MET

INSTITUTE OF COMPUTER SCIENCE

UNIVERSITY QUESTION PAPERS (ICS)

RE-EXAM PAPER MAY-2010

SEM-I

No. File

MCA Sem I (may-2010)
System Analysis Design

n. 3376-10.

JR–1216

(3 Hours) [Total Marks : 100

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

1. a) Directorate of Technical Education has adopted online admission process for MCA. You all were the part of the system. Draw CLD,DFD up to 2nd level, ER diagram and data dictionary along with input & output screen. 15

   b) What is goal of input & output design? 5

2. a) What is purpose behind Normalization? How does one normalize file? Illustrate. 10

   b) Discuss the steps in prototype method, indicating the expected outcome for each step 10

3. a) What are the elements of cost/benefit analysis? Take a suitable example & give a system analysis & design? 10

   b) What role does observation play in systems investigation? 10

4. a) Explain different phases of SDLC. What are the role of the system analyst in system analysis & design. 10

   b) Compare & Contrast Conventional testing & Object oriented testing. 10

5. a) What are tools in context of system analysis and design? What types of tools are there? 10

   b) What is structured walkthroughs when it is conducted? What is the role of the user in this stage. 10

6. a) Discuss in detail any three process model along with advantages & disadvantages 10

   b) What are the fact finding techniques. What are the drawbacks of Questionnair. 10

7. Write a short note on :– 20

   A) HIPO Charts

   B) Activities of Implementation

   C) Debugging

   D) SRS.

Sub: Discrete Mathematics.

(3 Hours) [Total Marks : 100

MCA Sem I May-2010

COA

Con No–5

Con. 3291–10. (REVISED COURSE) JR–1207

(3 Hours) [Total Marks : 100

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

1. a) Write a short note on full adder. Draw the circuit diagram 5
   b) Write a short note on decoder 5
   c) Discuss displacement addressing mode with diagram 5
   d) Design 8-to-1 Multiplexer. 5

2. a) What do you mean by RAID? Explain various RAID Levels 10
   b) What is virtual memory? How it is useful? Define the benchmarking and performance techniques. 10

3. a) Discuss the various Superscalar Instruction Issue policies. 10
   b) Discuss the categories of computer systems proposed by Flynn along with suitable diagram. 10

4. a) Explain the working of a J-K Flip Flop. Explain all its states 10
   b) Write a note on six stage instruction pipeline and effect of conditional branching on the same. 10

5. a) Explain the basic functionality of control unit. Explain various control signals. 10
   b) What are the different types of parallel processing system? What is their significance in practical parallel processing approaches? Explain 10

6. Compare the following: 20
   a) DRAM vs SRAM
   b) Sequential vs Combinational Circuit
   c) Micro-programmed vs Hard wired control
   d) RISC vs CISC

7. Write short note on any **TWO** of the following: 20
   (i) Virtual Memory
   (ii) K-Maps
   (iii) Multiplexers vs Demultiplexers
   (iv) Associative Memory.

MCA - SEM - I - May - 2010.
Sub: Discrete Mathematics.

. 3298-10. JR–1213

(3 Hours) [Total Marks : 100

N.B.: (1) Q.1 is compulsory.
(2) Answer any four questions out of remaining six questions.
(3) Assume any necessary data, if required, but justify the same.
(4) Figures to the right indicate marks.

1. (a) (i) Obtain **Conjunctive and disjunctive Normal Form** of the following 5
$(p \wedge q) \vee (\sim p \wedge q \wedge r)$

(ii) Let G be a given group show that the function f: G → G defined by $f(a) = a^2$ 5
is Homomorphism if and only if G is abelian.

(b) (i) Determine C_0, C_1, C_2 if the solution of the recurrence relation 5
$f(n) = C_0 a_n + C_1 a_{n-1} + C_2 a_{n-2}$, is $3^n + 4^n + 2$ such that $f(n) = 6$ for all n.

(ii) Let S = { a, b, c, d, e}. Define R on A = S X S defined by 5

$$M_R = \begin{pmatrix} 1 & 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & 0 \\ 1 & 1 & 1 & 0 & 1 \end{pmatrix}$$

Show that R is an equivalence relation and compute A / R.

