

**1) List the uses of Network Techniques. (Any 5 points)**

Following are the uses of network technique to the management:

- It indicates the start and finish time of each activity of the project.
- It helps in controlling the project cost.
- It helps in better scheduling, monitoring and control of project activities.
- It helps in better execution (ನೆರವೇರಿಸುವುದು) of the project.
- These techniques can serve as indicators of bottle necks (problems which lead to stop the process).
- This helps in identifying the problems which stop the progress of the project as per plan.
- This will show the co-ordination required among the designers, contractors and other members of the project team.
- It helps in identifying the critical path.
- It helps in identifying the critical tasks and resources that are required to complete the task as per the schedule.
- It helps in resource allocation such as labour, machines etc.
- It helps to find the impact of crashing on the cost of the project.
- Helps to find which activities are to be speeded up.

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**2) Distinguish between PERT and CPM in Project management.**

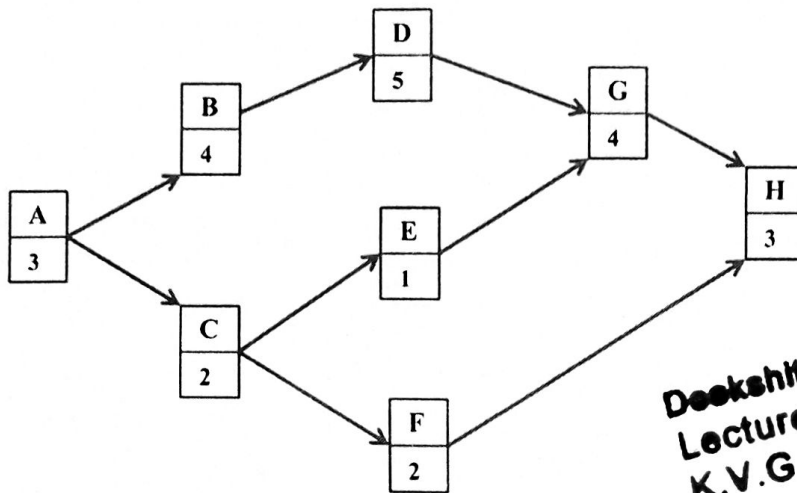
SL No.	PERT	CPM
1	It is appropriate where the time estimates are uncertain in the duration of activities.	It is appropriate when the time estimates are found with certainty in the duration of activities.
2	It uses three time estimates for the performance of an event.	It uses only one time estimate for the activity and which is constant.
3	It is concerned with the events.	It is concerned with the activity.
4	It is suitable for non-repetitive projects.	It is suitable for repetitive projects.
5	It can be analysed statistically.	It cannot be analysed statistically.
6	Time is the direct controlling factor.	Cost is the direct controlling factor.
7	The circle stands for an event and the line connecting the circles represents an activity.	The circle stands for an activity and the line joining the circles represents an events.
8	It is applied to research development industries.	It is applied to the construction.

**3) Develop a network diagram for a project whose activities and preceding activities with duration are given below:**

Activity	Predecessor	Duration(days)
A	-	3
B	A	4
C	A	2
D	B	5
E	C	1
F	C	2
G	D, E	4
H	F, G	3

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**Solution:**



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**4) Analyse the functions of Project auditor. (Any 5 points)**

- Providing the actual status of the project from time to time.
- He has to examine the project methodology and techniques to achieve the project objectives.
- Identification of factors which may create the quality problems during the project work and giving the recommendations to overcome those problems.
- Auditor is required to give advice.
- He should be competent to prepare the action plans.
- Auditor has to evaluate the contract base lines and give his judgment on their adequacy for achieving the project objectives.
- Auditor has to measure the present and future state of the project.
- Timely spotting of different problems relating to the execution of the project and suggesting to overcome the above problems.
- Establishing a good information base for a proper estimation and costing of the project.
- Assisting in establishing appropriate standards and systems and recommending suitable work techniques.
- Identification and recommendations of specific training needed with reference to the project tasks.
- Investing the underlying records, and the tangible results of work done.
- Continuous observations over the process and calibre of project management, and get a clear picture of the project organization and controls.

**5) List any three purposes of project control. (March/April-2022)**

*Purposes of project control:*

- To control the progress of the activities.
- To control the performance of the project activities.
- To control the project schedule.
- To have control over the project cost.
- To have control over the delays in project activities.
- To motivate project personnel through performance evaluation.
- To achieve the project goals effectively and efficiently.

**6] List any four objectives of project review. (March/April-2022)**

*Objectives of project review:*

- To examine whether the project is implemented in a specified ways or not.
- To assess the impact of the project.
- To examine the project efficiency.
- To measure the quality of the project.
- To review the safety aspects followed during the project.
- To examine the methods, process, procedures followed during the project.
- To assess the outcome of the project.

