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Question Paper Code : X20398

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
AND APRIL/MAY 2021
Fourth Semester
Computer Science and Engineering
CS 6403 – SOFTWARE ENGINEERING
(Common to Information Technology)
(Regulations 2013)
(Common to PTCS 6403 – Software Engineering for B.E. Part-Time – Fourth Semester – Computer Science and Engineering – Regulations 2014)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. If you have to develop a word processing software product, what process model will you choose ? Justify your answer.

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

3. Draw a use case diagram for an online shopping which should provide provisions for registering, authenticating the customers and also for online payment through any payment gateway like paypal.

4. Define Quality Function Development (QFD).

5. Draw diagrams to demonstrate the architectural styles.

6. List down the steps to be followed for User Interface design.

7. How can refactoring be made more effective ?

8. Why does software fail after it has passed from acceptance testing ?

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) i) What is the impact of reusability in software development process ? **(4)**

ii) Explain the component based software development model with a neat sketch. **(9)**

(OR)

b) i) Write a note on the unique characters of a software. **(3)**

ii) What is the significance of the spiral model when compared with other models ? **(3)**

iii) Explain the CMMI model to assess the organization level. **(7)**

12. a) Write a brief note on the various Requirements Engineering activities.

(OR)

b) Draw use case and data flow diagrams for a Restaurant System. The activities of the Restaurant system are listed below.

Receive the customer food orders, Produce the customer ordered foods, Serve the customer with their ordered foods, Collect payment from customers, Store customer payment details, Order raw materials for food products, Pay for raw materials and pay for labor.

13. a) What is structured design ? Illustrate the structured design process from DFD to structured chart with a case study.

(OR)

b) i) Describe the golden rules for interface design. **(7)**

ii) Explain component level design with suitable examples. **(6)**

14. a) i) State the need for refactoring. How can a development model benefit by the use of refactoring ? **(7)**

ii) Why does software testing need extensive planning ? Explain. **(6)**

(OR)

b) i) Compare and contrast alpha and beta testing. **(6)**

ii) Consider a program for determining the previous date. Its input is a triple of day, month and year with the values in the range $1 \leq \text{month} \leq 12$, $1 \leq \text{day} \leq 31$, $1990 \leq \text{year} \leq 2014$. The possible outputs would be previous date or invalid input date. Design the boundary value test cases. **(7)**

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. a) 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.

(OR)

b) For each of the following types of projects, choose the most appropriate life cycle model and justify your choice by a couple of lines of explanation

i) You are migrating a legacy application in mainframes to Oracle. The project goes through well-defined phases of contract signing, taking each program of the current system with a well-defined acceptance test data, converting it to Oracle and proving that the output matches the expected output. It is not possible to seek intermediate feedback. **(8)**

ii) You are developing a proof-of-concept to show your prospect on how your product is suited for developing wireless applications. You do not have access to expensive CASE tools. **(7)**

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