Reg. No.



MANIPAL INSTITUTE OF TECHNOLOGY MANIPAL

VII SEMESTER B.TECH. (CIVIL ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: CONSTRUCTION PLANNING ORGANISATION AND **EQUIPMENT** [CIE 403]

REVISED CREDIT SYSTEM (02/12/2016)

Time: 3 Hours

MAX. MARKS: 50

Instructions to C	Candidates:
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- Answer ANY FIVE FULL questions.
- ✤ Missing data may be suitable assumed.

	Identify the limitations of Gantt/Milestone chart which have overcome by a PERT/CPM											
	Draw a neat network for the activity relationships given below and number the events											
1Δ	using Fulkerson's rule								03			
	Activities	A and B give	initiatio	n and mark th	e beginning of	a projec	۲ t					
	Activity A is the immediate predecessor to Activity C and Activity D											
	Activity H follows Activity D but it cannot be started until Activity C is completed											
	Activity E	precedes Act	ivity L			1001110						
1B.	Activities	E and F are th	e imme	diate successo	rs to Activity l	3.						
	Activity J	follows Acti	vities H	land F but it	cannot start u	intil Ac	tivities E and	C are	07			
	completed								07			
	Activity C	precedes Act	ivity G.									
	Activities	G, I and J dep	ict the c	losure of the p	project.							
2∆	What is the need to update a project? Explain the process of updating with the data							03				
	necessary	for it.										
	A small project is composed of seven activities, the time estimates (in weeks) of which											
	are listed in the below table:											
	Activity	Optimistic	Most	Pessimistic	Probability	Ζ	Probability	Ζ				
			likely	time	%							
			time									
	1-2	1	1	7	+1.3	90.32	-1.3	9.68				
	1-3	1	4	7	+1.4	91.92	-1.4	8.08	_			
2 B .	2-4	2	2	8	-				07			
	2-5	1	1	1	-							
	3-5	2	5	14	-							
	4-6	2	5	8	-							
	5-6 3 6 15											
	a) Draw the project network and determine the expected project length.											
	b) What is the probability that the project will be completed 4 weeks earlier than											
	expected?											

3A.	Compare between: i) Pre-tender and contract planning ii) Slack and float						04	
3B.	Calcula time sca	te the optimale network Activity 1-2 1-3 1-4 2-4 2-5 3-4 3-5 4-5	num duration a at every stage. Normal time (weeks) 2 5 5 2 5 4 6 5	and minimum cost Overhead cost is Normal cost (INR) 800 1000 1000 600 1500 2000 1200 900	t for the data Rs. 500 per w Crash time (weeks) 1 2 3 1 3 3 4 3 4 3	given below. D eek. Crash cost (INR) 1400 2000 1800 700 2100 3000 1600 1600	raw the	06
4A.	 i) Outline the 'scalar principle' by reviewing its features through the framework of the line and functional organisations. ii) Define organisation. How significant is the presence of an organisation in bringing out the coordination among various wings of a construction project? 						04	
4B.	 i) What do you mean by 'useful life' of equipment maintenance? List and explain the factors governing 'economic life' of an equipment. ii) How a project is analyzed during the planning of construction equipment? List the limitations involved. 						06	
5A.	List the basic parts of a scraper. Explain how each of them contributes towards operation of a scraper						05	
5B.	Write a note on: i) Depreciation cost ii) Downtime cost iii) Obsolescence cost iv) Need for mechanization v) Infant mortality period						05	
6A.	Distinguish between dragline and back hoe excavator based on their construction and factors affecting output.					04		
6B.	A 260 HP diesel powered wheel loader will be used to load shot rock. Crank case capacity-40 litre, hours between oil change-150, operating factor-0.8, useful life-5 years with 10% salvage value, hours operated per year-1800, shipping weight-100 tonnes, freight charge @ Rs. 350.00 per tonne, factory cost-Rs. 26,00,000 @ 12% average investment cost, sales tax @ 12.5%, unloading and assembly charge @ Rs.15,000, bank interest @ 10.5%, risk factor @ 8%. Consider cost of fuel Rs. 59/litre and cost of lubricating oil Rs. 550/litre.					06		