CV8PEEIA **Max Marks: 100**
Course: Environmental Impact Assessment

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT – I	CO	PO	Marks
1	a)		Describe conceptually the relationship between EIA, FONSI and EIS with a flow chart	CO 1	PO1	**10**
	b)		Explain the purpose and need of EIA	CO 1	PO1	**10**
			UNIT – II			
2	a)		Explain briefly the step-by-step procedure for conducting EIA	CO 1	PO1	**10**
	b)		Define EIA List the limitations and advantages of EIA	CO 1	PO1	**10**
			UNIT - III			
3	a)		List the EIA methodology and explain the checklist and matrix method the EIA methodology	CO 2	PO2	**10**
	b)		Discuss the basic criteria to select an appropriate methodology for a specific project?	CO 2	PO2	**10**
			UNIT – IV			
4	a)		Explain the assessment and prediction of impact on air attribute for EIA process with the flow diagram	CO 3	PO3	**10**
	b)		Explain the assessment and prediction of the impact on water attribute for EIA process with flow diagram	CO3	PO3	**10**
			OR			
5	a)		List the advantages and disadvantage of public participation in environmental decision-making	CO 3	PO3	**10**
	b)		Explain the various steps involved in assessment and prediction of impacts on socio economic Environment	CO 3	PO3	**10**
			UNIT – V			
6	a)		Describe the EIA process for nuclear power plant highlighting the environmental settling connected with project activity	CO 3	PO4	**10**
	b)		Describe the EIA process for thermal project highlighting the environmental settling connected with project activity	CO 3	PO4	**10**
			OR			
7	a)		Describe the EIA process for water resource project highlighting the environmental settling connected with project activity	CO3	PO4	**10**
	b)		Describe the EIA process for mining project highlighting the environmental settling connected with project activity	CO3	PO4	**10**

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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

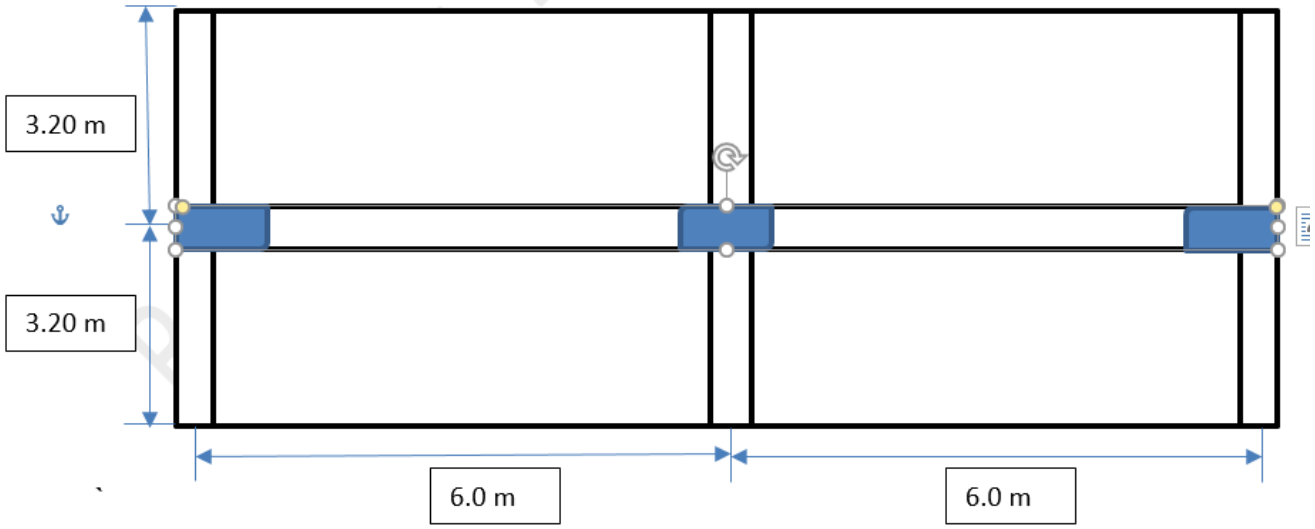
May 2024 Semester End Main Examinations

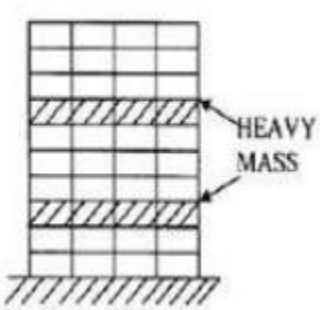
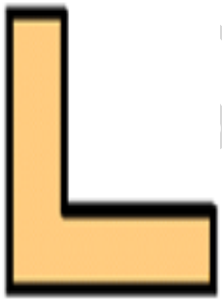
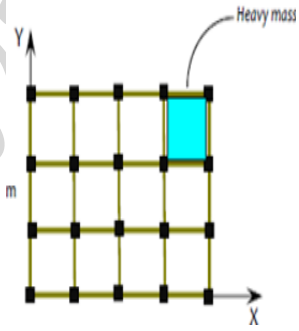
Program: B.E. **Semester: VIII**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 21CV8PEERD **Max Marks: 100**
Course: Earthquake Resistant Design of Structures

