Registration No.: | | | | | | | | | | |

Total Number of Pages: 03 **Course: B.Tech**
Sub_Code: RCS7D001

7th Semester Regular/Back Examination: 2024-25
SUBJECT: Software Project Management
BRANCH(S): CST, CSEAI, CSE, CSEAIME
Time: 3 Hours
Max Marks: 100
Q.Code : R108

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right-hand margin indicate marks.

Part-I

Q1 **Answer the following questions:** **(2 x 10)**

a) Mention any two criteria for selecting a proper process model.
b) Name any two methods of improving motivation.
c) How to calculate cost performance index (CPI) and Schedule Performance Index (SPI) of a project.
d) How the verification is differentiated from validation.
e) State two drawbacks of statistical testing.
f) Mention any two criteria for selecting a proper process model.
g) Write the importance of product flow diagram
h) Differentiated between the original COCOMO estimation model and the COCOMO 2 estimation model.
i) Define Gantt chart. Mention its objective.
j) Identify the factors which make the measurement of software reliability a much harder problem than the measurement of hardware reliability.

Part-II

Q2 **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 × 8)**

a) Define software process model. Explain in details regarding the difference between classical waterfall model and Iterative Waterfall model.
b) Explain how Putnam's model can be used to compute the change in project cost with project duration. What are the main disadvantages of using the Putnam's model to compute the additional costs incurred due to schedule compression?
c) Define risk. Explain different types of risk. State the different steps involved in risk planning.
d) Describe the various steps of step wise project planning.

e) Why is it necessary for a project manager to decompose the tasks of a project using work breakdown structure (WBS)? To what granularity level are the tasks decomposed? Explain your answer.

f) Explain the use of PERT to evaluate the effects of uncertainty.

g) Discuss activity-based approach to identify the activities that make up project.

h) Describe briefly about earned value analysis for cost monitoring.

i) Explain using one simple sentence each what you understand by the following reliability measures:
- A POFOD of 0.001
- A ROCOF of 0.002
- MTBF of 200 units
- Availability of 0.998

j) What does Halstead's volume metric represent conceptually? How according to Halstead is the effort dependent on program volume.

k) What is team structure? Categorize team structure and explain each citing their advantages and disadvantages.

l) List five salient requirements that a software development organization must comply with before it can be awarded the ISO 9001 certificate. Mention some of the shortcomings of the ISO certification process.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3 a) Briefly explain the agile software development model. Give an example of a project for which the agile model would be suitable and one project for which the agile model would not be appropriate. **(8)**

b) State the advantages of function point over Lines of Code (LOC). List all the value adjustment factors. What is the metric for specification quality? **(8)**

Q4 a) Consider a software project with the following information domain characteristic for calculation of function point metric. **(8)**

Number of external inputs (I) = 30
Number of external output (O) = 60
Number of external inquiries (E) = 23
Number of files (F) = 08
Number of external interfaces (N) = 02

It is given that the complexity weighting factors for I, O, E, F, and N are 4, 5, 4, 10, and 7, respectively. It is also given that, out of fourteen value adjustment factors that influence the development effort, four factors are not applicable, each of the other four factors have value 3, and each of the remaining factors have value 4. Compute value of function point metric.

b) What do you understand by the "99 per cent complete" syndrome that software project managers sometimes face? What are its underlying causes? What problems does it create for project management? What are its remedies? **(8)**

Q5	**a)**	What are the different categories of software development projects according to COCOMO estimation Model? Give examples of software product development projects belonging to each of these categories	**(8)**
	b)	Assume that the size of an organic type software product has been estimated to be 32,000 lines of source code. Assume that the average salary of a software developer is Rs. 15,000 per month. Determine the effort required to develop the software product, the nominal development time, and the cost to develop the product.	**(8)**
Q6	**a)**	Discuss the salient features of the organizational reporting structure of the SQA group as recommended by SEI CMM and ISO 9001. What is the rationale behind having such a reporting structure?	**(8)**
	b)	What is statistical testing? In what way is it useful during software development? Explain in the different steps of statistical testing.	**(8)**