SEMESTER EXAMINATION-2021
CLASS –MCA I SEM SUBJECT COMPUTER SCIENCE
PAPER CODE: MCA-C102
PAPER TITLE: SOFTWARE ENGINEERING

Time: 3 hour **Max. Marks: 70**
Min. Pass: 40%

Note: Question Paper is divided into two sections: **A and B.** Attempt both the sections as per given instructions.

SECTION-A (SHORT ANSWER TYPE QUESTIONS)

Instructions: Answer any five questions in about 150 words each. Each question carries six marks. (5 X 6 = 30 Marks)

Question-1: What is modularity? List important properties of a modular system.
Question-2: List the advantages of using water fall model instead of adhoc build and fix model.
Question-3: What is software maintenance?
Question-4: What is Norden/Rayleigh Curve?
Question-5: Explain Expert Judgement Approach.
Question-6: What is unit testing?
Question-7: Define the following terms: objects, Abstraction and Class
Question-8: What is verification and validation?
Question-9: What is software engineering? Is it an art, craft or science? Discuss.
Question-10: What do you understand with the term "requirement elicitation"?

SECTION-B (LONG ANSWER TYPE QUESTIONS)

Instructions: Answer any FOUR questions in detail. Each question carries 10 marks. (4 X 10 = 40 Marks)

Question-11: What is boundary value analysis? Consider a program for determining the previous date. Its input is a triple of day, month and year with the values in range

$$1 \leq \text{month} \leq 12$$
$$1 \leq \text{day} \leq 31$$
$$1900 \leq \text{year} \leq 2025$$

The possible outputs would be previous date or invalid input date. Design the boundary value test cases.
Question-12: What is cost analysis in context of software? Explain COCOMO Model.
Question-13: What is DFD? Draw a DFD for Root Mean Square (RMS) calculating system. Read three integers in the range from -1000 to 1000 and calculate their

RMS value and then display it.

Question-14: What is software requirements specification (SRS)? List out the advantage of SRS standards.

Question-15: What do you understand with decision table based testing? Explain with the suitable example.

Question-16: Consider the following program segment:

```
main()
{
int number, index;
printf("enter a number");
scanf("%d", &number);
index=2;
while(index<=number-1)
{
  if (number % index == 0)
   {
printf("not a prime number");
      break;
   }
index++;
}
  if (index== number)
printf("prime number");
}// end main
```

a) Draw the DD graph for the program.
b) Calculate the cyclomatic complexity of the program using all the methods.
c) List all the independent paths.
d) Design test cases from all the independent paths.

Question-17: Define spiral model. Explain with suitable example, types of software development for which spiral model is suitable? Is the number of loops of spiral fixed for different development project?

Question-18: Consider a project with the following functional units: number of user inputs = 40, number of user outputs =50, number of user enquiries= 25, number of user FI= 06 and number of external interfaces =04. Assume all complexity adjustment factor are average bearing values 4, 5, 4, 10, and 7 respectively. Also all weighting factors bear average value as 3. Compute the function point for the project.

Paper Code: MCA-C102