3E1140

Roll No.

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B. Tech. III - Sem. (Main) Exam., Dec. - 2018
PCC Computer Science & Engineering
3CS4 – 07 Software Engineering
CS, IT

Time: 3 Hours **Maximum Marks: 120**

Instructions to Candidates:

Attempt all ten questions from Part A, selecting five questions from Part B and four questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 Define verification and validation.

Q.2 Suggest a suitable life-cycle model for a software product which an organization has undertaken on behalf of a specific customer who is likely to change his requirements. Justify your answer.

Q.3 Write the objective of software project planning.

Q.4 Write any two major differences between LOC and FP estimation techniques.

Q.5 List the requirement analysis tasks.

Q.6 Why is accuracy important in data dictionary?

Q.7 How are coupling and software portability related? Give an example.

Q.8 What is a "Design Walk through"? Is it different from a "Design Inspection"?

Q.9 "Can we have inheritance without polymorphism?" –Comment on it.

Q.10 List object oriented design approaches.

PART – B

(Analytical/Problem solving questions) **[5×8=40]**

Attempt any five questions

Q.1 Explain the waterfall model. Suggest reasons, why it is not a true reflection of the activities which are involved in software development. Boehm came up with an alternative. Briefly explain it.

Q.2 Compute function point and estimate effort for a project with the following information domain characteristics. Assume complexity weight factor is average, the number of inputs = 24, outputs = 16, inquiries=22, files=4, and external interfaces = 2, complexity adjustments value are 4, 2, 0, 4, 3, 4, 5, 3, 5, 5, 4, 3, 5, 5 and productivity = 6.4 FP/PM.

Q.3 List any three common types of risks that typical software might suffer from. Explain how you can identify the risks that your project is susceptible to, suppose you are the project manager of a large software development project. Point out the main steps you would follow to manage the risks in your project.

Q.4 Explain the components of Software Requirement Specification (SRS). Write the IEEE recommended structure of SRS.

Q.5 Draw Data Flow Diagram of Traffic Control System for all 3 levels: 0-level, 1-level and 2-level.

Q.6 Explain different types of cohesion that a module must exhibit. How is it different from coupling?

Q.7 What is UML? Explain how it is useful in object oriented modeling.

PART – C

(Descriptive/Analytical/Problem Solving/Design Question) **[4×15=60]**

Attempt any four questions

Q.1 (a) Explain RAD model in detail. Draw suitable diagram to show its activities. [8]

(b) Explain why programs that are developed using evolutionary development are likely to be difficult to maintain. [7]

Q.2 (a) Write a note on resources required for software development. [7]

(b) Consider s software project of full screen editor. The major components identified are: [8]

(i) Screen Edit

(ii) Command Language Interpreter

(iii) File Input and Output

(iv) Cursor Movement and

(v) Screen Movement.

The sizes for these components are estimated to be 6K, 7K, 2K, 4K and 3K LOC. Assume cost driver values as 1.0. Use intermediate COCOMO model to determine:

(i) Final effort

(ii) Efforts estimates for different phases

(iii) Total time

(iv) Time estimates for different phases

Q.3 (a) What is structured analysis? Explain control flow diagram and control process specification by giving a suitable example. [8]

(b) Describe software prototyping in detail. [7]

Q.4 (a) Explain the following concepts with examples: Modularity, Stepwise Refinement and Information Hiding. [8]

(b) Describe the role of data and architectural designs in software design. How is flowchart different from box diagram in procedural design? Explain. [7]

Q.5 (a) Write similarities and dissimilarities between object oriented and functional oriented design approaches. [5]

(b) Perform Object-Oriented Analysis and design for the following problem: [10]

A factory has machines that fails uniformly after continuous operation and needs frequent adjustments and repair after a certain Mean Time To Failure (MTTF). A manager has certain number of adjusters who keep the machines running. The manager maintains a queue of operative machines and idle adjusters. If machines are waiting to be repaired, then the manager assigns the first queued machine to the next available adjuster. The factory administrator wants to get maximum possible output from its machines and adjusters. The objective of the simulation is to see how average machine and adjuster utilization depends on:

- Number of Machines
- Number of Adjusters
- Reliability of Machines in terms of MTTF
- Productivity of Adjusters