

## CE6-R3: SOFTWARE QUALITY MANAGEMENT

### NOTE:

1. Answer question 1 and any FOUR from questions 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 100

1.
  - a) Describe the fundamental requirements for any quality improvement process to be successful.
  - b) State the barriers that prevent top management from understanding and implementing constant improvements in quality and productivity in all areas of their organization.
  - c) Describe the salient features of defect density measures.
  - d) Justify – ‘Do it right the first time’ principle.
  - e) Using the Rayleigh curve, to model software development quality, involves two basic assumptions. State these two assumptions.
  - f) What's the role of documentation in QA?
  - g) Describe the meaning of audit, auditing, review and reviewing.

**(7x4)**
  
2.
  - a) What do you understand by Total Quality Management (TQM)? Discuss the advantages of TQM.
  - b) State the importance of Software Requirement Review (SRR) and kind of documents to be reviewed by SRR.
  - c) Classify software reliability growth models.

**(7+6+5)**
  
3.
  - a) Describe briefly phase-based defect removal model (DRM) and specify the method for calculating defect at the exit of a development setup using DRM.
  - b) Describe Reviewing and Walkthrough approach for quality assurance.

**(10+8)**
  
4.
  - a) Describe the classifications of defect by category and priority.
  - b) How does CMM help to ensure quality?
  - c) How does Rayleigh model differ from phase-based defect removal model?

**(8+6+4)**
  
5.
  - a) How cyclomatic complexity of a module can be determined? Draw a control flow graph and calculate McCabe's cyclomatic number for the following source code.
    - i) read x,y,z;
    - ii) type="scalene";
    - iii) if (x==y or x==z or y ==z) type = "isosceles";
    - iv) if (x==y or x==z) type = "equilateral";
    - v) if ((x>=(y+z)) or (y>=(x+z)) or (z>= (x+y))) type = "not a triangle";
    - vi) if (x<=0 or y<=0 or z <=0) type = "bad inputs";
    - vii) print type;
  - b) Describe Depth of Inheritance Tree (DIT) and Weighted Methods per Class (WMC) object oriented metrics.

**(9+9)**

**6.**

- a) What do you understand by configuration management? How does it help to ensure quality of a software product?
- b) State the essential features of ISO 9000 Model.
- c) Discuss the salient measures to ensure process and product quality.

**(6+6+6)**

**7.**

- a) What is a Risk in a software project? Describe the popular strategies to manage risk.
- b) Describe six axioms of Quality Management.
- c) State the fundamental data collection rules for maintenance of data relating to quality.

**(9+6+3)**