**7] Explain initial review in a project.**

*Initial project review is carried out for following reasons:*

- To examine whether the project is implemented in a specified ways or not.
- To ensures that the actual expenditure does not deviate from planned one.
- To assess the impact of the project.
- To examine the project efficiency.
- To measure the quality of the project.
- To review the safety aspects followed during the project.
- To examine the methods, process, procedures followed during the project.
- To assess the outcome of the project.

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**8] List the objectives of project audit. (Any 5 points)**

*Following are the objectives of project audit:*

- Providing the clear picture of actual status of the project from time to time.
- Creating awareness among the project staff about the type and magnitude of the problems encountering during the completion of the project and producing the quality products in a planned volume and at competitive costs.
- Identification of factors which may create the quality problems leading to time and cost overruns.
- Timely spotting of a variety of generic problems while executing the project and suggestions to overcome these problems.
- Assisting to establish an appropriate standards and systems and recommending the suitable work techniques.
- Enabling to create the good information system for a proper estimation and costing of the project.
- Identification of specific training needs with reference to the project tasks.
- Developing the experience and expertise in project management in order to provide the consultancy services to the other enterprises.

**9] Analyse the steps in project audit program or explain the project audit program. (March/April-2022)**

*Project audit program:*

- The project audit aims to obtain a clear picture of the actual status of the project from time to time.
- The detailed audit program involves the following steps:

**Step 1:** Preliminary examination of the project's organization, administration, record keeping, planning and control and working methods and techniques performed in order to establish project current and future status.

**Step 2:** Preparing the statements of project current and future status, giving a detailed list of completed work as compared with the project's performance baseline, recording the cost and quality aspects, record keeping, working methods and communication aspects.

**Step 3:** Conducting preliminary analysis and presenting results in the form of audit report.

**10] Explain the two ways of conducting performance evaluation. (March/April-2022)**

- The performance evaluation is done periodically and it measures the performance of the project on an on-going basis.
- The performance evaluation may be done in terms of economic rate of return on investment or book rate of return on investment.
  - i. Economic rate of return for a given year =  $(\text{Cash flow} + \text{Changes in present value}) / \text{Present value at the beginning of the year}$
  - ii. Book rate of return for a given year =  $(\text{Cash flow} + \text{Changes in book value}) / \text{Book value at the beginning of the year}$

**11] Explain the application of critical path method (CPM) in project management.**

**Critical Path Method (CPM)- (March/April-2022)**

- The Critical Path Method (CPM) is an important tool in production planning and scheduling.
- CPM is used for scheduling special projects where the relationship between the different parts of a project is more complicated than of a simple chain of tasks to be completed one after the other.
- A CPM is a route between two or more operations which minimizes (or maximizes) some measures of performance.
- Under CPM, the project is analysed into different operations or activities and their relationships are determined and shown on the network diagram, so, first of all a network diagram is drawn.
- After this the required Time or some other measure of them combined to develop a schedule which minimizes or maximizes the measure of performance for each operation.
- Thus, CPM marks critical activities in a project and concentrates on them.

**12] Explain the application of Program Evaluation and Review Technique (PERT) in project management. (March/April-2022)**

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**Program Evaluation and Review Technique (PERT)**

- PERT is a time-event network analysis technique designed to watch how the parts of a programme fit together during passage of time and events.
- The PERT is used for planning and control of large projects in various industries like defence, chemical and construction industries.
- Under PERT all individual tasks are shown in a network.
- All the events are shown by circles and whose completion can be measured at a given time.
- Each arrow represents an activity, which are the time consuming elements of a program.
- The activity time is the lapsed time required to accomplish an event.

