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Question Paper Code : 71680

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Fourth Semester

Information Technology

CS 6403 — SOFTWARE ENGINEERING

(Common to Computer Science and Engineering)

(Regulations 2013)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Depict the relationship between work product, task, activity and system.

2. List two deficiencies in waterfall model. Which process model do you suggest to overcome each deficiency?

3. Differentiate between normal and exciting requirements.

4. What is the purpose of a data dictionary?

5. What is the purpose of a Petri Net?

6. What UI design patterns are used for the following?

    (a) Page layout.

    (b) Navigation through menus and web pages.

7. What is smoke testing?

8. List two testing strategies that address verification. Which types of testing address validation?

9. What are the different types of productivity estimation measures?

10. List two customer related and technology related risks.

PART B — (5 × 13 = 65 marks)

11. (a) What is a process model? Describe the process model that you would choose to manufacture a car. Explain giving suitable reasons. (13)

Or

(b) (i) How function point analysis methodology is applied in estimation of software size? Explain. Why FPA methodology is better than LOC methodology? (8)

(ii) 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? (5)

12. (a) What is requirements engineering? Explain in detail the various processes in requirements engineering.

Or

(b) (i) Explain the feasibility studies. What are the outcomes? Does it have implicit or explicit effects on software requirement collection? (8)

(ii) Write a note on what are the difficulties in elicitation, requirement elicitation. (5)

13. (a) What is cohesion? How is it related to coupling? Discuss in detail different types of cohesion and coupling with suitable examples. (13)

Or

(b) What is software architecture? Describe in detail different types of software architectures with illustrations. (13)

14. (a) (i) What is white box testing? Explain. (7)

(ii) Consider the pseudocode for simple subtraction given below : (6)
Program 'Simple Subtraction'
Input (x, y)
Output(x)
Output (y)
If x > y then DO
x − y = z
Else y − x = z
EndIf
Output (z)
Output 'End Program"
Perform basic path testing and generate test cases.

Or

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(b) (i) What is integration testing? Discuss any one method in detail. (8)

(ii) Describe black box testing. Design the black-box test suite for the following program. The program computes the intersection point of two straight lines and displays the result. It reads two integer pairs (m1, c1) and (m2, c2) defining the two straight lines of the form $y = mx + c$. (5)

15. (a) Describe in detail COCOMO model for software cost estimation. Illustrate considering a suitable example.

Or

(b) Given the following project plan of tables table 1 and table 2 :

Table 1

ID	Task	Immediate predecessor (*)	Expected duration (days)	Budget ($)
A	Meet with client		5	500
B	Write SW	A	20	10000
C	Debug SW	B	5	1500
D	Prepare draft manual	B	5	1000
E	Meet with clients	D	5	1000
F	Test SW	C, E	20	2000
G	Make modifications	F	10	8000
H	Finalize manual	G	10	5000
I	Advertise	C, E	20	8000

(*) all dependencies are assumed to be FS-Finish to Start

And the following progress status :

Table – 2

ID	Task	Status	Actual start (days)	Actual duration (days)	Actual costs ($)
A	Meet with client	100%			1500
B	Write SW	100%	+5 days	+10 days	9000
C	Debug SW	100%	+15 days	+5 days	2500
D	Prepare draft manual	100%	As per other delays		1000
E	Meet with clients	100%	As per other delays		1000
F	Test SW	100%	As per other delays		750

G	Make modifications	0%	As per other delays	0
H	Finalize manual	0%	As per other delays	0
I	Advertise	10%	+5 on top of other delays	1000

Perform an analysis of the project status at week 13, using EVA. Use the CPI and SPI to determine project efficiency. Explain the process involved.

PART C — (1 × 15 = 15 marks)

16. Consider an online book stores. It accepts individual/bulk orders, process payments, triggers delivery of the books. Some of the major features of the system include :

    - Order books
    - User friendly online shopping cart function
    - Create, view, modify and delete books to be sold
    - To store inventory and sales information in database
    - To provide an efficient inventory system
    - Register for book payment options
    - Request book delivery
    - Add a wish list
    - Place request for books not available
    - To be able to print invoices to members and print a set of summary reports
    - Internet access.

    Analyse the system using the context diagram and level 1 DFD for the system. Explain the components of DFD.

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