CLASS: BTECH   SEMESTER : V
BRANCH: CSE   SESSION : MO/2022

SUBJECT: IT305 SOFTWARE ENGINEERING

TIME: 3:00 Hours   FULL MARKS: 50

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Explain briefly in two lines about the principles deployed by software engineering to overcome human cognition limitations? K5,CO1	[2]
Q.1(b)	Draw the context diagram (level-0 DFD) of institute library information system.K2,CO1	[3]
Q.1(c)	Draw the neat labelled diagrams of i)V-Model and ii) RAD . K2,CO1	[5]
Q.2(a)	List 4 important characteristics of a good SRS. K4,CO3	[2]
Q.2(b)	Give one primary reason why requirements specification should avoid implementation? Analyze the following requirements i)In an examination software one of the the requirements are-During the final grade computation, if any student scores a sufficiently low grade in a semester, then his parents would need to be informed. (ii)In a chemical plant automation software, suppose one of the requirements is that if the internal temperature of the reactor exceeds 250 $^\circ$C then an alarm bell must be sounded. K4,CO3	[3]
Q.2(c)	Create a use case description document for the functional requirement-"Withdraw cash" of ATM software K6,CO3	[5]
Q.3(a)	List six important design concepts. K4,CO3	[2]
Q.3(b)	Design java classes to show low coupling and high cohesion. K6,CO3	[3]
Q.3(c)	(i)Using the case study of Library Management System discuss the differences between function oriented design and object oriented design.(ii) Explain with a diagram(M1(layer 0) connected to (layer1 M2,M3 ,M4),(layer 2 M3 connected to M5,M4 connected to M5)why low fan-out and high fan-in is desirable for good design. K5,CO3	[5]
Q.4(a)	What is the availability of a software with the following reliability figures? K1,CO5 Mean Time Between Failure (MTBF) = 25 days Mean Time To Repair (MTTR) = 6 hours	[2]
Q.4(b)	A program takes an angle as input within the range[0,360] and determines which quadrant the angle lies. Design test cases using equivalence class partitioning method.K6,CO4	[3]
Q.4(c)	Draw the CFG for the following program and estimate the cyclomatic complexity of the program using all the methods.List Independent paths and design test cases from IPs. K6,CO4	[5]

```
main()
{
    char string [80];
     int index;
    printf("Enter the string for checking its characters");
    scanf("%s",string);
    for(index=0;string[index]!='\0';++index){
       if((string[index]>='0' &&(string[index]<='9'
            printf("%c is a digit",string[index]);
      elseif((string[index]>='A' && string[index]<'Z'))|| ((string[index]     >='a'&&(string[index]'z')))
               printf("%c is an alphabet",string[index]);
       else
               printf("%c is a special character",string[index]);
        }
    }
```

Q.5(a) A software project with the following functional units: User Inputs(60,weight factor=4),user [2] outputs(50,weight factor=5),user enquiries(45,weight factor=4),user files(07,weight factor=10),external interfaces(04,weight factor=7).The Degree of influence of the 14 adjustment factors is average(i.e 3) . Compute the FP of the project. K3,CO2

Q.5(b) Explain briefly the three different types of software maintenances. Which type consumes maximum [3] effort? K6,CO5

Q.5(c) Describe the contents of software project plan. K6,CO2 [5]

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