RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FOURTH SEMESTER EXAMINATION, AUGUST 2021

SECOND YEAR [BATCH 2019-22]

Date : 09/08/2021

COMPUTER SCIENCE (HONOURS)

Time : 11 am – 1 pm

PAPER : IX [CC9]

Full Marks : 50

Answer **any five** of the following questions: [5×10]

1. a) If a company has already experienced in developing payroll software for different organizations for developing a payroll software for another organization, which life cycle mode should it use? Justify your answer.

   b) Explain why it may not be prudent to use the spiral model for developing large software products.

   c) Irrespective of whichever life cycle model is followed for a software product development, why is it necessary for the final documentation to describe the product as if it were developed using the classical waterfall model?

   d) Define software engineering. [3+3+3+1]

2. a) What do you mean by the terms error, fault and failure?

   b) Explain sandwich integration testing with a suitable example.

   c) A system has 12 external inputs, 24 external outputs, and fields 30 different external inquiries, manage 4 internal logical files, and interfaces with 6 different legacy systems. All of these data are of complex complexity, and the overall system is relatively complex. Compute FP for the system. [3+3+4]

3. a) Draw a class diagram using the UML syntax to represent the fact that an Order-Register consists of many orders. Each order consists of ten order items. Each order item contains the name of the item, its quality and the date by which it is required. Each order item is described by an item order specification object having details such as its vendor addresses, its unit price, and manufacturer.

   b) What are the disadvantages of using LOC as software metric?

   c) What do you mean by coupling and cohesion? [4+3+(1.5+1.5)]

4. a) Explain the synchronous and asynchronous operations in DFD with suitable example.

   b) Under what circumstances might you want to develop software based on object-oriented concept?

   c) Draw a structure-chart for a courier service. [3+3+4]

5. a) What is a prototype?

   b) Under what circumstances is it beneficial to construct a prototype?

   c) Does construction of a prototype always increase the overall cost of software development? [2+3+5]

6. a) The following table indicates the various tasks involved in completing a software project, the corresponding activities, and the estimated effort for each task in person-months. The precedence relation $T_i \leq \{T_j, T_k\}$ implies that the task T_i must complete before either task T_j or T_k can start. The following precedence relation is known to hold among different tasks: $T_1 \leq T_2 \leq \{T_3, T_4, T_5, T_6\} \leq T_7$. Draw the Gantt chart for the project.

Notation	Activity	Effort in person-months
T_1	Requirements specification	1
T_2	Design	2
T_3	Code actuator interface module	2
T_4	Code sensor interface module	5
T_5	Code user interface part	3
T_6	Code control processing part	1
T_7	Integrate and test	6
T_8	Write user manual	3

b) What is egoless programming? How can it be realized?

c) Define different Capability Maturity Model Integration levels. [4+2+4]

7. a) Which important parameters are required to be estimated in project planning activity. Write down two different estimation techniques with suitable examples.

b) What do you mean by PERT chart?

c) Justify the importance of data dictionary. [(2+4)+2+2]

——— × ———