

Total No. of Questions : 12]

SEAT No. :

**P794**

[Total No. of Pages : 4

**[4659] - 206**

**B.E. (Information Technology) (Semester - I)**  
**SOFTWARE TESTING AND QUALITY ASSURANCE**  
**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Answer question number 1 or 2, 3 or 4, 5, or 6 from section I.*
- 2) *Answer question number 7 or 8, 9 or 10, 11 or 12 from section II.*
- 3) *Answers to the two sections should be written in separate answer books.*
- 4) *Neat diagrams must be drawn wherever necessary.*
- 5) *Figures to the right indicate full marks.*
- 6) *Assume suitable data, if necessary.*

**SECTION - I**

- Q1)** a) What is need of testing? Differentiate error, fault, defect and failure with example. **[8]**
- b) Give objectives, examples and when to use ANY TWO of the following testing techniques: Requirement testing, security testing, Integration testing, and recovery testing. **[8]**

**OR**

- Q2)** a) Describe the circumstances under which you would apply white-box and black-box testing techniques. **[8]**
- b) What are different levels of testing? Which software components are most suitable for unit testing and why? **[8]**
- Q3)** a) Draw and explain a defect life cycle. **[6]**
- b) Explain Test case design strategies. Assume you purchased new android mobile phone. How would you test it? Develop black box test cases for the android mobile phone with pass/fail criteria. **[10]**

**OR**

**P.T.O.**

**Q4) a)** Explain in detail different functions/ responsibilities to be handled in a testing life cycle or process. **[8]**

**b)** Draw control flow graph for the code given below. Clearly label each node. Calculate its cyclomatic complexity. How can this value be used to measure testability? Describe how cyclomatic complexity number and flow graph be used. **[8]**

to design a set of white box tests for this module.

```

{
1) i=1;
2) while(i<=n) {
3) j=1;
4) while(j<=1) {
5)     if(a[i] < a[j]);
6)     Swap(a[i], a[j]);
7)     j=j+1;}
8) i = i+1; }
9) }
```

**Q5) a)** Explain GQM technique in detail. Draw a GQM tree for the quality goal of achieving better software usability. **[8]**

**b)** List and explain different types of measurement scales with example. **[10]**

OR

**Q6) a)** Spell Check Specs: The checker accepts as input a document file and an optional personal dictionary file. The checker lists all words not contained in either of these files. The user can query the number of words processed and the number of spelling errors found at any stage during processing. **[18]**

Item	Weighting Factor		
	Simple	Average	Complex
External Inputs	3	4	6
External Outputs	4	5	7
External Inquiries	3	4	6
External Files	7	10	15
Logical Internal Files	5	7	10

There are 14 technical complexity factors out of that two factors has rating as 5 and six factors has rating as 3 and remaining six has rating as 0 on a scale of 0 to 5. Where 0 means irrelevant, 3 means it is average and 5 means it is essential to the system being built

Based on the above perform the following:

- a) Draw pictorial representation of the system for FP analysis.
- b) Identify internal logical files, external I/P, O/P, Inquiries and Files.
- c) Calculate Function Count (FC)
- d) Calculate Technical Complexity Factor(TCF)
- e) Calculate Function Point (FP)
- f) Explain the importance of FP in software testing.

## SECTION - II

- Q7)** a) Explain the following software reliability quality attributes in short: [10]
- i) Usability
  - ii) Portability.
  - iii) Maintainability
  - iv) Interoperability.
  - v) Correctness.
- b) Explain the objectives and elements of software reviews and inspections.[8]

OR

- Q8)** a) List ishikawa's seven basic quality tools. Explain any two in detail with example [10]
- b) How are code inspection and Project Planning helpful in improving the product quality? [8]
- Q9)** a) List the requirements of ISO 9000 and ISO 9001. [8]
- b) Discuss how better software quality can be assured by using quality [8] standards.

- Q10)a)** Explain the PDC A cycle in detail with reference to ISO 9000:9001. [8]
- b) What is six sigma? Explain the terms DMAIC and DMADV with reference to six sigma. [8]

- Q11)a)** Draw and describe the various levels of CMM along with the KPA's for different levels. [8]
- b) Describe in detail the KPA Software Project Tracking and Oversight (SPTO). [8]

OR

- Q12)a)** Explain the goals and activities performed in the following KPA's: [8]
- i) Software Product Engineering.
- ii) Organization Process Definition.
- b) Describe in detail Software Configuration Management (SCM). [8]

