QP Code : **MV-18077**

(3 hours)   [Total Marks : 100

N.B. (1) Question no. **1** is **compulsory**.
 (2) **Attempt** any **four** out of remaining **six** questions.
 (3) **Draw** neat and clean **diagrams**.
 (4) State your assumptions **clearly**.
 (5) **Illustrate** with suitable examples.

10

1. (a) Develop the class diagram for the following scenario :—
 School has one or more departments. Department offers one or more subjects.
 A particular subject will be offered by only one department. Department has
 instructors and instructors can work for one or more departments. Student can enrol
 in up to 5 subjects in a school. Instructor can teach up to 3 subjects. The same
 subject can be taught by the different instructors. Students can be enrolled in more   10
 than one school.
 (b) Realise any of the many-to-many association between two classes of above example
 using Java code.   10
                                                    10

2. (a) Explain function point Analysis and its relationship with LOC and COCOMO.
 (b) Explain the methods of identifying objects for the problem statement.   10
                                                    10

3. (a) Define Design Patterns. Classify Design Patterns.
 (b) Explain the process of CMM.   10
                                                    10

4. (a) Elaborate on User Acceptance Testing.
 (b) Explain the identification of subsystems and interfaces.   10
                                                    10

5. (a) Explain th various characteristics of the requirements.
 (b) Explain software Configuration item identification.   10
                                                    10

6. (a) Explain and compare FTR and walk through.
 (b) Explain the process of debugging.   20

7. Write short notes on (any **two**) :—
 (a) Version Control and Change Control
 (b) Architectural Styles
 (c) Risk management
 (d) Agile process.

Con. 9596-14.

QP Code : MV-18124

(3 Hours)   **[Total Marks : 100**

N.B.:

1. Q. 1 is compulsory.
2. Answer any four questions from remaining questions.
3. Assume suitable data if necessary.
4. Figures to the right indicate full marks.

Q.1.	a)	Explain instruction pairing on Pentium processor.	05
	b)	Explain control and structural hazards with respect to superscalar processor architecture.	05
	c)	Write short note on RISC evaluation.	05
	d)	Explain IA 64 Itanium processor architecture in brief.	05
Q.2.	a)	What is descriptor? Explain Code and Data segment descriptor with neat diagram.	10
	b)	Explain protection mechanism implemented on 80386DX..	10
Q.3.	a)	Explain Integer pipeline of Pentium processor.	10
	b)	Explain Pentium processor architecture with block diagram.	10
Q.4.	a)	Explain Pentium II software changes in detail.	10
	b)	Explain branch prediction logic implemented on Pentium processor.	10
Q.5.	a)	Explain cache/MMU organization of SuperSPARC processor.	10
	b)	Explain, in detail, register file of SPARC processor.	10
Q.6.	a)	Explain the features of USB bus. Also, explain features of ISA bus.	10
	b)	Write short note on	10
		I. ATA	
		II. SCSI	
Q.7.		Write short note on	
	a)	Cache memory organization	05
	b)	Pentium IV processor	05
	c)	Systolic architecture	05
	d)	Operating modes of 80386	05

Con. 10849-14.
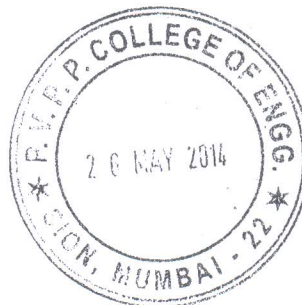
Q P Code : MV-18167

(3 Hours) [Total Marks : 100]

N.B. : (1) Questions No. 1 is compulsory.
     (2) **Solve** any **four** from the **remaining.**

1. (a) Explain the role of automata in compiler theory.   5
   (b) Compare the performance of compilers and interpreters   5
   (c) What the advantages of assemblers with multiple passes? How many passes   5
       should be there in a typical compiler?
   (d) What are the features of macro to be included in the preprocessor.   5

2. (a) What are the various phases of a compiler taking the following as input statement   10
       while $(a > b)$
            $c = b + 2.0 * a - 50;$

   (b) Explain the design of absolute loaders and mention all data structures in detail.   10

3. (a) State the differences between operator precedence passing and Recursive   10
       descent passing with examples.
   (b) Explain how the code generator phase of a compiler handles control structures   10
       and procedure calls.

4. (a) Design a predictive parser for the given grammar. Mention all the steps   10
       $E \rightarrow TQ$
       $T \rightarrow FR$
       $Q \rightarrow + TQ \mid -TQ \mid E$
       $R \rightarrow * FR \mid / FR \mid E$
       $F \rightarrow (E) \mid id$

   (b) Explain the significance and the differences between a linkage editor and a   10
       linking loader.

5. (a) Explain the different error recovery techniques used in a compiler.   10
   (b) Explain Run time storage organization in detail.   10

6. (a) What are the different forms of intermediate code generated.   10
   (b) Explain the working of a macro preprocessor with neat flow charts and data bases.   10

7. Write short notes on (any **two**)   20
      (a) Garbage Collection and Compaction
      (b) Java Compiler Environment
      (c) Syntax Directed Translation.

