(2 ½ Hours) [Total Marks: 75]

N.B. 1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q. 1 **Attempt All**
(a) **Choose the correct alternative from the options given** **(10M)**
(i) A deviation from the specified or expected behaviour that is visible to end-users is called _____
a. error b. fault
c. failure d. defect

(ii) How many levels are present in CMM?
a. 3 b. 4
c. 5 d. 6

(iii) SMI stands for _____
a. Software Mature Indicator b. Software Maturity Index
c. Software Mature Index d. Software Maturity Indicator

(iv) Which of the following is not an appraisal cost in SQA?
a. inter-process inspection b. maintenance
c. quality planning d. testing

(v) Exit criteria in test plan mentions _____
a. When to stop accepting new requirements b. When to stop the code from moving to production
c. When to stop testing activities d. When to stop from accepting new pieces of code

(vi) ___ takes into account inputs about singular defects as well as defect priorities, product issues, defect resolution history, developers involved, and the like.
a. Defect Prevention b. Defect Discovery
c. Defect Resolution d. Defect Analysis

(vii) Cost and schedule are a part of _____
a. Product Metrics b. Process Metrics
c. Project Metrics d. People Metrics

(viii) What is not included in prevention costs?
a. quality planning b. formal technical reviews
c. test equipment d. equipment calibration and maintenance

(ix) In which of the following type of testing, testing is done without planning and documentation?
a. Unit testing b. Retesting
c. Ad hoc testing d. Regression testing

(x) Which document that prescribes the requirements with which the product or service has to confirm?
a. Reliability b. Specification
c. Inspection d. Audit

(b) **Fill in the blanks by selecting the correct option from the pool of options:** **(5M)**
(reusability, stub, customer, appraisal, fish bone, skeleton, portability, pareto, prevention, employee)

(i) _____ chart uses the rule of 20:80?

(ii) Quality improvement, Quality education, and Quality performance reporting fall under the category of _____ costs.

(iii) ___ is effort required to transfer the program from one hardware and/or software system environment to another.

(iv) In Unit Testing, ___ serves to replace modules that are subordinate to the component to be tested.

(v) The objective of ISO-9000 family of Quality Management is _____ satisfaction.

Q. 2 Attempt the following (Any THREE) **(15M)**
(a) Define Quality and explain software quality attributes.
(b) Differentiate between Verification and Validation.
(c) What is Software review? Explain the types of reviews?
(d) Write a short note on V-V Model of software testing.
(e) Explain the term cyclomatic complexity with example.
(f) What is Coverage Criteria? List and explain any two coverage criteria in short.

Q. 3 Attempt the following (Any THREE) **(15M)**
(a) Define regression testing? What is the Role of capture and playback?
(b) Write a short note on Smoke Testing
(c) What is Val1idation testing? Write 7 validation test criteria.
(d) What is Software metric? Explain its importance.
(e) Explain defect life cycle.
(f) List the types of System Testing and explain any 2 types in short.

Q. 4 Attempt the following (Any THREE) **(15)**
(a) List and explain the goals and objectives of SQA.
(b) Write a note on statistical Software Quality Assurance
(c) Discuss how reliability changes over the lifetime of a software product and a hardware product.
(d) Write short note on Cause-effect Diagrams.
(e) What is quality cost? Explain the objectives of finding quality cost.
(f) Explain the outline structure for a quality plan.

Q. 5   Attempt the following (Any FIVE)   **(15)**
(a)   Define the terms: error, fault and failure.
(b)   Distinguish between White box and Black box testing.
(c)   State the objectives of Testing.
(d)   What is the difference between function-point metrics and feature-point metrics?
(e)   Discuss the differences between Alpha and Beta testing
(f)   What are the guidelines for review.
(g)   What is Run chart? How to create & interpret it?
(h)   Discuss the concept of Software Safety.

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