

INDUSTRIAL ENGINEERING

FIFTH SEMESTER- (REGULATION-2008)

IE9026 VALUE ENGINEERING AND PROJECT MANAGEMENT

(Common to Seventh Semester Printing Technology)

(Use of Statistical Tables are permitted)

Time: 3 hr

Max. Mark: 100

Answer ALL Questions

Part-A (10 X 2 = 20 Mark)

1. State the Important Reasons for Unnecessary Cost in VE.
2. What are the various levels of functions in VE?
3. Define Value Mismatch and Value Control
4. What are three basic components necessary for creativity in an Individual?
5. What do you mean by the term "Reporting Interface"?
6. Show the neat sketch of Project Environment Model?
7. What is Life Cycle Costing?
8. The current market price of an equity share is Rs120. The expected dividend at the end of the first year is Rs20. The constant annual growth rate of the dividend from second year onwards is 5%. Find the cost of equity share?
9. If the project cost is Rs500 crores and the floatation cost is 7%, determine the amount realized?
10. What are the objectives of resource leveling in PM?

Part-B (5 X 16 = 80 Marks)

11. Lakshmi Associates undertook a project to setup a granite company for kumar incorporation. As a part of the project, the lakshmi associate has to procure a granite machine and install in the company. The criteria on which the granite cutting machine is to be evaluated are as listed below:

(i) Price (ii) Safety (iii) Maintainability

Gamma Associates has identified three vendors, (ie) P,Q and R for the procurement of the machine, A careful pairwise comparisons of the criteria as well as the vendors in terms of their relative importance with respect to each of the criteria in the scale 1 to 9 with odd numbers by assuming as the indifferent value (both vendors are equal) given the data as shown in the following tables:

Table1:Matrix of pariwise comparisons of criteria

	Price	Safety	Maintainability
Price	1	3	9
Safety	1/3	1	6
Maintainability	1/9	1/6	1

Table2:Matrix of pariwise comparisons of vendors with respect to Price criterion

	P	Q	R
P	1	7	5
Q	1/7	1	1/3
R	1/5	3	1

Table3:Matrix of pariwise comparisons of vendors with respect to Safety criterion

	P	Q	R
P	1	3	1/3
Q	1/3	1	1/5
R	3	5	1

Table4:Matrix of pariwise comparisons of vendors with respect to Maintainability criterion

	P	Q	R
P	1	1/5	3
Q	5	1	9
R	1/3	1/9	1

Table5:Random Consistency Indices

N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RI	0.0	0.0	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.48	1.56	1.57	1.59

Perform the steps of AHP and determine the best vendor from whom the granite cutting machine is to be procured. (16)

12 (a) ABC Co have to select the best out of the following three mutually exclusive projects. Suggest the best project to the corporation by assuming i as 20%. Determine using Future worth method? (16)

Table 6: Mutually Exclusive Projects

	Projects		
	1	2	3
Initial Cost (Rs)	80,00,000	70,00,000	90,00,000
Life (years)	12	12	12
Annual Operation & Maint. Cost (Rs)	8,00,000	9,00,000	8,50,000
Salvage Value after 12 years (Rs)	5,00,000	4,00,000	7,00,000

Table 9: Data of the activities

Activity	Immediate Predecessor (s)	Time Estimate (weeks)		
		Optimistic	Most Likely	Pessimistic
A	-	4	6	8
B	-	2	3	4
C	-	5	5	5
D	A	8	10	12
E	A	4	5	6
F	B,E	5	6	7
G	C	5	8	11
H	C	6	8	10
I	D	7	7	13
J	F,G	8	10	12
K	H	2	3	4
L	K	4	5	6

14.(a) With neat sketch develop a FAST Diagram Model for the product Ball-Point Pen and also develop the FAST-COST Diagram for the above case: (16)

OR

14.(b) Develop a Factor Comparison Method (Improved) for the Product Safety Handgloves (16)

15.(a) (i) Consider the data of Problem 13(b), draw the Gantt-Chart for scheduling the critical and non-critical activities (6)

(ii) Write a brief note on the following:

(a) Types and Guidelines of Network Crashing (5)

(b) Creation Phase in VE (5)

OR

15 (b) Explain in detail the Audit phase of VE with suitable illustration? (16)