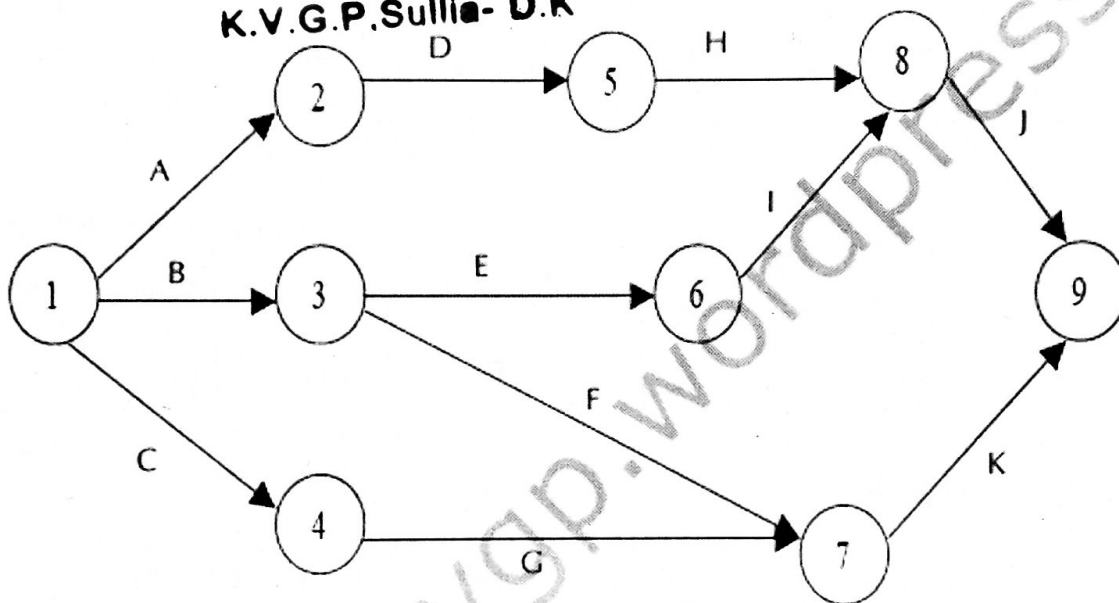
- Finally, compute the critical path and the slack time.
- The critical path is a sequence of activities, which takes the longest time to complete the work and the least slack time.

13] Construct a network diagram for a project whose activities and their predecessor relationship are given below. (March/April-2022)

Activity	A	B	C	D	E	F	G	H	I	J	K
Predecessor	–	–	–	A	B	B	C	D	E	H, I	E, G

Solution:

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14] Develop the network diagram for the following activities with corresponding time estimate. (March/April-2022)

Activity	Time estimate		
	$t_0$	$t_m$	$t_p$
1-2	9	12	21
1-3	6	12	18
2-4	1	1.5	5
3-4	4	8.5	10
2-5	10	14	24
4-5	1	2	3

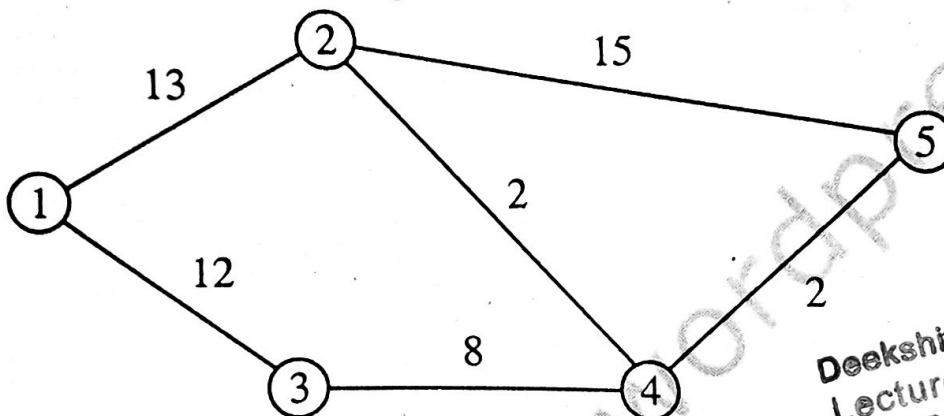


**Solution:**

Time estimate ( $t_e$ ) can be calculated as follows:

Activity	Time estimate			$t_e = \frac{t_o + 4t_m + t_p}{6}$
	$t_o$	$t_m$	$t_p$	
1 - 2	9	12	21	13
1 - 3	6	12	18	12
2 - 4	1	1.5	5	2
3 - 4	4	8.5	10	8
2 - 5	10	14	24	15
4 - 5	1	2	3	2

The network diagram with average time estimate is as follows:



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**15] Analyse the importance of project evaluation.**

Here are some of the main benefits of implementing a project evaluation process.

- Better Project Management:** Project evaluation helps you easily find areas of improvement when it comes to managing your costs, tasks, resources and time.
- Improves Team performance:** Project evaluation allows to keep track of team's performance and increases accountability.
- Better Project Planning:** Helps to compare project plan against actual project performance for better planning and estimating.
- Helps with Stakeholder Management:** Having a good relationship with stakeholders is a key to success as a project manager.

**16] State the purposes of project control.**

Project control activities/steps can be imposed on various project progress and performance activities and also on project cost and project schedules for the following purposes:

- To control the project progress activities
- To control the performance of the project activities
- To control the project schedule (as not to exceed allotted time)
- To have control over the project cost (as not to run out of estimated budgeted cost)