

Each of the 23 multiple choice questions below has ONE correct answer and is worth 1 mark.
There are 3 open ended questions which are worth 4 marks each.

- 1 All of the following are steps in benchmarking EXCEPT:
 - Compare current organization practices against those of chief competitors or some general industry standard.
 - Define a systematic route for improving organizational project management practices.
 - Compute an index score that measures the necessary rate of performance improvement.
 - Analyze and critically evaluate current practices.

- 2 Poor project scope definition may cause all of the following EXCEPT:
 - Higher project costs.
 - Rework.
 - Material failure.
 - Schedule delays.

- 3 A project is:
 - A set of sequential activities performed in a process or system.
 - A revenue generating activity that needs to be accomplished while achieving customer satisfaction.
 - An ongoing endeavor undertaken to meet customer or market requirements.
 - A temporary endeavor undertaken to create a unique product or service.

- 4 In a typical matrix organization, functional managers are responsible for all of the following EXCEPT:
 - General administrative philosophy.
 - Assignment of personnel.
 - Developing standards.
 - Monitoring performance.

- 5 Organizations performing projects may divide each project into phases. Collectively, project phases are known as the:
 - Project waterfall.
 - Project life cycle.
 - Project life stages.
 - Project life quality circle.

- 6 Which of the following is NOT true about project stakeholders?
 - They are all individuals and organizations that are actively supportive of the project.
 - They are all individuals and organizations actively involved in the project.
 - They are all individuals and organizations whose interests may be affected as a result of project execution.
 - They are all individuals and organizations that may exert influence over the project.

- 7 All of the following are communication tools EXCEPT:
 - Memos.
 - Body language.
 - Inputting data into spreadsheets.
 - Verbal circulation or rumor.

- 8 Cost reimbursable contracts include:
 - Cost plus fixed fee.
 - Cost plus fixed fee plus sliding fee.
 - Cost plus fixed percentage.
 - All of the above.

- 9 Project management is:
 - The integration of the critical path method and the earned value management system.
 - The application of knowledge, skills, tools and techniques to project activities to meet project requirements.
 - The application of knowledge, skills, wisdom, science and art to organizational activities to achieve operational excellence.
 - A subset of most engineering and other technical disciplines.

- 10 All of the following are true about project phases and the project life cycle, EXCEPT:
- Each phase normally includes a set of defined deliverables.
 - The project life cycle serves to define the beginning and the end of the project.
 - The project life cycle generally involves some form of technology transfer or handoff.
 - Cost and staffing levels are generally symmetrical throughout the project life cycle.
- 11 The power-sizing model can be used to obtain a
- Ballpark estimate. Feasibility estimate.
 - Comparative estimate. Definitive estimate.
- 12 Which of the following is true about the WBS?
- The WBS is deliverable-oriented.
 - The WBS is an unstructured list of activities in chart form.
 - The WBS is the same as an Organizational Breakdown Structure.
 - The WBS refers to the Bill of Material (BOM).
- 13 Scope definition is necessary for:
- Improving the accuracy of cost, duration, and resource estimates.
 - Defining the baseline for performance measurement and control.
 - Facilitating clear responsibility assignments.
 - All of the above
- 14 An advantage of using a functional structure for project management is:
- That it allows for standard career paths for workers in each function.
 - That it maximizes scarce resources between competing projects and functional responsibilities.
 - That it assigns authority solely to the project manager.
 - That it leads to improved communication across the organization and among functional groups.
- 15 Life-cycle costing is:
- Designing the project with a full recognition of the associated costs over various phases of their life-cycle.
 - Preparing the budget for the conceptual or preliminary stages of a project.
 - Using the Work Breakdown Structure to obtain the break-even point.
 - Determining the benefit that is forgone by choosing in one project instead of another.

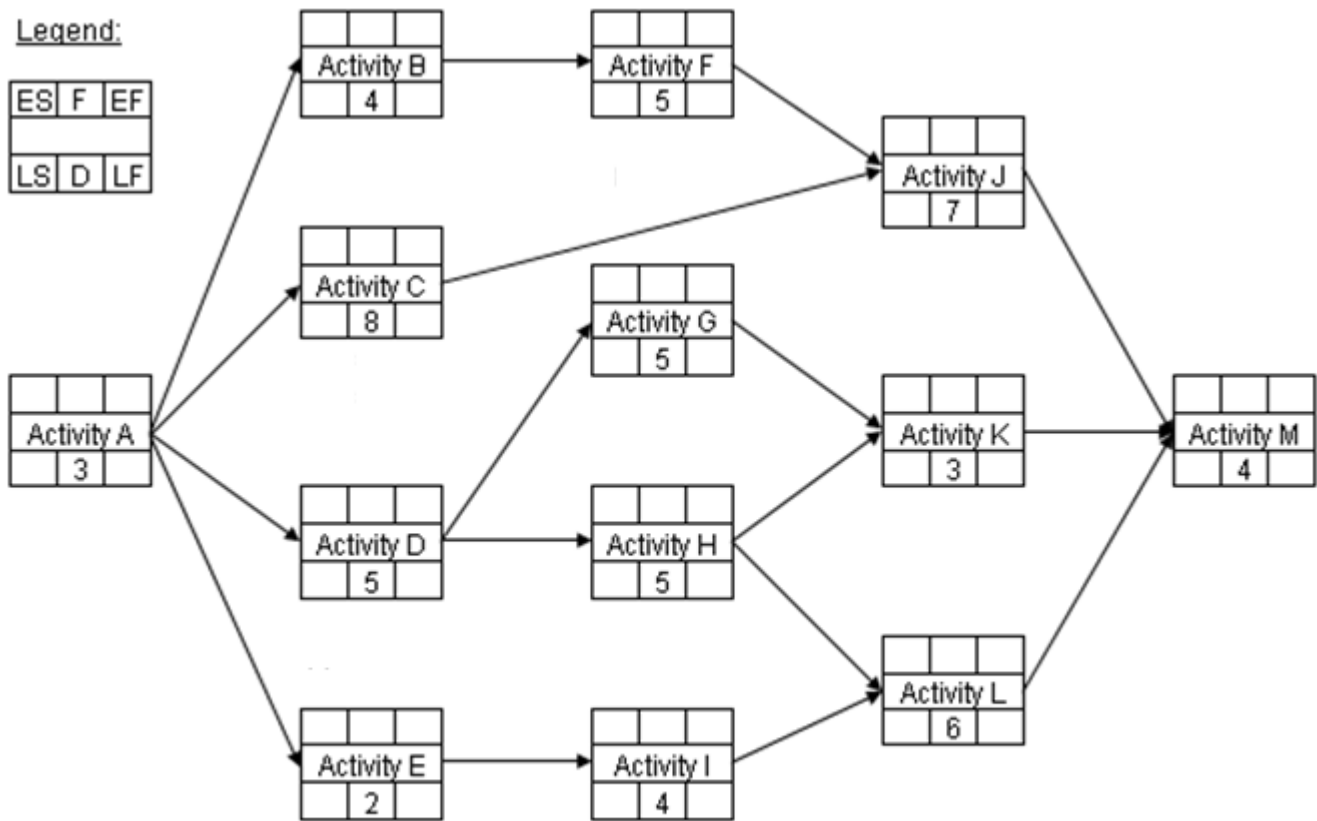
For questions 16-21 see the network diagram on the next page:

