PROJECT MANAGEMENT
(CHEN 4182)

Time Allotted : 3 hrs **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**

(i) The CPM network is
(a) A deterministic network
(b) A probabilistic network
(c) A virtual network
(d) Sometimes deterministic & sometimes probalistic.

(ii) Communication between same status of people is regarded as
(a) Vertical communication (b) Consensus
(c) Horizontal communication (d) Cross communication.

(iii) Asset value of a property
(a) is the worth of the property in the market
(b) is the worth of the property as shown in the owner's accounting records
(c) is independent of time
(d) cannot be predicted, without experimental determination.

(iv) In a Chemical Process Plant 15 ton product is obtained from 100 ton of raw-material. Such a plant should be located:
(a) Near raw-material source
(b) Near an Airport
(c) Half-way between raw-material source and metropolitan city
(d) Near a port.

(v) The PERT network deal with
(a) unique time estimate (b) three time estimates
(c) Events (d) Two time estimates.

(vi) The 5% level of significance means ____ % confidence interval
(a) 1 (b) 95 (c) 10 (d) 0.

(vii) In TQM Kaizen means
(a) deplorable condition (b) corporate planning
(c) continuous improvement (d) charitable movement.

(viii) The normal distribution is
(a) a discrete distribution (b) a continuous distribution
(c) a skewed distribution (d) a virtual distribution.

(ix) The CPM network is invented by
(a) US Navy (b) Diamond Alkali Co
(c) NASA (d) Du pont international.

(x) Identify the terminology which has no relation with Materials Management
(a) LIFO (b) PERT (c) FIFO (d) EOQ.

Group – B

2. (a) How do you identify Stakeholders in a project?

(b) Discuss different aspects of Stakeholders Management highlighting the following:
(i) Planning Aspect
(ii) Management and Control

4 + (4 + 4) = 12

3. A plant is producing 10,000t/y of a product. The overall yield is 70%on a mass basis (kg of product per kg raw material). The raw material costs Rs. 1,000/t, and the product sells for Rs. 3,500/t. A process modification has been devised that will increase the yield to 75%. The additional investment required is Rs. 35,00,000, and the additional operating costs are negligible. Is the modification worth-making?

12

Group – C

4. The following table gives data on normal time-cost and crash time-cost for a project

Activity	Normal		Crash	
	Time (days)	Cost (Rs.)	Time (days)	Cost (Rs.)
10--20	6	600	4	1000
10--30	4	600	2	2000
20--40	5	500	3	1500
20--50	3	450	1	650
30--40	6	900	4	2000
40--60	8	800	4	3000
50--60	4	400	2	1000
60--70	3	450	2	800

The indirect cost per day is Rs. 100. Drawing the Network, Crash the relevant activities systematically and determine the optimum project completion time and cost.

12

5. What is Gantt Chart? How does it differ from a milestone chart? Discuss the evolution of Network Planning methodologies from Milestone chart. Enumerate the sailient points of Fulkerson's rule for numbering Network.

(1 + 2 + 6 + 3) = 12

Group – D

6. A heat exchanger has been designed and insulation is being considered for the unit. The insulation can be obtained in thickness of 25mm, 50mm, 75mm and 100mm. The following data have been determined for the different insulation thickness:

Insulation thickness	25 mm	50 mm	75 mm	100 mm
K.cal/hr Saved	75000	87500	93700	95000
Cost for insulation (Rs)	65000	70000	90000	93500
Annual Fixed Charges (%)	10	10	10	10

The value of heat is Rs. 60 per million K.Cal. An annual return of 15% on fixed capital investment is required for any capital put into this type of investment. The exchanger operates 300 days per year. Which thickness of insulation should be used?

12

7. What is meant by Risk Analysis? Discuss the essentials of Planning Risk Responses and its control.

(4 + 8) = 12

Group – E

8. Shipments of metal castings arrive in batches of 500 castings each. The inward inspection involves testing which could be destructive and therefore, a sample of 20 items is taken. A batch is accepted only if one or nil of the items in the sample is found to be below the desired quality.

Under this sampling plan, what are the probabilities of:rejecting a shipment that has two per cent defectives, and accepting a shipment that is bad enough to contain 10 per cent defectives?

(6 + 6) = 12

9. What is the role of a leader in a Quality Circle? A Q.C. was formed in Machine Shop. In the first meeting an effective brainstorming was conducted and the circle identified a problem pertaining to the same work area. In a next meeting the members identified 20 causes of the selected problem under four sub-heads. Considering you to be the leader of the circle present this case study and draw an Ishikawa diagram.

(2 + 10) = 12

Department & Section	Submission Link
BT/CE/ECE/ME	https://classroom.google.com/c/MTQ3Njc1MDIxNDg2/a/Mjc0NDM2MzE1OTg4/details

Appendix A2

Table of Poisson Distribution

Values of: SIGMA of $k = 0$ to $k = x$ of $(e^{-\text{lambda}} \cdot \text{lambda}^k)/k!$

λ \ x	0	1	2	3	4	5	6	7	8
0.02	0.980	1.000							
0.04	0.961	0.999	1.000						
0.06	0.942	0.998	1.000						
0.08	0.923	0.997	1.000						
0.10	0.905	0.995	1.000						
0.15	0.861	0.990	0.999	1.000					
0.20	0.819	0.982	0.999	1.000					
0.25	0.779	0.974	0.998	1.000					
0.30	0.741	0.963	0.996	1.000					
0.35	0.705	0.951	0.994	1.000					
0.40	0.670	0.938	0.992	0.999	1.000				
0.45	0.638	0.925	0.989	0.999	1.000				
0.50	0.607	0.910	0.986	0.998	1.000				
0.55	0.577	0.894	0.982	0.998	1.000				
0.60	0.549	0.878	0.977	0.997	1.000				
0.65	0.522	0.861	0.972	0.996	0.999	1.000			
0.70	0.497	0.844	0.966	0.994	0.999	1.000			
0.75	0.472	0.827	0.959	0.993	0.999	1.000			
0.80	0.449	0.809	0.953	0.991	0.999	1.000			
0.85	0.427	0.791	0.945	0.989	0.998	1.000			
0.90	0.407	0.772	0.937	0.987	0.998	1.000			
0.95	0.387	0.754	0.929	0.984	0.997	1.000			
1.00	0.368	0.736	0.920	0.981	0.996	0.999	1.000		
1.10	0.333	0.699	0.900	0.974	0.995	0.999	1.000		
1.20	0.301	0.663	0.879	0.966	0.992	0.998	1.000		
1.30	0.273	0.627	0.857	0.957	0.989	0.998	1.000		
1.40	0.247	0.592	0.833	0.946	0.986	0.997	0.999	1.000	
1.50	0.223	0.558	0.809	0.934	0.981	0.996	0.999	1.000	
1.60	0.202	0.525	0.783	0.921	0.976	0.994	0.999	1.000	

λ \ x	0	1	2	3	4	5	6	7	8
1.70	0.183	0.493	0.757	0.907	0.970	0.992	0.998	1.000	
1.80	0.165	0.463	0.731	0.891	0.964	0.990	0.997	0.999	1.000
1.90	0.150	0.434	0.704	0.875	0.956	0.987	0.997	0.999	1.000
2.00	0.135	0.406	0.677	0.857	0.947	0.983	0.995	0.999	1.000

λ \ x	0	1	2	3	4	5	6	7	8	9