MANAV RACHNA
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MANAV RACHNA UNIVERSITY
FORMERLY MANAV RACHNA COLLEGE OF ENGINEERING
NAAC ACCREDITED 'A' GRADE INSTITUTION
Declared as State Private University under section 2f of the UGC act, 1956

Department of Computer Science & Technology

"T2 Examination, March'2020"

Semester: 4th | **Date of Exam**: 21/03/2020
Subject: Software Engineering | **Subject Code**:CSH207B-T
Branch: CSE | **Session**: II
Course Type: Core | **Course Nature: Hard**
Time: 90 minutes | **Max.Marks**: **30**
Program: B.Tech | **Signature: HOD/Associate HOD:**

***Note**: All questions are **compulsory** from **PART A**. (2 marks each).*
***Part B:** Each question carries 10 marks. Attempt any **TWO** questions.*

PART-A (10 marks)

Q1.(a) State the risk management activities.

(b) Mention the crucial process steps of requirement engineering.

(c) A company needs to develop digital signal processing software for one of its newest inventions. The software is expected to have 40000 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 2.8 for the software development on embedded systems, while the exponentiation factor is given as 1.20. What is the estimated effort in person-months?

(d) Draw a simple use case diagram for Library Management System.

(e) Calculate the average rate of software team buildup for a large-scale project for which the man power requirement is 400PY and development time is 2 years 6 months.

PART-B (2*10 = 20 marks)

Q2. (a) What is COCOMO? Mention (only) the various type of COCOMO models. Explain the basic model in detail. (5)

(b) A company is developing software for a client with a development team having an average experience on similar type of projects with a project size of **2,50,000 LOC.** Also, the project schedule is not very tight.
Calculate the following: Development Time, Effort , Average staff size and productivity of the project. (5)

Q3. Assume we have the following application that models soccer teams, the games they play, and the players in each team. In the design, we want to capture the following:

• We have a set of teams, each team has an ID (unique identifier), name, main stadium, and to which city this team belongs.
• Each team has many players, and each player belongs to one team. Each player has a number (unique identifier), name, DoB, start year, and shirt number that he uses.
• Teams play matches, in each match there is a host team and a guest team. The match takes place in the stadium of the host team.
• For each match we need to keep track of the following:

- The date on which the game is played
- The final result of the match
- The players participated in the match. For each player, how many goals he scored, whether or not he took yellow card, and whether or not he took red card.
- During the match, one player may substitute another player. We want to capture this substitution and the time at which it took place.

• Each match has exactly three referees. For each referee we have an ID (unique identifier), name, DoB, years of experience. One referee is the main referee and the other two are assistant referee.

Design an **ER diagram** to capture the above requirements. State any assumptions you have that affects your design. Make sure cardinalities and primary keys are clear.
(10)

Q4. (a) Compute the function point for the following data:
Number of user inputs(average) = 24, Number of user outputs(low) = 46, Number of inquiries(high) = 8, Number of internal files(average) = 4, Number of external interfaces(low) = 2. Various processing complexity factors are: 4, 1, 0, 3, 3, 5, 4, 4, 3, 3, 2, 2, 4, 5. (4)

(b) Describe facilitated application specification technique (FAST) and compare this with brainstorming sessions. (3)

(c) Using SEL model equations, Calculate number of lines of source code and the duration of the development for a software project expected to involve **8 person-years** of effort.
(3)

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