



# Silver Oak College of Engineering & Technology

## Department of Examinations

Exam Completed - Question Papers

Mid Semester Exam (Winter-2014 Session)

**Branch: Information Technology**

**Semester: III**

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H.O.D (IT)

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GTU COORDINATOR

**SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY****B.E. Semester- (III) - MID SEMESTER EXAMINATION (Winter'14 Session)****SUBJECT: Database Management System (2130702)****Date:** 14-10-2014**TIME:** 11:00 A.M. to 12:30 P.M**Total Marks:** 40

- Instructions:** 1. Question one is compulsory.  
 2. **Attempt any three** from rest of the questions  
 3. Figures to the right indicate full marks.  
 4. Assume suitable data if required.

Q.1 Each Question is of one mark. There is no negative mark. (7)

- 1) What is DBA?
 

a) Design Basic Administrator	b) Database Administrator
c) Design Architect	d) Database Architect
- 2) The \_\_\_\_\_ clause allows us to select only those rows in the result relation of the \_\_\_\_ clause that satisfy a specified predicate.
 

a) Where, from	b) From, select
c) Select, from	d) From, where
- 3) Which of the following is not a function of DBA?
 

a) Network Maintenance	b) Schema Definition
c) Routine Maintenance	d) Authorization for Data access
- 4) What Is Database Schema?
 

a) logical design of the database	b) Rows in a table
c) Column of the table	d) Instance of a database
- 5) Which of the following is Relation Algebra Operation?
 

a) Select	b) Rename
c) Union	d) All the Above
- 6) E-R Diagram Stands for?
 

a) Enterprise Resource	b) Enterprise Relation
c) Entity Relationship	d) Entity Request
- 7) Which of the following is not a group function?
 

a) avg()	b) sqrt()
c) sum()	d) max()

Q.2 (a) Explain the purpose of Database Systems compare to File System? Explain the view level architecture of a Database system. (6)

(b) What is functional dependency? Explain trivial and non-trivial FD with example. (5)

Given relation R with attributes A, B, C, D, E, F and set of FDs as  $A \rightarrow BC$ ,  $E \rightarrow CF$ ,  $B \rightarrow E$  and  $CD \rightarrow EF$ . Find out closure  $\{A, B\}^+$  of the set of attributes.

- Q.3 (a) What is a transaction explain with example. Explain ACID properties. (6)  
 (b) Draw and Explain the steps involved in Query Processing. (5)

- Q.4 (a) Explain Conflict and View Serializability with example. (6)  
 (b) Explain different types of Outer Join with example. Explain any two aggregate functions of SQL. (5)

- Q.5 (a) EMPLOYEE TABLE: (6)

emp_num	emp_fname	emp_lname	job_class	Hiredate
101	Rahul	Shah	2	16-aug-1984
102	Ankita	Rajput	3	12-feb-1977
103	Arjun	Patel	2	09-sep-1982
104	Payal	Patel	1	14-mar-2001
105	Maya	Modi	1	12-jan-2012

Job Table:

job_code	job_class	Change_hrs
A-1	1	5.5
A-2	2	10.3
A-3	3	4.8

- 1) Insert the values in employee table (106, William, Smithfield, PRG, 10/31/2002)
- 2) Remove the employees from the employee table where the hiredate is before 1-Jan-80.
- 3) Show the employee first and last names and their job class description and Change\_hrs.
- 4) Find the hiredate of employee Rahul.
- 5) Write a query that displays the employee's names with the first letter capitalized and all other letters lowercase, and the length of the names, for all employees whose name starts with P, A, or M. Give each column an appropriate label. Sort the results by the employees' last names.
- 6) Count total number of Employees.

- (b) Explain Extended E-R features? Draw E-R diagram of a university database? (5)

\*\*\*\*\*BEST OF LUCK\*\*\*\*\*

**SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY****B.E. Semester- (III) - MID SEMESTER EXAMINATION (Winter'14 Session)****SUBJECT: Data Structures (2130702)****Date: 15-10-2014****TIME: 11:00 A.M. to 12:30 P.M****Total Marks: 40**

- Instructions:**
1. Question one is compulsory.
  2. Figures to the right indicate full marks.
  3. Assume suitable data if required.

