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Paper Code : ESC501 Software Engineering

Time Allotted : 3 Hours *Full Marks :70*

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer any ten of the following : [1 x 10 = 10]

(I) The CMMI was developed to combine multiple ____ into one framework..

A) Meta model
B) Business maturity models
C) Bootstrap
D) All of the mentioned above

(II) What is the use of CMMI?

A) Decreases risks in software
B) Encouraging a productive
C) Streamlines process improvement
D) All of the mentioned above

(III) Which of the following is a building block of UML?

A) Things
B) Relationships
C) Diagrams
D) All of the mentioned

(IV) Amongst which of the following is / are the Verification and validation activities.

A) Technical reviews, quality and configuration audits
B) Algorithm analysis, development testing, usability testing
C) Qualification testing, acceptance testing, and installation testing
D) All of the mentioned above

(V) To achieve good design, modules should have

A). Low coupling, low cohesion
B). Low coupling, high cohesion
C). High coupling, low cohesion
D). High coupling, high cohesion

(VI) The planning task is estimation of the resources required to accomplish the software development effort.

A) True
B) False

(VII) Which of the following term is best defined by the statement:"a structural relationship that specifies that objects of one thing are connected to objects of another"?

A) Association
B) Aggregation
C) Realization
D) Generalization

(VIII) A typical configuration management (CM) operational scenario involves a ____ who is in charge of a software group.

A) Project manager
B) System engineer
C) System administrator
D) All of the mentioned above

(IX) CASE Tool is

A). Computer Aided Software Engineering
B). Component Aided Software Engineering
C). Constructive Aided Software Engineering
D). Computer Analysis Software Engineering

(X) All critical path activities have slack time of
A). 0 B). 1 C). 2 D). None of above

(XI) The SCM repository is the set of ____.
A) Project database
B) Mechanisms and data structures
C) A tracking and control
D) None of the mentioned above

(XII) Software configuration management is a set of ___ activities.
A) Change management
B) Process
C) Tracking and control
D) None of the mentioned above

Group-B (Short Answer Type Question)
Answer any three of the following [5 x 3 = 15]

2. Write the short notes on: Rayleigh curve, [5]
3. Discuss the basic COCOMO model for software cost estimation [5]
4. Write short notes on: Software project plan [5]
5. Write the short notes Re-engineering legacy systems. [5]
6. Write the short notes white box testing [5]

Group-C (Long Answer Type Question)
Answer any three of the following [15 x 3 = 45]

7. a) Explain the software life cycle model that incorporates risk factor [15]
b) Draw the Context level DFD and Level 1 Data Flow Diagram for the system whose requirements are summarized as follows –
A store is in the business of selling paints and hardware items. A number of reputed companies supply items to the store. New suppliers can also register with the store after providing necessary details. The customer can place the order with the shop telephonically or personally. In case items are not available, customers are informed. The detail of every new customer is stored in the company's database for future reference. Regular customers are offered discounts. Additionally details of daily transactions are also maintained. The suppliers from time to time also come up with attractive schemes for the dealers. In case, scheme is attractive for a particular item, the store places order with the company. Details of past schemes are also maintained by the store. The details of each item i.e. item code, quantity available etc. are also maintained.

8. a) How function point analysis methodology is applied in estimation of software size? Explain. Why FPA methodology is better than LOC methodology ? [15]
b) An application has the following:10 low external inputs, 12 high external outputs, 20 low internal logical files, 15 high external interface files, 12 average external inquiries and a value adjustment factor of 1.10 . What is the unadjusted and adjusted function point count ?

9. a) Define coupling and cohesion. What are the different types of coupling possible between various modules of a software system. [15]
b) Discuss why "low coupling and high cohesion" are features of good design
c) Compute function point value for a project with the following domain characteristics:
No. of I/P = 30
No. of O/P = 62
No. of user Inquiries = 24
No. of files = 8
No. of external interfaces = 2
Assume that all the complexity adjustment values are average.

10. What is regression testing? [15]
What is alpha testing?
What is BETA testing?

11. 'Software doesn't wear out' justify
Write the IEEE definition of software engineering
Mention the characteristics of software contrasting it with characteristics of hardware