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22/05/17

Bharatiya Vidya Bhavan's

Sardar Patel College of Engineering

(A Government Aided Autonomous Institute)
Munshi Nagar, Andheri (West), Mumbai – 400058

END SEMESTER
MAY 2017

Date:

Program: M.Tech. Civil Engineering (Construction Management) **Duration: 4hr**

Maximum Marks: 100

Course code: MTCM152

Name of the Course: Management of Construction Resources **Semester: II**

Master file.

Instructions: Attempt any five
Assume suitable data wherever necessary and mention the same

Q.No.		Marks	CO	M.No.
Q1A	Explain the scope of Materials Management.	10	03	03
Q1B	Briefly explain the functions of Materials Management.	10	03	03
Q2A	Highlight Materials Classification with suitable examples	10	03	03
Q2B	Explain how you propose to organize Materials Management.	10	03	03
Q3A	Explain the factors considered for Materials purchasing	10	03	03
Q3B	Give important strategies for efficient inventory control.	10	03	03
Q4A	Define EOQ .Explain the importance of EOQ for Inventory Management	10	03	03
Q4B	Calculate EOQ from the f0llowing details. The annual usage of material is 1200 units It costs Rs 10 to handle an order for this material the price is Rs 1 per unit..The carrying cost of inventory is 24 percent .per year.	10	03	03
Q5A	How do you classify Construction Equipment.? Describe any two	10	02	02
Q5B	Explain the features of Aggregate and production Equipment.	10	02	02
Q6A	Explain factors to be considered for selection of Construction Equipment.	10	02	02
Q6B	Explain Conveying Equipment and aggregate and concrete Production Equipment?	10	02	02
Q7A	Explain the qualities of Construction Managers?	10	01	01
Q7B	Explain the features of factories Act and minimum Wages Act?	10	01	01

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END SEMESTER
17th MAY 2017

Program: M.Tech. Civil Engineering (Construction Management) **Duration: 1hr**
Course code: MTCM154 **Maximum Marks: 100**
Name of the Course: Project Appraisal, Planning and Scheduling **Semester: II**

Instructions: Attempt any five Master file.
Assume suitable data wherever necessary and mention the same

Q.No.	Questions	Marks	CO	M.No.
Q1A	Compare and contrast the project evaluation and review technique (PERT) with the critical path method (CPM). Also state what do you understand by terms Optimistic duration, Most likely duration and pessimistic duration in PERT analysis?	10	05	03
Q1B	Explain use of Gantt chart, Prepare Gantt chart for the activity as given in **table no.1**	10	04	04
Q2A	What is resource allocation? Explain Resource levelling and resource smoothing.	10	04	04
Q2B	i) Discuss demerits/ limitations of using this method for numbering node. ii) Number the node of the network diagram given in **figure no.1** iii)Write down Fulkerson's Rules for Numbering the Events	10	05	03
Q3A	Write a short note Direct and Indirect cost in construction Industry	05	02	07
Q3B	Your company is considering whether it should tender for two contracts (C1 and C2) on offer from a government department for the construction of warehouse. It is estimated that the tender preparation costs would be Rs.2, 000 if tenders are made for contracts C1 or C2 only and Rs. 3,000 if a tender is made for both contracts C1 and C2. If Tender C1 is selected the cost of production will be 50000 with extra facility cost of 18000 will be incurred. If C2 is selected than cost of production and extra facility will be 45000 and if both is selected it would be 70000. For each contract, possible tender prices have been determined. In addition, subjective assessments have been made of the probability of getting the contract with a particular tender price as shown below. Note here that the company can only submit one tender and cannot, for example, submit two tenders (at different prices) for the same contract. What do you suggest the company should do and why?	15	01	05

	Tender Options	**Tender Price**	**Possible Probability of getting tender**		
	Tendering for C1 only	120000	0.3		
		110000	0.85		
	Tendering for C2 only	70000	0.10		
		65000	0.60		
		60000	0.90		
	Tendering For both C1 and C2	190000	0.05		
		140000	0.65		
		100000	0.95		
Q4A	Construct a WBS Structure for Construction of a Highway.			10	01	02
Q4B	Explain different methods of Qualitative Risk Analysis			10	02	05
Q5A	Draw AOA network diagram for following activities and Find out critical path and project duration.			05	05	03