**Q.1 Answer the following Multiple Choice Questions :- 07**

- (i) The term "data structures" refers to \_\_\_\_\_ and interrelationship between them.
- (i) Organization of data element                      (ii) Coding standards  
(iii) Programming language statement              (iv) None of these
- (ii) What will be the base address of two dimensional 3X3 float array "A" having address=65540 for the element A[0][2] in row-major representation?
- (i) 65548                      (ii) 65532                      (iii) 65554                      (iv) 65500
- (iii) Degree of a leaf node in a Tree is \_\_\_\_\_.
- (i) 0                      (ii) 1                      (iii) 2                      (iv) 3
- (iv) The maximum number of nodes on level – h of a binary tree can be given as:
- (i) 2h                      (ii)  $2^h$                       (iii)  $2^{h+1}$                       (iv)  $2^{h-1}$
- (v) An edge that has identical end points is called
- (i) Multi- path                      (ii) Loop                      (iii) Cycle                      (iv) Multi-edge
- (vi) Total number of edges containing the node  $u$  are called
- (i) Indegree                      (ii) Out degree                      (iii) Degree                      (iv) None of these
- (vii) Evaluation of postfix expression  $5\ 2\ 3\ +\ * \ 4\ -$  is:
- (i) 5                      (ii) 20                      (iii) 21                      (iv) None of these

**Q.2 (a) Write an algorithm to convert a parenthesized infix expression into postfix. 06****(b) Write algorithms/program to implement Insert and Delete operation into a Circular Queue. 05****OR****Q.2. (a) Trace the conversion of infix to postfix expression in tabular form. 06**

(i)  $(A + B * C / D - E + F / G / (H + I))$

(ii)  $(A + B) * C + D / (B + A * C) + D$

(b) Write an algorithm for deleting a node from a doubly linked list. 05

**Q.3** (a) Write a recursive algorithm for "Tower of Hanoi" problem. 06

(b) What is sparse matrix? Explain memory representation of sparse matrix. 03

(c) What do you mean by Data Structures? Give the difference between Primitive and Non-primitive data structures. 02

**OR**

**Q.3.** (a) Write a short note on the following: 06

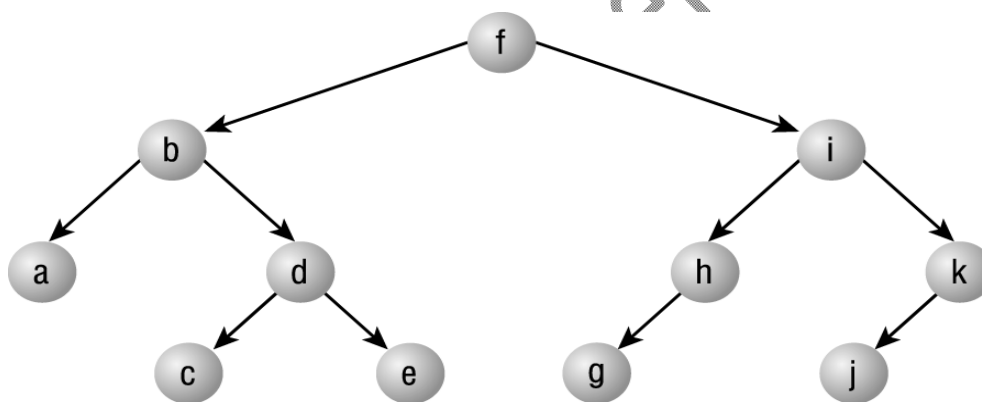
(i) Deque (ii) Priority Queue

(b) How to add two polynomial expressions using linked list? Explain with example. 03

(c) What is an active and book-keeping operation? Explain with example. 02

**Q.4** (a) Write procedures and sub algorithms to implement stack as singly linked list. 07

(b) Write the Preorder, Inorder, Converse Postorder and Converse Inorder traversals for the following binary tree. 04



**OR**

**Q.4** (a) Discuss the advantages and disadvantages of linked list over an array. Also discuss the limitations of various kinds of linked lists. 05

(b) Consider the following queue, where queue is a circular queue having 5 memory cells. 02

Front=2, Rear=4

Queue: \_, A, C, D, \_

Describe queue as following operations take place:

- E is added to the queue
- Two letters are deleted
- R is added to the queue
- S is added to the queue

(c) Explain Time & Space analysis of the algorithm. 04

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**SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY****B.E. Semester- (III) - MID SEMESTER EXAMINATION (winter'14 Session)****SUBJECT: Engineering Economics and Management (2130004)****Date: 10-10-2014****TIME: 11:00 A.M. to 12:30 P.M****Total Marks: 40**

- Instructions:**
1. Question **one** is compulsory.
  2. **Attempt any three** from rest of the questions
  3. Figures to the right indicate full marks.
  4. Assume suitable data if required.

Q 1

07

- 1) If Demand is Price inelastic then which of the following applies
 

A) $E=1$	B) $E=0$
C) $E>1$	D) $E<1$
- 2) Which of the following is not the stage of Law of variable proportion?
 

