

Project Management

N.B.:

- Question paper is having two sections carries 30 marks each and both the sections are compulsory.
- Q1 of section – I is compulsory, and it carries 9 marks.
- Attempt any three questions out of four questions, and each one carries 7 marks.
- Section – II is having 30 MCQs for one mark each is compulsory.

Section – I

Q1.

(9 marks)

Pertech Computers Limited Pune

Pertech computers limited is having a small assembly plant in Pune where they assemble personal computers through nine interlinked activities. The time duration for which is given below:

Activity	A	B	C	D	E	F	G	H	I	J	K
Preceding Activity	-	-	-	A	B	B	C	D	E, G	F	H, I, J
Duration (in hours)	2	2	1	4	8	5	3	1	5	4	3

Requirements:

- Draw network diagram. (1 mark)
- Find critical path and project completion time. (1 mark)
- Calculate and tabulate for each activity: Earliest start time (EST), Earliest finishing time (EFT), Latest start time (EST) and Latest finishing time (LFT). (3 marks)
- Find head slack and tail slack. (2 marks)
- Find total float, free float, independent float, interfering float for each activity. (2 marks)

Note: Attempt any three questions out of four questions.

Q2. The weekly demand for units manufactured by the Acme water Purifier Company has been as follows: (7 marks)

Week	1	2	3	4	5	6	7	8
Units	100	80	110	115	105	110	125	120

Use the exponential smoothing method to forecast the number of units from 2nd week to 9th week. The initial forecast for 1st week was 15 units and  $\alpha = 0.2$ .

- Q3.** You have planned for a project to write a software application to take one year. The cost on this project is budgeted at ₹9,37,500/- per month. Six months into the project you find that the software application is 50% completed and you have spent ₹52,50,000/-. Based on above information find the following (7 Marks)

CV	(1 mark)
CPI	(1 mark)
SV	(1 mark)
SPI	(1 mark)
ETC	(1 mark)
TCPI	(1 mark)
Critical Ratio	(1 mark)

- Q4.** Write short note on any two of the following:
- Project Life Cycle (3 ½ marks)
  - Project Crashing (3 ½ marks)
  - Work Breakdown Structure (WBS) (3 ½ marks)

- Q5.** Compare project A and B using the given data. Calculate NPV and PI for both the project and select the best project. (7 marks)

Particulars	Project	
	A	B
Investment on the project (in ₹)	6,00,000/-	6,00,000/-
Estimated life (in year)	5	5
Discount Factor	10%	12%
Scrape Value (in ₹)	25,000/-	35,000/-

The profits before depreciation and after taxes (i.e. cash flows) are as follows:

Projects	Years				
	1	2	3	4	5
A (in ₹)	1,00,000	150,000	2,00,000	1,00,000	1,50,000
B (in ₹)	1,50,000	2,00,000	2,00,000	1,50,000	1,00,000

**Note: Present Values of Annuity Re. 1 at 10% and 12% discount rate**

PV factor @	Years				
	1	2	3	4	5
10%	0.909	0.826	0.751	0.683	0.621
12%	0.892	0.797	0.711	0.635	0.567

## Section – II

Q.1. Profitability index (PI) decision rule states that if  $PI < 1$ , then -----

- A) Accept the project
- B) Reject the project
- C) Review the project
- D) Project is justifiable

Q.2. Which of the following activities would NOT be an appropriate way of crashing a project?

- A) Reducing quality
- B) Working overtime
- C) Adding further resources
- D) Sub-contracting

Q.3. Crashing starts with the critical activity having minimum -----

- A) Normal cost
- B) Crash time
- C) Crash cost
- D) Crash Slope

Q.4. In crashing process 'minimum time' is reached when

- A) All paths are crashed completely
- B) At least one path is crashed completely
- C) Optimality is reached
- D) Further crashing is more than the budget estimate

Q.5. For an activity in a project, optimistic time is 2 days; most likely time is 3 days and pessimistic time is 6 days. The estimated time in days is

- A)  $3/8$
- B)  $20/6$
- C)  $11/6$
- D) 5

Q.6. A project whose cash flows are more than the capital invested for Rate of Return then the Net Present Value will be

- A) Positive
- B) Independent
- C) Negative
- D) Zero

Q.7. Which of the following is not incorporated in capital budgeting?

