SECTION – 1

QUESTION-1.

ANSWER:-

PERT:-

PERT in project management refers to a planning tool that is useful for the calculation of the time involved in finishing a project realistically. The full form of PERT is Program Evaluation Review Technique. In PERT, charts serve to be the tools that are mostly used for planning tasks in the course of a project. PERT charts are helpful in scheduling and coordinating team members so that they may accomplish their goals quickly.

PERT has certain similarities with the critical path. Both PERT and critical path are used for visualizing the timelines and tasks that have to be performed for a project.

It is possible to create three varied time estimates with PERT while creating a project. These time estimates pertain to the estimation of the shortest possible time that may be taken by each task, the maximum probable time, and the longest time that tasks may take in case things fail to go as per the plan.

PERT calculations are performed backward from any fixed end date as the contractor deadlines cannot be moved in typical ways.

CPM:-

CPM or Critical Path Method is an essential algorithm in project management. It is mostly used for planning, scheduling, coordinating, and controlling the different activities in any given project. In the case of CPM, it is assumed that specific activity durations are defined and fixed.

CPM is appropriate for computing the latest as well as the earliest possible start times of each activity.

CPM processes are designed to differentiate between non-critical and critical activities. This is to gain the advantages of time reduction and avoid long queue generations.

There is an essential reason for the identification of critical activities. In case any specific significant action is delayed, the entire process will be impacted adversely. To avoid this, project managers opt for the Critical Path Method.

In CPM, a list consisting of the activities required for project completion is prepared. This is followed by a computation of the time needed for completing every task. After that, the dependency existing between all the activities has to be determined.

The path defined in CPM relates to a sequence of tasks in a network. Out of all the possible ways, the one that has the maximum length is the critical path.

Basis of Difference	PERT	CPM
Nature	It is a useful project management tool for planning and controlling the timeline of projects. In PERT, the emphasis is on the start and completion of events and not activities. The activities that occur between events cannot be specified.	It is a significant method for keeping the checks and balances of project costs and timelines effectively. CPM networks are activity-based and are represented through arrowed lines while the events are represented with circles. The activities can be linked in a logical sequence wherein the time assigned to each activity is carefully associated with its cost.
Orientation	PERT is event-oriented. In simple words, PERT networks are interested in laying focus upon the start or completion of different events rather than the activities themselves	CPM is activity-oriented and related to the cost rather than time
Type of model	Probabilistic Model: The probabilistic tools of PERT offers several estimates for determining the time of completion of given projects. These probabilistic tools also control all the activities involved for a project to be completed at a lower cost and faster rate	Deterministic Model. The deterministic tools of CPM provide an estimate that relates to the cost/ amount of time available for completing a project
Lay focus on	Time frames for the estimation of project completion are determined based on three estimations in PERT: the most probable, the most unfavorable and the most promising	A trade-off between cost and time. It helps project planners to make decisions to which aspect of specific projects are to be reduced or increased; trade-offs are needed
Process of evolution	PERT evolved in the form of a Research & Development project	CPM developed as a project based on construction.
Estimation	Three times	One time
Best used for	Estimation of high precision time	Time estimates in reasonable forms
Suitable for the management of	Unpredictable activities	Predictable activities
Job type	Takes care of tasks that are of non-repetitive nature	Caters to jobs of a repetitive nature
Non-critical/ critical activities	There is no differentiation in how significant activity is	The activities are differentiated based on their vital and non-critical attributes
Suitability	PERT is most suitable for R&D related activities	CPM takes care of activities that are non-research based, such as projects dealing with shipbuilding, civil construction, etc.
Concept of Crashing	Crashing idea is not applicable	Crashing concept is applicable
Orientation	PERT is event-oriented	CPM is activity-oriented
Monte Carlo simulations	It contains certain outdated weighting factors for the approximation of schedule variation. Monte Carlo simulations, in comparison, are quite robust and real-time based if modeled correctly	CPM scheduling processes use deterministic links for connecting tasks. Its techniques represent tasks, durations,

dependencies, etc. in a schedule. CPM forms the platform on which PERT/ Monte Carlo simulations can be performed

Consideration for UncertaintyIn a PERT network, due consideration is given to uncertainty
In a CPM network, there is no allowance possible for risks to the duration of time needed for project completion

Duration of activity In PERT, the duration of activities fails to be very accurate and definite
In CPM, the overall period of action can be estimated with quite a fair level of accuracy

Relation of cost and time Time and price are not related in any way in PERT. In current times, PERT has been extending its functionality in this direction. Given this, the dividing line between PERT and CPM is fading out gradually In CPM, the objective pertains to the development of a specific and optimum time cost relation