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Con. 11775-14.

QP Code :MV-18210

(3 Hours) [Total Marks : 100

N.B. : (1) Question **No. 1** is **Compulsory**.
(2) Attempt any **four** from remaining **six** questions.

1. (a) Explain Distance Vector Routing and Hierarchical routing with examples.   10
   (b) Explain the SONET Frame structure.   10

2. (a) Compare RIP and OSPF Protocol. Explain OSPF operations with the help of   10
        common header.
   (b) What is RTP ? Explain the RTP Frame format in detail.   10

3. (a) Differentiate between HUB, BRIDGE, ROUTER on the basis of collision and   5
        broadcast domain.
   (b) Explain different traffic descriptors used in ATM.   10
   (c) Explain the following traffic characteristics : Delay, Jitter, Burstiness, Throughput,   5
        Lost Packet Percentage.

4. (a) Explain in detail Multiprotocol Label Switching (MPLS).   10
   (b) What are different Queuing Models, Explain any one in detail.   10

5. (a) Explain NAT, Dynamic NAT, Static NAT. What are advantages and disadvantages   10
        of NAT.
   (b) Compare X.25 and Frame Relay.   10

6. (a) Explain Stream Control Transport Protocol, its services and Features.   10
   (b) Explain H.323 std. in detail.   10

7. Write short note on any two   20
   (a) SNMP
   (b) X.75
   (c) SAN
   (d) DMZ, its working, single firewall and double firewall system.

Con. 12367-14.

QP Code : MV-18251

TIME - 3 Hrs   **Marks – 100**

Note: 1. Question 1 is compulsory
       2. Answer any 4 out of the remaining questions.
       3. Answers to sub questions must be written together

Q1. A bank wants to develop a data warehouse for effective decision-making about their loan schemes. The bank provides loans to customers for various purposes like House Building Loan, Car Loan, Educational Loan, Personal Loan, etc. The whole country is categorized into a number of regions, namely, North, South, East and West. Each region consists of a set of states. Loan is disbursed to customers at interest rates that change from time to time. Also, at any given point of time, the different types of loans have different rates. The data warehouse should record an entry for each disbursement of loan to customer.

    a) Design an information package diagram for the application.   **(05)**
    b) Design a star schema for the data warehouse clearly identifying the fact table(s), Dimensional table(s), their attributes and measures.   **(05)**
    c) Describe an algorithm the bank can use to cluster its potential customers, based on their attributes.   **(05)**
    d) Describe how data warehousing and mining help the bank increase its productivity.   **(05)**

Q2. Define the following terms by giving examples
    (a) Fact Constellation
    (b) Snowflake Schema
    (c) Aggregate Fact tables
    (d) Snapshot and Transaction Tables   **(5 X 4 =20)**

Q 3.(a) Consider an online travel agency that helps customers to plan and schedule their holidays. The agency maintains all past history in a data warehouse. Describe the different classes of users who could access this data warehouse and design the information delivery framework for this data warehouse.   **(10)**

    (b) Describe the working of the K-Means clustering algorithm with the help of the a sample dataset.   **(10)**

Q 4.(a) Consider a data warehouse for a hospital, where there are three dimensions: (1) Doctor (2) Patient (3) Time; and two measures: (1) Count & (2) Fees; For this example create a OLAP cube and describe the following OLAP operations: (1) Slice (2) Dice (3) Rollup (4) Drill Down (5) Pivot   **(10)**

Con. 13112-14.   **[TURN OVER**

(b) Consider the following transaction database:

TID	Items
01	A, B, C, D
02	A, B, C, D, E, G
03	A, C, G, H, K
04	B, C, D, E, K
05	D, E, F, H, L
06	A, B, C, D, L
07	B, I, E, K, L
08	A, B, D, E, K
09	A, E, F, H, L
10	B, C, D, F

Apply the **Apriori** algorithm with minimum support of 30% and minimum confidence of 70%, and find all the association rules in the data set. **(10)**

Q 5.(a)

Transaction	Income	Credit	Decision
1	Very High	Excellent	AUTHORIZE
2	High	Good	AUTHORIZE
3	Medium	Excellent	AUTHORIZE
4	High	Good	AUTHORIZE
5	Very High	Good	AUTHORIZE
6	Medium	Excellent	AUTHORIZE
7	High	Bad	REQUEST ID
8	Medium	Bad	REQUEST ID
9	High	Bad	REJECT
10	Low	Bad	CALL POLICE

Using the above table illustrate any one classification technique. Further indicate how we can classify a new transaction, with **(Income = Medium and Credit=Good)** . **(10)**

(b) (a) Describe clearly the different steps of the ETL (Extract - Transform - Load) cycle in Data Warehousing **(10)**

Q6.(a) Give a brief description of web mining **(10)**

    (b) Explain clearly the role of Meta data in a data warehouse. **(10)**

Q7. Write detailed notes on:–
    (a) Data Warehouse Architecture
    (b) Hierarchical Clustering methods. **(10 X 2 = 20)**