Instructions: 1. Answer any FIVE questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.
3. Use of IS 1893 (2016) is permitted

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT – I	*CO*	*PO*	Marks
1	a)		Discuss the causes of earthquakes as per Elastic Rebound Theory.	*CO* 1	*PO1*	**8**
	b)		Explain the following with the help of sketches: i. Focus, epi-center, Focal depth, epi-central distance ii. Types of plate boundaries iii. Magnitude and Intensity	*CO* 1	*PO1*	**12**
			UNIT – II			
2	a)		List the key historical earthquakes that have occurred in India and enumerate the observed effects (failures) on structures with a case study during significant past earthquakes in India.	*CO* 2	*PO1*	**10**
	b)		Elucidate the construction methodology of the displacement response spectrum and explain the need for a combined D-V-A spectrum (displacement, velocity, and acceleration) when each contains the same information.	*CO* 2	*PO1*	**10**

			UNIT - III			
	3		Analyze a four-storeyed RC building shown in **Figure No.3** by an equivalent static method as per IS 1893 (part 1): 2016 and estimate lateral forces. Data given: i. Type of structure: Multi-storey rigid jointed plane frame (Special moment resisting frame) ii. Seismic Zone: III iii. Number of Stories: G+3 iv. Floor height: 3.25 m (all floors at same height) v. Infill wall: 230 mm thick including plaster vi. Imposed Load: 3.50 kN/m^2 vii. Materials M20 Concrete and Fe 415 Steel viii. Size of columns: 230 mm X 400 mm ix. Size of Beams: 230 mm X 500 mm x. Depth of Slab: 125 mm xi. Specific Weight of RCC: 25 kN/m^3 xii. Specific Weight of Infill: 20 kN/m^3 xiii. Type of Soil: medium stiff soil xiv. Response Spectra: As per IS 1893 (Part 1) 2016 Time history: Compatible to IS 1893 (Part 1) 20 spectra at medium stiff soil site for 5% damping.	*CO* 3	*PO3*	**20**
			 **Figure No. 3a**			
			OR			
	4	a)	Calculate the design horizontal seismic coefficients A_h for proposed G+9 floor RC special moment resisting frame Hospital building for two cities Kohima and Mysore separately. Height of all floors is 3.50 m. Soil type is soft soil.	*CO* 3	*PO3*	**10**
		b)	List out different methods to estimate earthquake forces in buildings as per IS 1893-2016 (Part I) code and explain the principles adopted to analyze the building as per Equivalent static method.	*CO* 3	*PO1*	**10**

			UNIT – IV			
	5	a)	Explain 'dual' systems with sketches. List reasons as to why it is better than moment-resisting framed systems.	*CO* 3	*PO1*	**10**
		b)	Discuss the codal provisions as per IS:13920 to make the flexural members in the frame ductile.	*CO* 3	*PO1*	**10**
			OR			
	6	a)	List out any undesirable earthquake resistance aspects noticed in the schematic diagrams of different structural forms shown in **Figure No. 6a** (open ground floor), **Figure No.6b** (heavy at irregular floor levels), **Figure No.6c (**L shaped building), **and Figure No.6d** (heavy mass at building corner). Justify your answer with the technical terms associated with them.	*CO* 3	*PO1*	**10**
			 **Figure No. 6a**  **Figure No. 6b**  **Figure No. 6c**  **Figure No. 6d**			
		b)	Explain the significance of providing adequate lap splice length in column-beam junctions to achieve ductility as per IS 13920.	*CO* 3	*PO1*	**10**
			UNIT – V			
	7	a)	Explain the concept of "out-of-plane" and "in-plane" failure in masonry structures(buildings).	*CO* 4	*PO1*	**10**
		b)	Discuss the importance of proper detailing and construction practices in achieving earthquake resilience in masonry buildings.	*CO* 4	*PO1*	**10**

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May 2024 Semester End Main Examinations

Programme: B.E. **Semester: VIII**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 21CV8PEIWM **Max Marks: 100**
Course: Integrated Watershed Management

