B.TECH / IT /5TH SEM/ INFO 3103/2017
SOFTWARE ENGINEERING AND PROJECT MANAGEMENT
(INFO 3103)

Time Allotted : 3 hrs **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**

(i) Which of the following is not an information domain required for determining function point in FPA?
(a) Number of user Input (b) Number of user Inquiries
(c) Number of external Interfaces (d) Number of errors.

(ii) RAD stands for
(a) Relative Application Development
(b) Rapid Application Development
(c) Rapid Application Document
(d) None of these.

(iii) Which of the following is an indirect measure of product?
(a) Quality (b) Complexity (c) Reliability (d) All of these.

(iv) MTBF is measured in terms of
(a) Day (b) Year (c) Hours (d) Minutes.

(v) The chain of activities that determines the duration of the project
(a) Critical Path (b) Duration Path
(c) Linear Independent Path (d) None of These.

(vi) When a system interfaces with other types of systems then that time the testing that will be required is
(a) Volume Testing (b) Compatibility Testing
(c) Maintenance Testing (d) Configuration Testing.

(vii) Swim lane is defined in
(a) State Chart Diagram (b) Activity Diagram
(c) Use Case Diagram (d) Sequence Diagram.

(viii) In function point analysis, number of complexity adjustment factor is
(a) 10 (b) 14 (c) 15 (d) 16.

(ix) An SRS document normally contains
(a) Functional requirements of the system
(b) Module structure
(c) Configuration management plan
(d) None of these.

(x) Big Bang Integration testing is useful for projects with
(a) Smaller number of modules
(b) Large number of modules
(c) Average number of modules
(d) None of these.

Group - B

2. (a) List out all the phases of SDLC.

(b) Identify at least two activities carried out during each phase of a spiral model. Differentiate between Decision Table and Decision Tree with suitable example.

(c) Explain different types of Coupling used in software Management design process. What is temporal cohesion?

2+ (2 + 4) + (3 + 1) = 12

3. (a) Identify at least four characteristics of a good software design technique.

(b) Draw a DFD(Upto 2nd level) for a Vehicle Showroom Management system that includes the following features:
Provides the searching facilities based on various factors such as selling vehicles like cars, bikes from show room, vehicle bookings and vehicle delivery. Vehicle Showroom Management system also manage the selling vehicles details, customers details, employee details. It tracks all the information of selling vehicles like cars, bikes etc. Manage the information and description of the repaired vehicle.

4 + (2 + 3 + 3)= 12

Group - C

4. (a) Write short notes on Black Box testing. Write down the important coding guidelines.

   (b) What are driver and stub modules in the context of integration testing of a software product?

(5 + 4) + 3 = 12

5. (a) Explain the different guidelines used for the design of equivalence classes for a problem. Differentiate between Code Walk Through and code inspection.

   (b) What is cyclomatic complexity? Draw the Control Flow Graph for a c program that finds the maximum and minimum among three given numbers. Hence find the cyclomatic complexity.

(3 + 3) + (1 + 3 + 2) = 12

Group - D

6. (a) Explain the term Work breakdown Structure (WBS) with proper example. Explain when and why you will use PERT chart and when and why you will use Gantt chart while you are project manager?

   (b) What is FTR? List out all the review guidelines used in the software quality assurance.

(3 + 3) + (2 + 4) = 12

7.(a) Draw the PERT diagram for the given set of tasks and dependencies. Also draw the Gantt Chart for the given task with showing critical path.

Subtask	Time to complete	Dependencies
1	10	-----
2	10	5
3	10	4,6
4	20	1,6,2
5	8	1,6
6	5	1

   (b) What is an activity network model?

(2+ 3 + 4) + 3 = 12

Group - D

8. (a) Write the difference between include and extend relationship used in UML diagram (with example). How do we represent private and public data member in class diagrams?

   (b) How a UML Use Case Diagram is different from a traditional flow chart? Write the different components required to draw class diagram.

(4 + 2) + (4 + 2) = 12

9. (a) Explain the concept of Fork and join (with example) used in activity diagram. When should we use activity diagram?

   (b) Draw an activity diagram for Electricity Bill payment system in which user /customer log in the system and then they can view the current bill, previous bill and late fine if any. By using the consumer id user can make payment for current/previous bill. Admin can make changes in the bill, Add/Delete connection. Also user can apply for a new connection in the system, by viewing that request Admin has to take necessity step on the basis of reconnection as a defaulter. You must include the concept of Special states, Normal States, Swimlanes, Fork and Join.

(4 + 2) + 6 = 12