Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes.

[Total No. of Questions: 09] [Total No. of Pages: 2.]

Uni. Roll No. .....

Program: **B.Tech. (Batch 2018 onward)**
Semester: **4**
Name of Subject: **Software Engineering**
Subject Code: **PCCS-107**
Paper ID: **16217**

EVENING

17 JAN 2023

Time Allowed: 03 Hours **Max. Marks: 60**

NOTE:

1) Parts A and B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately

Part – A **[Marks: 02 each]**

Q1.

a) State software crisis alongwith its solution.

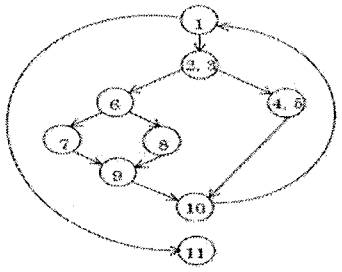
b) What are the objectives of PSP model?

c) 'Spiral model is thought of as a meta-model.' Justify.

d) Compare Software Quality and Reliability.

e) A company needs to develop digital signal processing software for one of its newest inventions. The software is expected to have 20000 lines of code. The company needs to determine the effort in person-months needed to develop this software using the basic COCOMO model. The multiplicative factor for this model is given as 2.2 for the software development on embedded systems, while the exponentiation factor is given as 1.50. What is the estimated effort in person-months?

f) A flow graph F with entry node (1) and exit node (11) is shown below:



Flowgraph F

How many predicate nodes are there and what are their names?

Part – B **[Marks: 04 each]**

Q2. Demonstrate the process of risk management with respect to software development. Highlight the importance of risk management with help of a case study.

Q3. What are the various types of requirements-gathering activities that the analysts use to gather requirements from the customer?

Q4. Illustrate the differences between White-box and Black-box testing techniques giving suitable test cases.

Q5. Explain in detail the various phases of SDLC by taking a suitable example.

Q6. Discuss the concept of forward and reverse engineering highlighting the differences between the two.

Q7. Consider a real-life example of a furniture-making company building tables that consist of a drawer, four legs, and the top of the table. The time taken in hours for different activities is given in table below. Building legs takes 11 hours, building the top takes 3 hours, and building the drawer takes 10 hours. After each part is built, each part is painted. The legs take 2 hours, top 1 hour, and the drawer 3 hours. The drawer is then attached to the tabletop (1 hour). After the top and drawer are attached, the four legs can be attached (1 hour). Find the critical Path.

Part – C **[Marks: 12 each]**

Q8. Explain the software design concepts of coupling and cohesion. Is it true that whenever you increase cohesion of your design, the coupling in your design automatically decreases? Justify the statement with a suitable example.

OR

What are the major advantages of first constructing a working prototype before developing the actual product? Explain the prototype model in detail with diagram.

Q9. How does code inspection help in verification? Is it different from code walkthrough.

OR

'Data Flow Diagrams provide insightful understanding of the software system before actual code implementation'. Comment on the statement by drawing DFD's for 0 level, 1'st level and 2nd level both for Admin side and Client side for an Online Shopping System.

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