

SYSTEM PROG. & COMPILER CONSTRUCTION

Q.P. Code : 581502

(3 Hours)

[Total Marks : 80

- N.B. :** (1) Question No. 1 is **compulsory**.
 (2) Attempt any **three** from the remaining questions.
 (3) Assume suitable **data** if **necessary**.
 (4) **Figures** to the **right** indicate **full** marks.

1. (a) What is Handle pruning? 5
 (b) What is role of finite automata in compiler theory? 5
 (c) What are different type of attributes in SDD? Explain with examples. 5
 (d) Backpatching with example. 5
2. (a) Explain two pass macro processor with flowchart and databases. 10
 (b) Explain various loop optimization techniques with example. 10
3. (a) a) Construct SLR parsing table for following grammar. Show how parsing actions are done for the input string () () \$. Show stacks content , i/p buffer, action. 12
 $S \rightarrow (S)S$
 $S \rightarrow \epsilon$
 (b) What are various databases used in two pass assembler design. Explain with example. 8
4. (a) Discuss various intermediate code forms in detail. 10
 (b) What is Loader ? Explain functions of loader with examples. 10
5. (a) For the given grammar below, construct operator precedence relations matrix, assuming *, + are binary operators and id as terminal symbol and E as non terminal symbol. 10
 $E \rightarrow E + E$
 $E \rightarrow E * E$
 $E \rightarrow id$
 Apply operator precedence parsing algorithm to obtain skeletal syntax tree for the statement
 $id + id * id$
 (b) Explain Run time organization in detail. 10
6. Write short notes.
 (a) LEX and YACC 5
 (b) Design of an Editor 5
 (c) Syntax Directed Translation 5
 (d) Recursive Descent parsing 5

Q.B. : (1) Question No. 1 is compulsory

(2) Attempt any three questions out of remaining five.

- Q1. (a) Develop the SRS for an Online Shopping Portal. [20]
A customer visits the online shopping portal. He may buy item or just visit the page and logout. The customer can select a segment, then a category and brand to get different products in the desired brand.
The customer can select product for purchasing. The process can be repeated for more items. Once the customer finishes the selecting product/s, the cart can be viewed. If the customer wants to edit the final cart it can be done. For completing the process of purchase and payment the customer has to login the portal. If the customer is visiting for first time, he should do the registration process first, else he can directly login to continue. Final cart is submitted for payment and the delivery address is confirmed by the customer. Confirmation is given to the customer through shipment Id and products list.
SRS for this should include:
a. Product perspective
b. Scope and objective
c. Functional Requirements
d. Non-Functional Requirements
- Q2. (a) What is user interface design process? Explain with one example. [10]
(b) Explain Software Configuration item identification. [10]
- Q3. (a) What are the objectives of testing? Explain black box testing and integration testing. [10]
(b) What is Coupling and Cohesion? Explain different forms of it. [10]
- Q4. (a) What do you mean by requirements? Explain Functional and Non-Functional requirements in detail. [10]
(b) What are the different types of maintenance and also explain steps for creating maintenance log? [10]
- Q5. (a) Discuss Incremental model and prototype model for software development with merits and demerits. [10]
(b) Explain size oriented software engineering metrics. [10]
Find function points for an E-commerce application with the following data,
No. of User inputs 50
No. of User outputs 30
No. of User inquiries 35
No. of User files 06
No. of external interfaces 04
Assume suitable complexity adjustment factors and weighting factors.
- Q6. Write short notes on (any two)
(a) Version control and change control. [10]
(b) COCOMO Model. [10]
(c) Agile Methodology. [10]
(d) Risk Management. [10]

Q.P. Code : 581702

(3 Hours)

[Total Marks : 80

- N.B. :** (1) Question No.1 is Compulsory.
 (2) Attempt any 3 questions out of the rest.
 (3) Figure to the right indicate full marks.
 (4) All question carry equal marks.

1. a) What are advantages and disadvantage od Distributed DBMS 5
 b) What are the features of DDBMS? 5
 c) Explain the basic Timestamp Ordering Algorithm. 5
 d) What are the objectives of Distributed Query Processing? 5
2. a) What is horizontal and vertical fragmentation? What are the types of horizontal fragmentation. Perform horizontal fragmentation for student relation as given below. 10
 Also give the correctness criteria for it.
 Student (Studentrollno., StudentName, CourseName, CourseFees, year)
 b) What are the various kinds of transparencies in distributed database design? 10
 Explain each with the help of an example
3. a) What are the various concurrency control techniques? Compare Lock based Concurrency Control strategies in detail. 10
 b) Compare Distributed Deadlock prevention to Distributed Deadlock Avoidance 10
 Explain one scheme of Distributed deadlock Detection and Recovery.
4. a) A banking database should contain the customer's information along with the types of accounts customer is maintaining. Customer information is its full profile information along with his current address, PAN ID, adhar Card no. included and account information should include type of account (Saving, fixed, demat, recurring, current), date and time of access and the transactions details. 10
 i) Write the DTD rules for the above XML documents.
 ii) Create an XML schema for the above XML document.
 b) What are homogenous and heterogeneous database. Give the architecture of heterogeneous databases along with some query processing issues. 10

TURN OVER

Q.P. Code :

2

- 5 a) What problems can occur in a distributed system due to the failure of link?
What are the ways by which recovery can take place? 10
- b) Explain the phases of query processing in distributed database. 10
- 6 Answer any two: 20
- a) Bond Energy Algorithm
 - b) Design issues of Distributed Database
 - c) 3PC
 - d) Transaction management model for distributed System.
-

MOBILE COMM. & COMPUTING

Q.P. Code : 581802

(3 Hours)

[Total Marks : 80]

- N.B. :** (1) Question No.1 is Compulsory.
 (2) Attempt any Three questions out of remaining questions.
 (3) Make suitable assumptions whenever necessary.

1. a) Explain in short Time slot hierarchy of GSM system. 10
 b) Explain in short Wireless Local Loop Architecture. 10
 c) What are the general problems of satellite signals travelling from a satellite to a receiver ? 10
 d) Explain how Mobile originated call (MOC) work.? 10
 e) What are the characteristics of SIM? 10
2. a) List the entities of mobile IP and describe data transfer from a mobile node to a fixed node and vice versa. 10
 b) What are the modifications require to an existing GSM network to be upgraded to GPRS, Explain with the help of diagram. 10
3. a) Explain in Detail IEEE 802.11 MAC sublayer. 10
 b) Compare 3G and 4G. 10
4. a) Explain in detail Bluetooth Protocol Architecture. 10
 b) Explain in detail how Subscriber Authentication is done GSM. 10
5. a) Compare HIPERLAN 2, BLUETOOTH, IEEE 802.11. 10
 b) What are the different types of Handover in Satellite systems? 10
 Explain in Detail.
6. Write short notes on the following: 20
 - a) Satellite orbits.
 - b) Android framework.
 - c) Cellular IP.
 - d) Digital Certificate.