BE Comp Sem VII
PM
16/12/23

Paper / Subject Code: 52778 / Institute Optional Course-2: Project Management

ne: 3-hour

Max. Marks: 80

: (1) Question No. 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required, and state it clearly.
(5) Notations carry the usual meaning.

Answer the following **(Any FOUR)** [20M]

a) What are the three basic goals of a project and how do project managers achieve them in conditions of uncertainty?
b) Why project manager's role is more of a facilitator rather than a supervisor?
c) Explain the work breakdown structure.
d) What is Goldratt's critical chain method?
e) Briefly describe the purchasing cycle.
f) What are the four stages of team development and growth?

(a) Swanson Industries has a potential project with an initial cost of Rs. 20,00,000. The capital budget allows to accept only one project. Using the NPV method, which project should be selected? **[10M]**

Cash Flows (Year)	Project A	Project B	Project C	Project D
1	5,00,000	6,00,000	10,00,000	3,00,000
2	5,00,000	6,00,000	8,00,000	5,00,000
3	5,00,000	6,00,000	6,00,000	7,00,000
4	5,00,000	6,00,000	4,00,000	9,00,000
5	5,00,000	6,00,000	2,00,000	11,00,000
Discount Rate	6%	9%	15%	22%

(b) What is the project life cycle? How is the cost of change, risk, and influence of stakeholders affected by Project time during the life cycle of the project? **[10M]**

(a) What are the responsibilities of the project auditor? What is essential for a successful project Audit? **[10M]**

(b) Explain probability and impact matrix. What are the risk response strategies for negative risks (threats) and positive risks (opportunities)? **[10M]**

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Q4. (a) Following are the manpower requirements for each activity in a project.

Activity	Normal Time	Man Power Required
0-1	2	4
1-2	3	3
1-3	4	3
2-4	2	5
3-5	4	3
3-6	3	4
4-7	6	3
5-7	6	6
6-8	5	2
7-9	4	2
8-9	4	9

i) Draw the project network diagram.

ii) Rearrange the activity suitably to reduce the existing total manpower requirement. [10M]

Q4. (b) Differentiate between the Functional, Pure Project, and Matrix organizations. [10M]

Q5. (a) How communication is planned and managed in project management? [10M]

Q5. (b) A consulting project has an actual cost of Rs. 45000, Scheduled cost of Rs. 35000, and the value of completed work is Rs. 31000. Find the Scheduled and Cost Variance. Also, find SPI and CPI. [5M]

Q5. (c) State various project estimation and scheduling techniques. [5M]

Q6. (a) What is a scope creep? How does a formal change control system work in project management? [10M]

Q6. (b) List and briefly describe the ways the project may be terminated. What are some non-technical reasons for project termination? [10M]

Q.1 (a) – Ch. 1, Slide No. 14 & 15

Q.1 (b) – Ch. 3, Slide No. 43 to 46

Q.1 (c) – Ch. 3, Slide No. 2

Q.1 (d) – Ch. 4, Slide No. 22 & 23

Q.1 (e) – Ch. 5, Slide No. 51

Q.1 (f) – Ch. 2, Slide No. 66 to 71

Solution for Q.2 (a)

Use the mathematical expression for net present value (NPV) to arrive at the four answers as shown below. For Project A, NPV is Rs. 1,06,182/- while for Project B, NPV is Rs. 3,33,791/- & for Project C, NPV is Rs. 3,46,280/- (all three are positive values). For Project D, NPV is negative (Rs. – 2,19,414/-) so Project D need not be considered at all. Out of the 3 positive NPVs between Project A, Project B & Project C, choose Project C since it offers the best returns amongst all three.

Q.4 (A) Swanson Industries has four potential projects all with an initial cost of 10 2,000,000. The capital budget for the year will only allow Swanson industries to accept one of the four projects. Given the discount rates and the future cash flows of each project, which project should they accept using NPV method.

Cash Flows	Project A	Project B	Project C	Project D
First Year	500000	600000	1000000	300000
Second Year	500000	600000	800000	500000
Third Year	500000	600000	600000	700000
Fourth Year	500000	600000	400000	900000
Fifth Year	500000	600000	200000	1100000
Discount Rate	6%	9%	15%	22%

NPV = 1,06,182/- NPV = 3,33,791/- NPV = 3,46,280 NPV = -2,19,414/-

1,97,000

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Q.2 (b) – Ch. 1, Slide No. 16 to 20

