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2023

COMPUTER SCIENCE

(Honours Core)

Paper : CSC–HC–4026

(Software Engineering)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct answer for the following : 1×7=7

   (a) Effort is measured using which one of the following units :

   (i) Persons

   (ii) Person-months

   (iii) Months

   (iv) Rupees

(b) Which one of the following is NOT desired in a good software requirement specification SRS document ?

(i) Functional requirement

(ii) Non-functional requirement

(iii) Goals of implementation

(iv) Algorithms for software implementation

(c) The modules in a good software design should have which of the following characteristics ?

(i) High cohesion, low coupling

(ii) Low cohesion, high coupling

(iii) Low cohesion, low coupling

(iv) High cohesion, high coupling

(d) Which of the following can be considered as a program validation technique ?

(i) Unit testing

(ii) Code reviews

(iii) Integration testing

(iv) Acceptance testing

(e) In the waterfall SDLC model, unit testing is carried out during which one of the following phase ?

(i) Coding

(ii) Testing

(iii) Design

(iv) Maintenance

(f) Which one of the following is NOT a factor for LOC being considered as a poor size metric ?

(i) It is programming language dependent

(ii) It penalises efficient and compact coding

(iii) It is programmer dependent

(iv) It is dependent on the complexity of the requirement

(g) A DFD depicts which of the following ?

(i) Flow of data

(ii) Flow of control

(iii) Flow of statements

(iv) None of the above

2. Define the following terms : 2×4=8

(a) Sliding window planning

(b) Function point (FP) metric

(c) Unit testing

(d) Black-box testing

3. Answer ***any three*** of the following questions : 5×3=15

(a) What do you mean by system testing ? Explain *any one* system testing.

(b) What is SRS ? Explain the characteristics of a good SRS.

(c) What do you mean by software quality assurance ? What is importance of debugging and reliability analysis in software quality ?

(d) What is DFD ? Briefly explain the element of a DFD.

(e) Distinguish between software verification and software validation. In which phase(s) of the iteration waterfall SDLC are the verification and validation activities performed ?

4. Answer the following questions : ***(any three)*** 10×3=30

(a) What are the differences between top-down and bottom-up integration testing approaches ?

What are their advantages and disadvantages ? Explain your answer using an example. 5+5=10

(b) Define software quality. How to get ISO 9000 certification ? What are the shortcomings of ISO 9000 ? 2+5+3=10

(c) Explain the following :

(i) Basic COCOMO model

(ii) Software risks

(d) What is SDLC models ? Explain the spiral model of SDLC in detail. 3+7=10

(e) Explain the concept of coupling and cohesion in software design. Discuss the ideal requirement of cohesion and coupling for good software design. 5+5=10

(f) What are the differences between data flow diagram and entity relationship diagram ? Briefly explain it.