- A) Tax Effect
- B) Time Value of Money
- C) Required Rate of Return
- D) Rate of Cash Discount

Q.8. Formula for Independent Float is

- A) FF - slack of Tail Event
- B) FF - Slack of Head Event
- C) TF - slack of Head Event
- D) TF - slack of Tail Event

Q.9. Interfering Float can be found out by

- A) Adding Free Float to Total Float
- B) Deducting Free Float from Total Float
- C) Deducting Free Float from Independent Float
- D) Deducting Total Float from Independent Float

Q.10. Which activity is to be selected for crashing

- A) The activity with highest incremental cost of critical path
- B) The activity with lowest incremental cost on Critical path
- C) The activity with the lowest cost irrespective of it being on Critical path or no
- D) The activity with the highest cost irrespective of it being on Critical path or no

Q.11. While crashing the projects this type of float is considered

- A) Free Float
- B) Interfering Float
- C) Independent Float
- D) Total Float



Q.12.The Latest Start Time can be found by the formula

- A) Earliest Start Time - Duration
- B) Earliest finish Time – Duration
- C) Latest Finish Time + Duration
- D) Latest Finish Time – Duration

Q.13.To assist in budget control, it is suggested that an estimate be created at the \_\_\_\_\_ level of the WBS

- A) Highest
- B) Lowest
- C) Major work effort
- D) Third

Q.14.Determining budget can be best described by which of the following?

- A) The process of developing the future trends along with the assessment of probabilities, uncertainties, and inflation that could occur during the project
- B) The process of accumulating costs of individual activities to establish a cost baseline.
- C) The process of establishing budgets, standards, and a monitoring system by which the investment cost of the project can be measured and managed
- D) The process of gathering, accumulating, analyzing, reporting, and managing the costs on an on-going basis

Q.15.Which of the following is a direct project cost?

- A) Lighting and heating for the corporate office
- B) Workers Compensation insurance
- C) Piping for an irrigation project
- D) A and B

Q.16. The Project Cost Management Process comprises the following activities:

- a) Determine Budget
- b) Plan Cost Management
- c) Estimate Costs
- d) Control Costs

What is the correct sequence?

- A) a-b-c-d
- B) c-a-b-d
- C) b-c-a-d
- D) a-c-b-d

Q.17. The tools and techniques used in the process of Determine Budget includes all but

- A) Cost Aggregation
- B) Cost of Quality
- C) Expert Judgment
- D) Historical Relationships

Q.18. Select the incorrect statement.

- A) A critical path always begins at the very first event.
- B) A critical path always terminates at the last event.
- C) Critical activities control the project duration.
- D) Critical activity is the one for which free float is zero.

Q.19. If earned value (EV) =350, actual cost (AC) =400, planned value (PV) =325, what is cost variance?

- A) 350
- B) -75
- C) 400
- D) -50

Q.20. The independent float affects only

- A) Preceding activities
- B) Succeeding activities
- C) The particular activity involved
- D) None of the above

Q.21.The time by which a particular activity can be delayed without affecting the preceding and succeeding activities is known as

- A) Total float
- B) free float
- C) interfering float
- D) independent float

Q.22.The time with which direct cost does not reduce with the increase in time is known as

- A) Crash time
- B) normal time
- C) optimistic time
- D) standard time

Q.23.The time corresponding to minimum total project cost is

- A) Crash time
- B) normal time
- C) optimistic time
- D) between normal time and crash time

Q.24..The direct cost of a project with respect to normal time is

- A) Minimum
- B) maximum
- C) zero
- D) infinite

Q.25. The reduction in project time normally results in

- A) Decreasing the direct cost and increasing indirect cost
- B) increasing the direct cost and decreasing the indirect cost
- C) increasing the direct cost and indirect cost both
- D) decreasing the direct cost and indirect cost both

Q.26.Economic saving of time results by crashing

- A) Cheapest critical activity
- B) cheapest non-critical activity
- C) costliest critical activity
- D) costliest non-critical activity

Q.27. Slack time refers to

- A) An activity
- B) an event
- C) both event and activity
- D) none of the above

Q.28. Crash project duration is obtained by summing the

- A) normal durations for all the activities
- B) crash durations for all activities
- C) crash durations for all the activities along the critical path obtained by taking into account the normal duration for all the activities
- D) crash durations for all the activities along the critical path obtained by taking into account the crash duration for all the activities.

Q.29. Interfering float is the difference between

- A) total float and free float
- B) total float and independent float
- C) free float and independent float
- D) none of the above

Q.30. Which of the following is not a PERT event?

- A) Site investigation started
- B) sessional work completed
- C) bus starts from Jaipur
- D) class is being attended