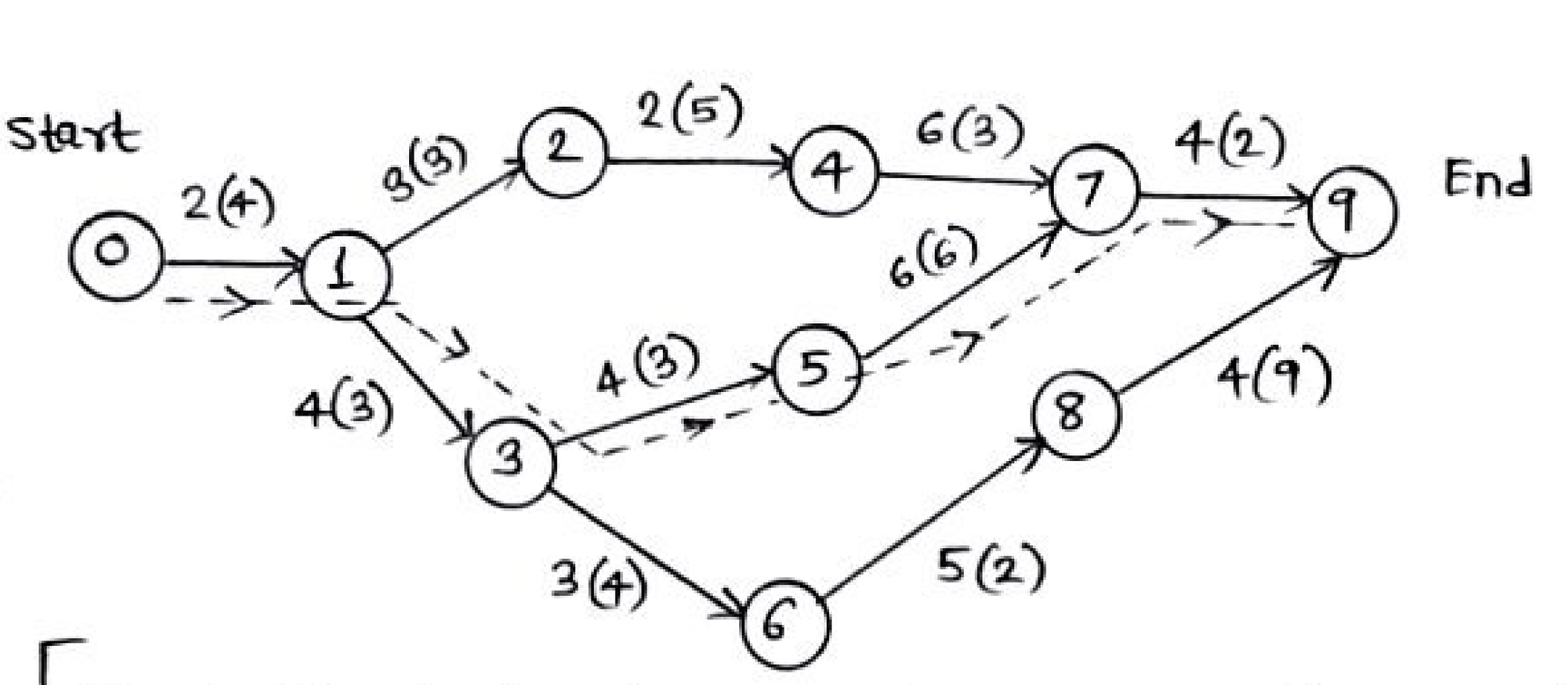
Q.3 (a) – Ch. 5, Slide No. 49 & 50

Q.3 (b) – Ch. 4, Slide No. 35, 47 & 48

Q.4 (a) – Can be solved using the activity on node (AON) diagram with each node representing the activity by its number. The path (arrow) between each activity contains information about total no. of days (time) & manpower required. The project network diagram will have multiple forward paths, each of them can be listed out & their individual number of days can be added. The path with highest number of days is the critical path, since beyond that project cannot be delayed. The total manpower requirement is the overall sum of individual products of number of days & the manpower requirements between those activities.

Q.4(a) - Dec. 2023 - Project Management

The project network diagram can be shown as activity on nodes (AON) as follows :-



m(n) → manpower required for activity transition

↓ normal time of activity transition

[* ⇒ The first entry in table mentions 'activity' 0 - 1 meaning one node is shown as '0' while other node is shown as '1'. Arrow or path joining both nodes/showing transition from node 0 to node 1 has the values of normal time (2) & manpower required (4) so is labelled as 2(4) ⟺ m(n)] → only for your understanding, not part of the answer

Alternative Paths (0 to 9)	Duration (Normal Time)
0 - 1 - 2 - 4 - 7 - 9	2 + 3 + 2 + 6 + 4 = 17
0 - 1 - 3 - 5 - 7 - 9	2 + 4 + 4 + 6 + 4 = 20
0 - 1 - 3 - 6 - 8 - 9	2 + 4 + 3 + 5 + 4 = 18

Critical path is always the one with highest/longest normal time duration since project cannot be delayed beyond that. Hence the critical path is 0 → 1 → 3 → 5 → 7 → 9 which is how the activity should be arranged with normal time duration of 20 days.

Activity	Normal Time	Manpower required
0 - 1	2	4
1 - 3	4	3
3 - 5	4	3
5 - 7	6	6
7 - 9	4	2

Manpower required for critical path is given by :-

$(2 \times 4) + (4 \times 3) + (4 \times 3) + (6 \times 6) + (4 \times 2) = \underline{76}$

Manpower required per day = $\frac{\text{Total manpower critical path}}{\text{Total duration (normal time)}} = \frac{76}{20} = \underline{3.8}$

Q.4 (b) – Ch. 1, Slide No. 48, 61, 62 & 63

Q.5 (a) – Ch. 4, Slide No. 27 to 29

Q.5 (b) – Refer previous May/June 2023 question paper attachment for solution

Q.5 (c) – Ch. 3, Slide No. 29 to 33

Q.6 (a) – Ch. 5, Slide No. 47 & 48

Q.6 (b) – Ch. 6, Slide No. 3, 4 & 5