Printed Pages: 02 **Sub Code: KCA- 302**

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MCA
(SEM III) THEORY EXAMINATION 2022-23
SOFTWARE ENGINEERING

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

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

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

(a) List 2 reasons for software crisis.
(b) "Software is developed or engineered; it is not manufactured in classical sense". Explain
(c) Describe 2 characteristics of SRS.
(d) Describe ER Diagram
(e) Describe structure chart.
(f) List two disadvantages of Lines of Code.
(g) What are the two main activities of regression testing?
(h) Differentiate between test drivers and test stubs
(i) Define need of maintenance.
(j) Discuss the ways to avoid risk.

SECTION B

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

(a) Discuss the prototype model. What is the effect of designing a prototype on the overall cost of the software project?
(b) What is feasibility study? What are the contents we should contain in the feasibility report?
(c) Draw a DFD for result preparation automation system of MCA Courses of AKTU university. Clearly describe the working of that system, also mention all assumptions made by you.
(d) What is integration testing? Explain different types of integration testing
(e) Discuss risk management? Explain how to select the best risk reduction technique when there are many ways of reducing a risk.

SECTION C

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

(a) What is Software development life cycle? Discuss the process for Spiral model.
(b) Current trends in Software Engineering are moving away from the waterfall model for large projects and moving toward iterative methods? What are we gaining and losing as a result? Explain with suitable examples.

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

(a) Discuss the significance of requirement engineering. Also write the various steps with requirement engineering with proper explanation.
(b) What do you understand with the term "requirement elicitation"? Discuss any two techniques.

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

(a) Define Cohesion. What is Functional Cohesion? Does Functional Cohesion within a module bring about good software design? Give an example. What type of coupling and cohesion between/among modules is preferred for good quality software?

(b) What is a formal technical review? What ate the objectives of formal technical review? Give a comparative study of code inspection, reviews and walk-through.

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

(a) Consider the following source code:

```
void sort (int *a, int n) {
inti, j, t;
if (n < 2) return;
for (i=0; i< n-1; i++) {
for (j=i+1; j < n; j++) {
if (a[i] > a[j]) {
t = a[i];
a[i] = a[j];
a[j] = t;
}
}
}
}
```

Calculate the formula of Halstead Analysis for Volume and Difficulty-level of the code?

(b) 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.

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

(a) Categorize the use of case tools in software engineering with their advantages and disadvantages.

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