23729

M.Tech. (Artifical Intelligence and Data Science)

1st Semester Examination, November–2023

SOFTWARE ENGINEERING

Paper–21MTAI21C4

Time allowed : 3 hours] *[Maximum marks : 100*

Note : ***Question No. 1 is compulsory.*** *Attempt* ***five*** *questions in total, the* ***first being compulsory,*** *and select* ***one*** *question from each unit.*

1. Explain the following : 8×2.5=20

(a) Software Process and Software Product

(b) Softwae Metrics

(c) Entity Relationship Diagrams

(d) Role of Functional Independence in System Design

(e) Decision Table Testing

(f) Failure and Faults

(g) Testing Tools

(h) Reliability Allocation

Unit–I

2. (a) Define the term Software. Explain the important Characteristics of good Software. Why does a Software crisis occur ? Give Reasons. 5

(b) Explain the Software Engineering Institute-Capability Maturity Model Quality standards for Software. 5

(c) Explain the following Software Life Cycle Model in detail : 2×5=10

(i) Prototype Model

(ii) Spiral Model

3. What are Software metrics ? How do you rate any software based on various metrics ? Explain the Software metrics in detail. 20

Unit–II

4. (a) Requirement analysis in unquestionably the most communication-intensive step in the software

engineering process. Why does the communication path frequently break down ? Explain. 15

(b) What is Putnam Resource Allocation Model ? Explain. 5

5. (a) Define the following terms and how they play an important role in software Project Planning :

(i) Cost Estimation 5×2=10

(ii) Risk Management

(b) Explain the software requirements specifications in detail using a relative case study. 10

Unit–III

6. (a) Differentiate between Cohesion and Coupling. Explain their classification. 10

(b) What is Software Designs ? Explain various types of Models for a software design process. 10

7. Define Software Reliability. What are various reliability models that play a great role in software development ? 20

Unit–IV

8. What is Testing ? Explain various Software Testing Techniques in detail. 20

9. (a) Differentiate between Software re-engineering and reverse engineering. 10

   (b) What is Software Maintenance ? Also, explain the process of Software Maintenance. 10