Total No. of Questions : **16**]   [Total No. of Printed Pages : **3**

SEM–3016

M.Sc. (IIIrd Semester) Examination, 2022
COMPUTER SCIENCE

Paper – MCS–303 (a)

(Software Engineering and Research Methodology)

*Time : **3** Hours*]   [*Maximum Marks : **40***

The question paper contains three Sections.

Section–A   **(Marks : 1 × 10 = 10)**

Note :–   Answer all the *ten* questions carries **1** mark each. The answer should not exceed **50** words.

Section–B   **(Marks : 3 × 5 = 15)**

Note :–   Answer *five* questions by selecting at least *one* question from each Unit. Each question carries **3** marks. Answer should not exceed **200** words.

Section–C   **(Marks : 5 × 3 = 15)**

Note :–   Answer *three* questions by selecting *one* question from each Unit. Each question carries **5** marks. The answer should not exceed **500** words.

Section–A

1.   Attempt all questions. Answer should not exceed **50** words in each question.

    (i)   What are non-functional software requirements ?

BR–839   (1)   SEM–3016   P.T.O.

(ii) What is the main difference between a computer program and computer software ?

(iii) What is baseline in Software Development ?

(iv) What are software metrics and measurements ?

(v) What is EAF in COCOMO Model ?

(vi) In white box testing, what do you verify ?

(vii) What are the limitations and advantages of COCOMO Model ?

(viii) Who defined 'Research' as "systematized effort to gain new knowledge" ? What is 'A' means in the word 'RESEARCH' ?

(ix) Write seven characteristics of research.

(x) Why is research necessary ? What are four criteria of good research ?

Section–B

Note :– Attempt *five* questions in about **200** words, by selecting at least *one* question from each Unit. Each question carries **3** marks.

Unit–I

2. What are different myths and realities about the software ?

3. Give at least *two* reasons for prototyping is problematic.

4. What activities are performed on linear sequential model ? Do you think the linear model of software development is appropriate ? Justify.

Unit–II

5. What is the difference between Risk and Uncertainty ?

6. What are the key challenges of Software Testing ?

7. Distinguish between Alpha and Beta testing.

Unit–III

8. Which points must be taken into account while selecting a problem ?

9. Distinction between Research Methods and Research Methodology.

10. What are the techniques of defining a research problem in Research Methodology ?

Section–C

Note :– Attempt *three* questions in about **500** words, by selecting *one* question from each Unit. Each question carries **5** marks.

Unit–I

11. What are the factors of Software Quality ? How many factors are proposed in McCall quality model ?

12. What are the eight management elements of the Spiral Model ? How does the Spiral Model address the need of accurately determining the software requirements ?

Unit–II

13. Define the concept of cohesion and coupling. State the difference.

14. White box testing is complementary to black box testing, not alternative. Why ? Give an example to prove this statement.

Unit–III

15. What is the process through which a research topic is identified ? Explain.

16. What do you mean by Research ? Classify different types of research with the help of suitable examples.