Subject Code: KCA302

PAPER ID-410477

Roll No: | | | | | | | | | | | | | |

MCA
(SEM-V) THEORY EXAMINATION 2021-22
SOFTWARE ENGINEERING

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. List the reasons for Software Crisis
b. Under what circumstance prototype model is beneficial to choose.
c. Describe how software requirements are documented?
d. How flowchart us useful for software development?
e. List the important shortcomings for LOC for use as a software size metric
f. List the attributes of a software quality?
g. What are test scenarios and test cases?
h. Illustrate the main objectives of alpha and beta testing?
i. Mention different types of maintenance of that a software product might need.
j. Describe the various steps of Reverse Engineering process in detail.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. Discuss the process of Waterfall Model. Mention reasons as to why classical waterfall model can be considered impractical and cannot be used in real projects.
b. Explain the CMM with the help of diagram. Differentiate between ISO and CMM
c. Discuss the main advantages of using an object-oriented approach for software design over function-oriented approach.
d. What are the difference levels of testing? Discuss the main purpose of each testing.
e. Categorize the use of case tools in software engineering with their advantages and disadvantages.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain spiral model for software life cycle with a neat diagram and discuss various activities in each phase.
(b) What are the essential characteristics of software engineering? How it is different from other engineering discipline such as house building and bride design etc.? Explain in detail the various phases in a software development project?

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) What are the problems arises in the formulation of requirement? Discuss the significance and use of requirement elicitation. Mention two techniques of it.
(b) For building a web-based library management system for an organization, develop a context-level and level-1 DFD for the system.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) What is Software Metrics and Measurement? Find Halstead's length and volume measure for following function.

```
void swap(int x[], inty[])
{
int temp;
temp=x[i];
a[i]=x[i+1]
x[i+1]=temp;
}
```

(b) Define the term software modularization? Explain various types of cohesion with the help of an example.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Write the difference between black-box testing and white-box testing. Consider a program which computes the square root of an input integer between 0 and 5000. Determine the equivalence class test cases. Determine the test cases using boundary value analysis also.

(b) What is Regression Testing? Illustrate the necessary points to perform regression testing? Highlight some issues and difficulties of regression testing.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss risk management? Explain how to select the best risk reduction technique when there are many ways of reducing a risk.

(b) What are the benefits of Software Configuration Management (SCM)? Elaborate the activities for SCM performed during SDLC?