2. (a) (i) Determine which of the form given below are **tautology or contradiction** 5
$(p \rightarrow q) \wedge (q \rightarrow r) \rightarrow (p \rightarrow r)$

(ii) Giving appropriate examples define and illustrate : 5
Functionally complete set of connectives

(b) Show that (A, ⊆) is a poset, where A is a collection of all subsets of S, ⊆ is a set 10
inclusion Operation. Draw the Hasse Diagram when S = { u, v, w }

3. (a) (i) Show that $R \rightarrow S$ can be derived from the premises $P \rightarrow (Q \rightarrow S)$ and $(\sim R \vee P)$ 5
and Q

(ii) Test the validity of the following arguments: 5
1. If milk is black then every Crow is white
2. If every Crow is white then it has four legs
3. If every Crow has four legs then every Buffalo is white and brisk
4. The milk is black
5. So, every Buffalo is white

(b) Let A={1,2,3,4,6} and R be the relation on A defined by "x divides y". Write down 10
the relation R, draw diagraph of R and find matrix of R. Check whether R is an equivalence relation

4. (a) (i) Use the method of homogeneous solutions to find a particular solution of 5
recurrence
relation $3a_n = 5a_{n-1} - 2a_{n-2} + n$ with initial condition $a_0 = -1$, $a_1 = 1$

(ii) Solve the difference equation: $a_n + 2a_{n-1} + a_{n-2} = 2^n$ 5

(b) (i) Use mathematical Induction to prove that: 5
$5 + 10 + 15 + \ldots\ldots\ldots\ldots + 5n = 5n(n + 1) / 2$

(ii) Obtain the recurrence relation & initial condition to find the maximum 5
number of regions defined by n lines in a plane. Assume that the lines are not parallel & lines are not intersecting at one point, and n>2. Solve the recurrence relation

[TURN OVER

5. (a)(i) Let $G = \{ e, a, a^2, a^3, a^4, a^5 \}$ be a group under the operation $a^m a^n = a^p$ Where $m+n = p \pmod 6$ show that G and Z_6 are isomorphic 5

(ii) For the cyclic group of order 8 with generator a, find the quotient group corresponding to the subgroups generated a^2 & a^4 respectively. 5

(b) Find the transitive closure of R of the following using by Warshall's algorithm 10
A={a,b,c,d,e} R={ (a,a) (a,d) (b,b) (c,d) (c,e) (d,a) (e,b) (e,e) }

6. (a) (i) Consider the (3,6) encoding function 5
e: $B^3 \rightarrow B^6$ defined by

e(000) = 000000	e(001) = 001100
e(010) = 010011	e(011) = 011111
e(100) = 100101	e(101) = 101001
e(110) = 110110	e(111) = 111010

Show that this encoding function is a group code.

(ii) Given 5

STATE	A	B	C
S_0	S_0	S_0	S_0
S_1	S_2	S_3	S_2
S_2	S_1	S_0	S_3
S_3	S_3	S_2	S_3

Draw the state transition diagram of the above state transition table

(b) (i) Let $V=\{v_0, w, a, b, c\}$ $S=\{a,b,c\}$ and let $\rightarrow$ be a relation on V* given by 5
$v_0 \rightarrow aw$, $w \rightarrow bbw$, $w \rightarrow c$
consider the phase structure grammar $G=(V,S,v_0,\rightarrow)$ Derive the sentence ab^6c. Also draw the derivation tree.

(ii) Consider the following (m,3m) encoding function 5
e: $B^m \rightarrow B^{3m}$ If $b=b_1b_2\text{-----}b_m \in B^m$
define $e(b)=e(b_1b_2\text{---------}b_m)=(b_1b_2\text{---}b_m)\ (b_1b_2\text{---}b_m)\ (b_1b_2\text{---}b_m)$.
Write code words of all 3 bits.

7. (a) Answer the following:- 10
(i) Convert the following **Binary number** into **Decimal and Octal representation:** **$(1011.110)_2$**

(ii) Perform the following **Binary Multiplication & Binary Division:**
1. 00010111 * 0000011
2. 00101010 ÷ 00000110

(iii) Perform the following **Binary Subtraction:** $(00100101)_2 - (00010001)_2$

(iv) Write in symbols of following
1. For all x , $x<4$ or $x>=4$
2. There exits an x such that $x<4$

(b) Determine whether the following relation are reflexive, symmetric or transitive 10
1. For A = {1,2,3} if R = { (1,1) (1,2) (2,1) (2,2) (3, 3) (2,3) (3,1) }
2. "is the father of"

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Introduction to Web Technology

MCA-SEM-I- May-2010.

