Time : 3 Hours **Total Marks : 80**

N.B. : 1) Question No.1 is **compulsory.**
2) Attempt any **three** from the remaining **six** questions.
3) Answer to sub-questions should be grouped together.

Q.1 (a) What is a Project Charter? Explain its purpose in project management. **(5)**

(b) What are the different Approaches to Leadership & Leadership Styles? **(5)**

(c) Explain Use Case diagram with an example. **(5)**

(d) What is McCall's Quality Model? **(5)**

Q.2 (a) Discuss in detail the Critical Path Method (CPM). Explain its advantages, limitations, and applications in project scheduling. **(10)**

(b) Explain the concept of a Work Breakdown Structure (WBS) in project management. **(10)**

Q.3 (a) A project of 300 KLOC (Kilo Lines of Code) is to be developed. The software development team has high experience with similar projects, and the project schedule is moderately tight. Estimate the following: **(10)**

(i) Effort (in person-months)
(ii) Development time (in months)
(iii) Average staffing size
(iv) Productivity (KLOC per person-month)

Assume the COCOMO model constants as: $a_1 = 2.8$, $a_2 = 1.10$, $b_1 = 2.5$, $b_2 = 0.32$

(b) What is an Activity Diagram? Explain its notations and construct an Activity Diagram for an Online Shopping System. **(10)**

Q.4 (a) The following table outlines the various tasks for a software project, detailing each activity, its predecessor, and the estimated duration in weeks: **(10)**

Activity	Description	Predecessor Activity	Duration (Weeks)
A	Project Initiation	-	8
B	Feasibility Study	A	12
C	System Architecture Design	B	15
D	Module Development	B, C	25
E	User Interface Creation	D	60
F	Integration and Testing	E	35
G	Final Deployment and Review	E, F	45

Tasks:

1. Draw the project network diagram.
2. Determine the critical path.
3. Identify the critical activities.
4. Calculate the total project completion time.

(b) Explain Project Life Cycle and different project cycle phases **(10)**

Q.5 (a) Describe the concept of Risk Identification. Explain different tools and techniques used for risk identification. **(10)**

(b) Describe the Agile Development Model. How does it differ from traditional software process models in terms of flexibility and team collaboration? **(10)**

Q.6 (a) What is a Feasibility Study? Discuss the various types of feasibility and their significance in software development. **(10)**

(b) What is Pareto Analysis? Explain how it is used in identifying and prioritizing quality issues in software projects with an example. **(10)**

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