A) Stage of Increasing returns	B) Stage of Constant returns
C) Stage of Demising returns	D) Stage of Negative returns
- 3) Which of the following stands true for the Net Domestic Product?
 

A) $NDP = NNP - \text{Depreciation}$	B) $NDP = NNP - \text{Depreciation}$
C) $NDP = \text{National Income} - \text{Depreciation}$	D) $NDP = GDP - \text{Depreciation}$
- 4) Which of the following is the basic need of Maslow's Hierarchy Theory?
 

A) Self – actualization
B) Safety Needs
C) Physiological Needs
D) Esteem Needs
- 5) Which of the following is NOT one of the four P's of marketing?
 

A) Pattern	B) Product
C) Price	D) Place
- 6) Which of the following is NOT one of the concepts of Marketing?
 

A) Production concept	B) Product concept
C) Price concept	D) Selling concept
- 7) Which of the following is NOT the market segmentation aspect?
 

A) Geographical Segmentation
B) Demographical Segmentation
C) Promotion Segmentation
D) Psychographic Segmentation

Q 2

- a) Please justify "Management is a Science as well as an Art". 06
- b) Define Perfectly Competitive market with its characteristics. 05

- Q 3 a) Describe Contribution of management by Abraham Maslow's Hierarchy Theory of needs with diagram. 06
- b) Define Production function. Discuss various factors of production. 05
- Q 4 Explain Directing and Controlling as functions of management and two natures of
- a) Planning and Organizing. 05
- b) Explain the following: 06
- 1) Short run Cost and Long run Cost
  - 2) Fixed and Variable Cost
  - 3) Opportunity Cost
  - 4) Average and Marginal Cost
- Q 5 a) Define demand forecasting and explain three methods of demand forecasting. 05
- b) What is Demand? Explain Law of Demand. 06

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Exam Completed Paper for Reference

**SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY****B.E. Semester- (III) - MID SEMESTER EXAMINATION (Winter'14 Session)****SUBJECT: Advanced Engineering Mathematics (2130002)****Date:09-10-2014****TIME: 11:00 A.M. to 12:45 P.M****Total Marks: 40**

- Instructions:** 1. Question one is compulsory.  
 2. Attempt any three from rest of the questions  
 3. Figures to the right indicate full marks.  
 4. Assume suitable data if required

**Q-1 Select the correct answer from the option given for each question.**

- (1)  $\Gamma(n+1) = \underline{\hspace{2cm}}$ . **07**  
 (a)  $n\Gamma(n)$  (b)  $n\Gamma(n+1)$   
 (c)  $(n+1)\Gamma(n+1)$  (d)  $(n-1)\Gamma(n-1)$
- (2) Find the Order and Degree of  $\left[ \frac{dy}{dx} + y \right]^{\frac{1}{2}} = \sin x$   
 (a) Order 1, Degree 1 (b) Order 1, Degree 2  
 (c) Order 2, Degree 1 (d) Order 2, Degree 2
- (3) Solve  $xy' + y = 0$ .  
 (a)  $x + y = c$  (b)  $xy = c$   
 (c)  $x/y = c$  (d)  $x - y = c$
- (4) Two solutions  $y_1(x)$  and  $y_2(x)$  are said to be linearly dependent if ?  
 (a)  $w(y_1, y_2) \neq 0$  (b)  $w(y_1, y_2) = 0$   
 (c)  $w(y_1, y_2) = 1$  (d) None of these
- (5) Laplace of  $\sin kt = \underline{\hspace{2cm}}$   
 (a)  $\frac{k}{s^2 + k^2}$  (b)  $\frac{s}{s^2 + k^2}$   
 (c)  $\frac{k}{s^2 - k^2}$  (d)  $\frac{s}{s^2 - k^2}$
- (6) Laplace of  $3^t = \underline{\hspace{2cm}}$   
 (a)  $\frac{1}{s-3}$  (b)  $\frac{1}{(s-\ln 3)}$   
 (c)  $e^{-\pi s}$  (d) None of these
- (7) The Particular Integral of  $(D+1)^2 y = e^{-x}$  is?  
 (a)  $\frac{x^2}{2} e^{-x}$  (b)  $\frac{x^2}{2} e^x$   
 (c)  $x^2 e^{-x}$  (d)  $x e^{-x}$