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

				CO	***PO***	**Marks**
			UNIT - I			
1	a)	Watershed development programs are essential in India. Discuss their relevance with the help of any appropriate case-study.		***CO*** 1	***PO1***	**10**
	b)	Explain the role of stakeholders in water conservation and their involvement in sustainable watershed management.		***CO*** 1	***PO1***	**10**
			UNIT - II			
2	a)	Enumerate the universal soil loss equation to estimate the soil loss rate due to water induced erosion.		***CO*** 2	***PO1***	**10**
	b)	Discuss about the modeling of rainfall-runoff process, subsurface flows and groundwater flow in brief.		***CO*** 2	***PO1***	**10**
			OR			
3	a)	Elaborate on the concept of general watershed modelling with an example.		***CO*** 2	***PO1***	**10**
	b)	List the various predominant hydrological processes and their impact on the watershed management.		***CO*** 2	***PO1***	**10**
			UNIT - III			
4	a)	Elaborate on the environmental guidelines for water quality management.		***CO*** 3	***PO1***	**10**
	b)	Describe the sources of surface water pollution. Briefly explain the key concept of surface water quality modelling.		***CO*** 3	***PO1***	**10**
			UNIT - IV			
5	a)	Explain the flood routing through the reservoir. Also, discuss how flood control measures and reservoir operations helps to mitigate the flood risks downstream.		***CO*** 4	***PO1***	**10**
	b)	Explain different indices used to measure the drought and its classification.		***CO*** 4	***PO1***	**10**

			OR			
	6	a)	Elaborate on various tools and techniques available for the assessment of the meteorological and agricultural drought.	***CO*** 4	***PO1***	**10**
		b)	List the various factors involved in the flood estimation and elaborate on their significance.	***CO*** 4	***PO1***	**10**
			UNIT - V			
	7	a)	Explain the role of integrated decision support systems in the sustainable development of river basins.	***CO*** 1	***PO1***	**10**
		b)	Elaborate on the applications of remote sensing and GIS in evaluating the characteristics of watershed and its management.	***CO*** 1	***PO1***	**10**

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May 2024 Semester End Main Examinations

Programme: B.E. **Semester: VIII**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 21CV8PEUTP **Max Marks: 100**
Course: Urban Transport Planning

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

				CO	*PO*	Marks
			UNIT – I			
1	a)		Describe various urban transportation problems and issues. Explain any three challenges and limitations of Transportation System.	*CO 1*	*PO1*	**10**
	b)		Explain Transportation planning process and discuss various components associated with the preparation of transportation plan.	*CO 1*	*PO1*	**10**
			UNIT – II			
2	a)		Explain the importance of secondary data and mention the types of data to be collected as a part of secondary data.	*CO 1*	*PO1*	**10**
	b)		Explain briefly the conduct of household survey along with its importance.	*CO 1*	*PO1*	**10**
			UNIT - III			
3	a)		Following information are obtained from transportation survey. Develop linear regression model for the data.	*CO 2*	*PO3*	**10**

Traffic zone	1	2	3	4	5	6
Population(in thousands)	20	24	28	32	36	39
Total trips generated(in 100)	10	12	17	16	18	20

	b)		Explain the factors governing trip generation and attraction rates.	*CO 2*	*PO3*	**10**
			OR			
4	a)		Given that a zone has 275 household with access to car and 275 household without access to car and the average trip generation rates for each group are 5.0 and 2.5 trips per day, respectively. Assuming that in the future, households will have similar distribution with access and without access to a car, as per the existing situation. There will be an addition of 550 households with similar distribution of car ownership. Find the growth factor and future trips from that zone.	*CO 2*	*PO 3*	**08**
	b)		Explain briefly the statistical tests to be carried out to develop multiple regression.	*CO 2*	*PO 1*	**12**

			UNIT – IV			
	5	a)	Consider the following trip matrix with the target origins and destinations for the future year. As per the Furness method.	*CO 2*	*PO 3*	**12**
		b)	Explain the Advantages and Disadvantages of Growth Factor Models.	*CO 2*	*PO*	**8**
			OR			
	6	a)	Explain the various methods for trip distributions with respect to growth factor models.	*CO 2*	*PO1*	**10**
		b)	Describe the concept of gravity model and comment on the calibration of gravity model.	*CO 2*	*PO1*	**10**
			UNIT – V			
	7	a)	Explain the various factors affecting the modal split.	*CO 3*	*PO1*	**10**
		b)	List the different traffic assignment techniques and briefly explain diversion curves.	*CO 3*	*PO1*	**10**

	1	2	3	4	pi	Pi
1	10	20	15	18	63	140
2	21	16	17	14	68	150
3	30	21	25	27	103	200
4	10	9	16	13	48	100
aj	71	66	73	72		
Aj	150	120	180	160		

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