Activity	Predecessor	Duration
A	-	18
B	-	3
C	-	1
D	B,E	4
E	C	6
F	C	8
G	C	6
H	G	11
I	A	5
J	A	22
K	D,F,I	7
L	K,H	9
M	L,J	5

Q5B	Explain meaning of following terms and Calculate for the above given network in Q5A. i. Total Float ii. Free float iii. Independent float iv. Interfering float v. Slack for all events	15	05	03
Q6 A	Explain five phase job plan of value engineering in detail.	10	03	06
Q6B	Write a short note on. i) Out of pocket Commitment ii) Cash Flow Diagram	10	02	01

Q7A	A Precast Fabricator has decided to make a significant investment into expanding its presence in Africa by setting up a large assembly facility in Kenya. It has estimated its initial set up costs to be in the region of Kenya Shillings 6,398M. Forecast net income from the project is detailed below: Year 1 Kenya Shilling 1,400M Year 2 Kenya Shilling 1,450M Year 3 Kenya Shilling 1,550M Year 4 Kenya Shilling 1,625M Year 5 Kenya Shilling 1,480M. (i) Calculate the projected payback time for the project to the nearest month. (ii) Calculate the Net Present Value of the project using a discount factor of 8% and comment on the attractiveness of the project.	10	01	01
Q7B	A construction firm has launched a residential building consisting of 2BHK flat of price Rs. 52 lakhs and having a variable cost of 42 lakh. If the annual fixed cost of the firm is estimated to be 2 crore. Find the no.of flat the firm should construct to have a no loss no profit condition, also find in terms of Breakeven % capacity if the firm can invest in construction of 50 flats. What will be the profit if firm constructs 40 flats?	10	02	07

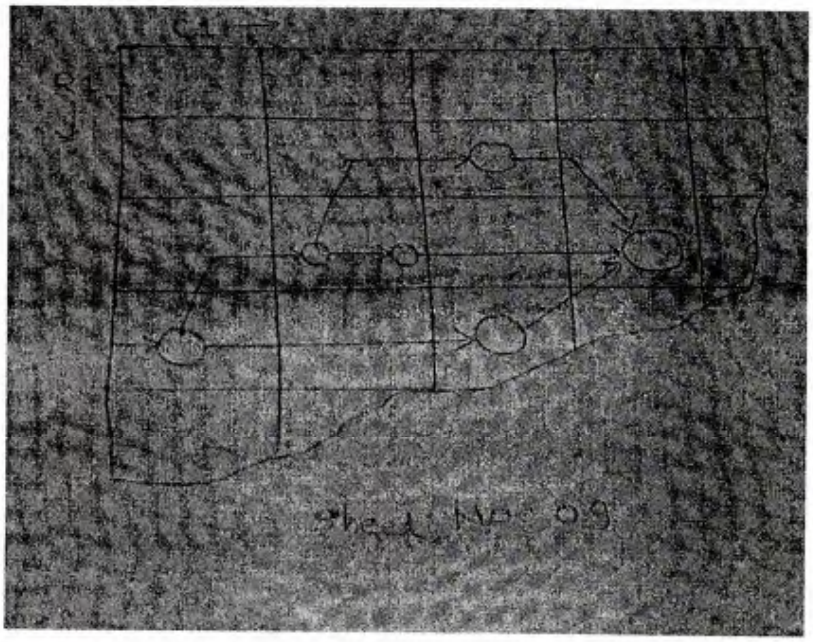

Figure No.1

Name	Duration	Start	Finish
Cleaning and layout	5.0 d	6/2/14	6/6/14
Excavate	7.0 d	6/9/14	6/17/14
Formwork and rebar	10.0 d	6/16/14	6/27/14
Concrete foundations	5.0 d	6/23/14	6/27/14
Structural steel	15.0 d	6/30/14	7/18/14
Masonry	15.0 d	7/14/14	8/1/14
Plumbing	5.0 d	7/21/14	7/25/14
Electrical	3.0 d	7/21/14	7/23/14
HVAC	5.0 d	7/21/14	7/25/14
Roofing	10.0 d	7/28/14	8/8/14
Carpentry	10.0 d	8/11/14	8/22/14
Lath and plaster	5.0 d	9/8/14	9/12/14
Doors and windows	5.0 d	8/18/14	8/22/14
Terrazzo	10.0 d	8/18/14	8/29/14
Glazing	10.0 d	9/1/14	9/12/14

