QP Code : 26593 MAY-2016

(3 Hours) [Total Marks : 100

Note: [1] Question no.1 is compulsory.
[2] Attempt any four from remaining six.

Q.1:(a) What is meant by object initialization? What is its need? Explain with the help of a suitable
example. 10
(b) What is a friend function? Explain its need and importance in object oriented
programming 10

Q.2:(a) Write a short note on operator overloading & function overriding with examples. 10
(b) What is Inheritance? What are the different visibility modes observed while deriving a class from
a base class? 10

Q.3: (a) Write a program to overload the + operator to concatenate two strings. 10
(b) What are virtual functions and pure virtual functions? Explain their utility with the help of an
example. 10

Q.4:(a) What is Exception Handling and how is it implemented in C++? Elaborate it with the help of an
example. 10
(b) Write a C++ program to store temperature of two different cities for a week and display it.
10

Q.5: Differentiate between the following with examples: 20
I. Constructors and destructors
II. call-by-value and call-by-reference
III. try, catch & throw
IV. this pointer

Q.6:(a) What do you mean by templates? Explain the creation and usage of function templates for
executing linear search on an array. 10
(b) What is the concept of polymorphism in object oriented programming? Explain with the help of
an example. 10

Q.7:(a) Create a class student containing data members as
Roll-no, Stu_name, Stu_address, Stu_class, Stu_dob, Stu_percentage.
Include member functions to accomplish the following : 20
(i) Design a constructor to automatically generate Roll_no for the students.
(ii) Accept student details from the user.
(iii) Calculate the student age from his birth year.
(iv) Assign grade to the student as follows :

Grade percentage criteria
A - 100 < Percentage => 90%
B - 90 < percentage => 80%
C - 80 < percentage => 70%
D - 70 < percentage => 60%
E - percentage < 60

Write appropriate main function for the above.

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QP Code : 26586

(3 Hours) [Total Marks: 100

N.B.: (1) Question No. **1** is **Compulsory**.
(2) Attempt any **four** questions from the remaining **six** questions.
(3) Answers to questions should be **grouped** and written **together**.
(4) Draw the **diagrams** wherever **required**.

Q.1 (a) A local authority wishes to keep a database of all its schools and the school children   10
that are attending each school. The system should also be able to record teachers
available to be employed at a school and be able to show which teachers teach which
children and in which school. Each school has one head teacher whose responsibility
is to manage their individual school.

Construct an ER diagram for the above school system. Document all assumptions that
you make for designing.

(b) Write schema definition and normalize all tables to 3NF for the above ER diagram.   10

Q.2 (a) What is transaction? Explain the ACID properties of transaction.   10
(b) Explain Bell-LaPadula model with example   10

Q.3 (a) Discuss the various steps of processing a high level query.   10
(b) What is serializability? Explain conflict serializability.   10

Q.4 (a) Explain the architecture of DBMS.   10
(b) What is deadlock? Discuss deadlock detection and prevention techniques.   10

Q.5 (a) What is normalization? What are the two required conditions for normalization   10
through decomposition of data?
(b) Discuss hash based indexing in detail.   10

Q.6 (a) Find the candidate keys and closure for given set of functional dependencies.   10
Consider the relation R(A, B, C, D, E) with following functional dependencies
$A \rightarrow BC$, $CD \rightarrow E$, $B \rightarrow D$, $E \rightarrow A$.

(b) Differentiate the following   10
(i) Physical and Logical data independence
(ii) Generalization and Specialization

Q.7 Write short notes on any **four** of the following:--   20
(a) Triggers
(b) Views
(c) Strict 2PL
(d) Network model
(e) Outer Join

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QP Code : 26588

(3 Hours)

[Total Marks :100]

Note:

a) Question No. 1 is compulsory
b) Attempt any four from the remaining six questions
c) Answers to sub questions should be answered together
d) Illustrate answers with diagrams wherever necessary

Q1. (a) Why OSI model was created? How it works? Explain the difference between OSI and TCP/IP model. 10

(b) What are wired transmission impairments? Discuss different types of impairments that can affect the wired transmission. 10

Q2. (a) Describe ALOHA multiple access techniques and its different forms with performance. 10

(b) What are the salient features of IEEE 802.5 and 802.11? 10

Q3. (a) What are error correction codes? Construct the hamming code for the bit sequence 10011101. 10

(b) Differentiate between distance vector routing and link state routing. 10

Q4. (a) With respect to the IP address - Discuss Class A,B,C,D and E addresses, sub-netting, masking and super-netting. 10

(b) Explain Sliding Window Protocol with example. Explain the concept of Go Back n and Selective Repeat. 10

Q5. (a) Discuss the use of hub, bridges, switch, router and gateway in networking. Also specify the layers in which they are used. 10

(b) Explain PCM (Pulse code Modulation) 10

Q6. (a) What is network security? Explain the DES algorithm for symmetric encryption. 10

(b) Discuss various collision free protocols. 10

Q7. Write short notes on: (Any Four) 20
   a. DHCP
   b. GEO,LEO and MEO
   c. Flooding
   d. DNS
   e. HDLC

Q.P. Code : 26599

(3 Hours) [Total Marks : 100

N.B. : (1) Question No. 1 is **compulsory**.
(2) Answer **any four** questions out of the remaining six questions.
(3) **All questions carry equal** marks

1. (A) Explain **the Agie** model and concurrent model? 10
   (B) Explain **COCOMO** -I model in detail. 10

2. (A) Explain **WBS in** detail with example. 10
   (B) **What is structured walkthrough** and how they are carried out? 10

3. (A) **Describe any two software** size estimation techniques. 10
   (B) **Compare and contrast** White box and black box testing. 10

4. (A) **What is meant** by Software reliability? Explain different reliability metrics. 10
   Explain any one reliability growth model.
   (B) What are the components of use case diagram? Explain the usage with Suitable diagram. 10

5. (A) Explain McCall's software quality model in details. 10
   (B) Explain SEI Capability Maturity Model (CMM). 10

6. (A) Explain in brief module coupling and module cohesion. 10
   (B) List and explain different decomposition techniques with suitable example. 10

7. Write short notes on (any **four**): 20
   (a) RAD model
   (b) SRS
   (c) Reverse Engineering
   (d) Formal technical review
   (e) Putman Model

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Q.P. Code : 26602

(3 Hours) [Total Marks : 100

N.B. : (1) Question No.1 is **compulsory**.
(2) Attempt any **FOUR** out of the remaining **SIX** questions.
(3) **Figures** to the right indicate **full** marks

1. a) What is Information? Explain the concept of Information? Explain the contemporary approach to information. 10

(b) What is MIS? Explain the major types of system in organization. 10

2. (a) Explain the Porter's Competitive model. 10
(b) What are the different functions of a manager and how MIS helps to achieve them? 10

3. (a) What is Business process? Explain the types of Business information from a functional perspective 10
(b) What are the contents of MIS plan? What is the purpose of each of them? 10

4. (a) What are the difference between top management, middle management and operation management plan in terms of goal, scope and content ? 10
(b) What is bullwhip effect? How supply management helps to reduce the bullwhip effect? 10

5. (a) Distinguish between long-range and short-range planning? Why a long-range plan is necessary in development of MIS? 10
(b) "The selection of Information Technology is a Strategic Decision in MIS development". Explain it. 10

6. (a) What are the parameters used in the evaluation of IT before decision is made? 10
(b) What are the problems does the System Analyst face in Ascertaining the information requirement at various level of management and how these problems tackled? 10

7. Write short notes on 20
    (i) Expert system
    (ii) Simon's Decision model
    (iii) CRM
    (iv) Levitt's model

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