- 16 Project duration is: 61 21 23 other
- 17 Critical path(s) is(are): ABFJM ADHLM both other
- 18 LF of activity C is: 13 11 12 other
- 19 EF of activity I is: 9 10 11 other
- 20 F of activity G is: 0 1 2 other
- 21 No. of critical activities is: 8 7 5 other

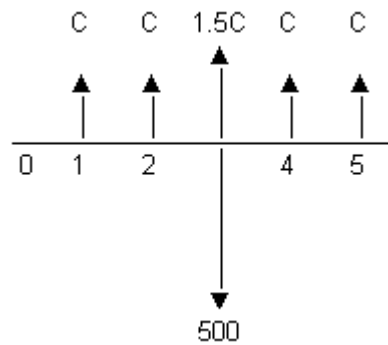
Network diagram for questions 16-21: ES = earliest start, LS = latest start, EF = earliest finish, LF = latest finish, F = float, D = activity duration.

Legend:

ES	F	EF
LS	D	LF



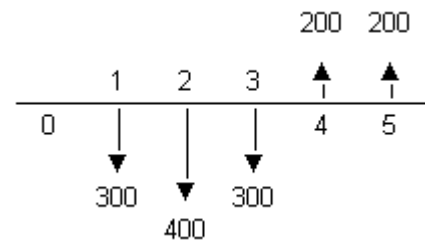
- 22 A matrix organization is essentially a combination of:
- Process and inverted organization
 - Project and functional organizations
 - Project and process organizations
 - Functional and process organizations
- 23 Most labor and material are considered to be which type of costs:
- Expedited
 - Fixed
 - Indirect
 - Recurring
- 24 Given the following cash flow diagram. Calculate C for $i = 15\%$.



- 25 If the manufacture of the 3rd machine takes 640 hours and of the 6th machine 544 hours,
- A. Calculate the learning rate
 - B. Calculate how long it takes to manufacture the 8th machine

- 26 The interest rate for the following cash flow diagram is 10%.

- A. Calculate which single sum of money at $t = 2$ is equivalent to the cash flow diagram shown on the right.
- B. Calculate which single sum of money at $t = 4$ is equivalent to the cash flow diagram shown on the right.



Summary of Useful Formulas for Discrete Models

Name	Symbol and Formula
Compound amount factor	$(F/P, i, N) = (1 + i)^N$
Present worth factor	$(P/F, i, N) = \frac{1}{(1 + i)^N}$
Sinking fund factor	$(A/F, i, N) = \frac{i}{(1 + i)^N - 1}$
Uniform series compound amount factor	$(F/A, i, N) = \frac{(1 + i)^N - 1}{i}$
Capital recovery factor	$(A/P, i, N) = \frac{i(1 + i)^N}{(1 + i)^N - 1}$
Series present worth factor	$(P/A, i, N) = \frac{(1 + i)^N - 1}{i(1 + i)^N}$
Arithmetic gradient to annuity conversion factor	$(A/G, i, N) = \frac{1}{i} - \frac{N}{(1 + i)^N - 1}$
Arithmetic gradient to present worth conversion factor	$(P/G, i, N) = \frac{(1 + i)^N - iN - 1}{i^2(1 + i)^N}$
Geometric gradient to present worth conversion factor	$(P/A, g, i, N) = \frac{(P/A, i^o, N)}{1 + g}$ $(P/A, g, i, N) = \left(\frac{(1 + i^o)^N - 1}{i^o(1 + i^o)^N} \right) \frac{1}{1 + g}$ $i^o = \frac{1 + i}{1 + g} - 1$
Capitalized value formula	$P = \frac{A}{i}$
Capital recovery formula	$A = (P - S)(A/P, i, N) + Si$

Effective interest rate per year: $i_e = (1 + r/m)^m - 1$

where r = nominal interest rate per year
 m = number of compounding periods per year

Learning curve: $T_N = T_1 N^b$

where T_N = time required to produce the N^{th} unit
 b = $\log(\text{learning rate})/\log(2)$