Table. No.1

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END SEMESTER
15th MAY 2017

Date: 15/05/17

Program: M.Tech. Civil Engineering (Construction Management) **Duration: 1hr**

Course code: MTCM153 **Maximum Marks: 100**

Name of the Course: Project Monitoring and Control **Semester: II**

Master file.

Instructions: Attempt any five
Assume suitable data wherever necessary and mention the same

Q.No.		Marks	CO	M.No.
Q1A	Explain scope change as a defensive and aggressive behavior and also discuss the tools and techniques for scope control.	10	01	01
Q1B	Discuss in detail monitoring of work progress on site and explain power grid as a tool for setting communication.	10	01	01
Q2A	State the factor affecting Job Productivity and explain crew balance chart method of measuring productivity on site.	10	01	02
Q2B	Explain Active and Passive means of communication on construction site with suitable examples.	10	01	01
Q3A	A Method Productivity Delay Model sheet for Roof truss installation operation is given as in fig no. 1 Calculate the delay information for the given sheet and Find the overall productivity	10	01	02
Q3B	Illustrate the steps for setting integrated control process system and explain establishing of baseline for the performance measurement.	10	01	06
Q4A	Discuss Different Method of Cost Codification	10	02	03
Q4B	Differentiate between Quality Control & Quality Assurance with an example.	10	02	04
Q5A	Explain in detail Product Quality Control Methodology	10	02	04
Q5B	Propose how the effective use of project management software can help an organization manage its projects throughout each stage of the project life cycle.	10	03	06
Q6A	As a safety officer in Indian oil Company discuss the hazards faced in your profession with respect to the current working site and what broad measures you will take to protect from the same.	10	03	05
Q6B	Discuss the causes of accident on construction site. Also suggest suitable remedial measures to prevent them.	10	03	05
Q7A	State the importance of information in project context	05	03	06

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END SEMESTER

MAY 2017

Q7B	On June 12, 2002, Delta Corporation was awarded an Rs.160, 000 contract for testing a product. The contract consisted of Rs.143, 000 for labor and materials, and the remaining Rs.17, 000 was profit. The contract had a scheduled start date of July 3, 2002. The network logic, as defined by the project manager and approved by the customer, consisted of the following.	15	02	03

Activity	Week
AB	7
AC	10
AD	8
BC	4
BE	2
CF	3
DF	5
EF	2
FG	1

On August 27, 2002, the executive steering committee received the following report indicating the status of the project at the end of the eighth week. Find the Variance in schedule and cost. And give your conclusion with respect to time required for completion and changes in performance required.

Activity	% Completed	Budgeted Cost	Actual Cost	Time Remaining in Weeks
AB	100	23000	23500	0
AC	60	25000	19200	4
AD	87.5	42000	37500	1
BC	50	17000	8000	2
BE	50	11000	5500	1

Figure No.1: MPDM Data Collection Sheet for Roof Truss Installation

MPDM Data Collection Sheet

Date: June 6, 1992

Operation: Roof truss installation — Observer: SMA

Production unit: One truss — Unit of time: Second

Prod. Cycle	Cycle Time	Enviro. Delay	Equip. Delay	Labour Delay	Mat. Delay	Mngt. Delay
	(1)	(2)	(3)	(4)	(5)	(6)
1	354					
2	465		x			
3	343					
4	445	x				
5	504				x	
6	470		x			
7	395					
8	345					
9	360					
10	400					
11	460		x			
12	385					
13	360					
14	353					
15	372					
16	505			50%**		50%
17	465					x
18	440					x
19	430	x				
20	360					
21	375					
22	405		x			
23	475		x			