- Q.2 (a)** Using method of undetermined coefficients, find the general solution of  $y'' + 2y' + 10y = 25x^2 + 3$  **6**
- (b)** Obtain the Fourier series to represent the function **5**  
 $f(x) = \frac{1}{4}(\pi - x)^2, 0 < x < 2\pi$
- Q.3 (a)** Solve using Laplace Transform **6**  
 $y'' + 2y' + y = e^{-t}, y(0) = -1$  and  $y'(0) = 1$
- (b)** Solve  $\frac{d^2y}{dx^2} + 4y = \tan 2x$  by method of variation parameter. **5**
- Q.4 (a)** (i) Solve:  $(x+1)\frac{dy}{dx} - y = e^{3x}(x+1)^2$  **6**  
(ii) Solve the D.E. by the exact differential.  
 $[(x+1)e^x - e^y]dx - xe^y dy = 0, y(1) = 0$
- (b)** Find Fourier Series for  $f(x) = 2x - x^2$  in the interval (0,3) **5**
- Q.5 (a)** (i) Using convolution theorem, determine  $L^{-1}\left\{\frac{a}{s^2(s^2+a^2)}\right\}$  **6**  
(ii) Find  $L^{-1}\left\{\ln\left(1 + \frac{w^2}{s^2}\right)\right\}$
- (b)** Solve  $(D^2 + 3D + 2)y = \sin(e^x)$  **5**

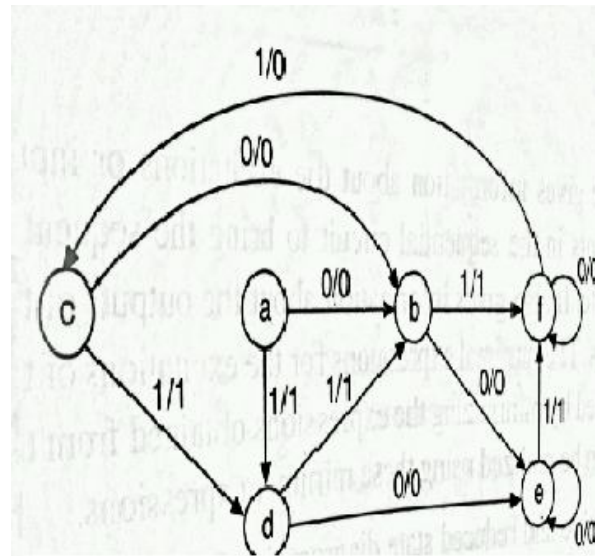
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**SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY****B.E. Semester- (III) - MID SEMESTER EXAMINATION (winter'14 Session)****SUBJECT: Digital Electronics (2131004)****Date:** 11-10-2014**TIME:** 11:00 A.M. to 12:30 P.M**Total Marks:** 40

- Instructions:**
1. Question **one** is compulsory.
  2. **Attempt any three** from rest of the questions
  3. Figures to the right indicate full marks.
  4. Assume suitable data if required.

- Q.1 (a) What is the 11's complement of  $(935)_{10}$ ? 07
- a) 286 b) 132  
 c) 265 d) 824
- (b) Which of following is universal flip flop?
- a) RS flip flop b) D flip flop  
 c) None of These d) Master Slave D flip flop
- (c) In a sequential circuit the next state is determined by \_\_\_\_\_ and \_\_\_\_\_
- a) state variable, current state b) Current state, flip flop output  
 c) Current state and external input d) Input and clock signal applied
- (d) \_\_\_\_\_ is said to occur when multiple internal variables change due to change in one input variable
- a) Hold delay b) Hold and Wait  
 c) Clock Skew d) Race condition
- (e) 2 Nibble consist of \_\_\_\_\_ bits
- a) 2 b) 6  
 c) 4 d) 8
- (f) Addition of two octal numbers "36" and "71" results in \_\_\_\_\_
- a) 213 b) 123  
 c) 127 d) 345
- (g) What is the gray code of  $(110101)_2$
- a) 010110 b) 110101  
 c) 100010 d) 101111
- Q.2 (a) Simplify the following Boolean function by means of the Quine McClusky method:  $F(A,B,C,D,E) = \sum(1,2,4,9,16,20,28,38,39,52,60)$  06
- (b) What is Multiplexer? Draw and explain logic circuit of 16:1 MUX using 4:1 MUX. 05

- Q.3 (a) What is Synchronous Counter? Construct synchronous counter which counts 2, 6, 3, 9, 11 using T flip flop. 06
- (b) With logic circuit explain the working of 4-bit magnitude comparator. 05
- Q.4 (a) Explain PLA in detail. 06
- (b) Reduce the State Diagram given below. Make state table and transition table of reduced state diagram. 05



- Q.5 (a) Convert the decimal number 167 to base 3, base 4, base 7, base 8 and base 16 05
- (b) Obtain the simplified expression in sum of product for the following Boolean functions. 06
- (a)  $F = \Sigma(0,1,4,5,10,11,12,14)$  using K- MAP and
- (b)  $F = \Sigma(2, 3, 7, 11, 12, 13, 14, 15)$  using V-MAP.