Sub:- Principles of Eco. & Mangeri

q-Con No. File

Con. 3299-10.

JR–1210

(3 Hours)

[Total Marks : 100

N.B.: 1) Question **No. 1** is compulsory.
2) Attempt **any two** questions from question no. 2-4 .
3) Attempt **any two** questions from question no. 5-7 .
4) Answer to questions should be grouped and written together.
5) All questions carry **equal marks**.

Q1.	A) What do you understand by law of demand? What factors are important in explaining the law of demand?	10
	B) Discuss the contribution of F.W. Taylor towards the development of management thoughts.	10
Q2.	A) Differentiate between monopoly and oligopoly with examples .	10
	B) What is law of supply and Explain briefly elasticity of supply .	10
Q3.	A) Describe in detail internal and external economies of scale .	10
	B) Explain cost output relationship in short term and long term .	10
Q4.	A) what is demand forecasting and brief out methods of demand forecasting .	10
	B) define managerial economics and responsibilities of managerial economist .	10
Q5.	A) What is organizational structure? List out different types of organizational structure and explain any two with the help of examples .	10
	B) Explain the Maslow's theory of motivation.	10
Q6.	A) Discuss the various types of interviews used in selecting employee .	10
	B) Write situation leadership theory with examples .	10
Q7.	Write a short note (any four) : – ➢ Product life cycle ➢ TQM ➢ Performance appraisals ➢ Planning ➢ Decision making .	20

MCA Sem I (May-2010)

Introduction to Web Technology

0 : mT-F-1stHf10

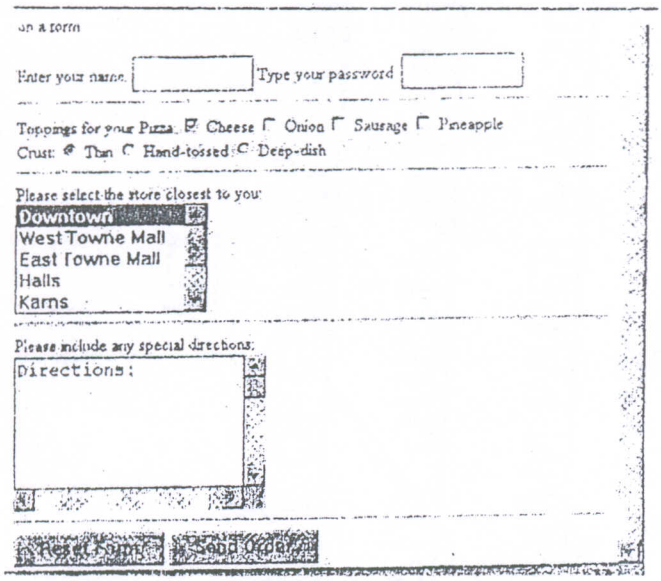
Con. 3303-10. JR-1219

(3 Hours) [Total Marks : 100

N.B. (1) Question No. **1** is **compulsory**.
(2) Answer any **four** questions from Question Nos. **2** to **7**.
(3) **All** questions carry **equal** marks.

1. (a) Attempt any **two** of the following :— 10
   (i) Distinguish between Application and Session Object
   (ii) Math Object in Javascript
   (iii) Text-level tags n HTML.
   (b) Write a JavaScript program to accept a number from the user and check whether the entered number comes in the Fibonacci number or not. 10

2. (a) Write HTML coding to develop following GUI :— 10



   (b) Explain different steps in Web development cycle. 10

3. (a) Explain different types of lists in HTML. 10
   (b) Explain Array as Object in JavaScript with at least four methos. 10

4. (a) Explain user-defined objects and user-defined functions in JavaScript along with example. 10
   (b) What is CSS ? Explain the different types of CSS with example and advantages, disadvantages. 10

5. (a) Explain Request and Response object available in ASP. 10
   (b) What is the difference between Application and Session object ? Explain with example. 10

6. (a) Difference between static and dynamic web pages along with advantages and disadvantages. 10
   (b) Explain different types of website with suitable example. 10

7. (a) Explain linking between frames along with example. Explain the advantages and disadvantages of frames. 10
   (b) What is Cookies ? Explain along with example advantages of cookies. 10