

MCA SEM I (old) May 2013 14/5/13
C.O.A.

74 : 1ST HALF-13 (c)-JP

Con. 665-13.

BS-5110

(3 Hours)

[Total Marks : 100

- N.B.** (1) Question No. 1 is compulsory.
(2) Attempt any **four** questions from remaining Question Nos. 2 to 7.

1. (a) Simplify : 5
$$F(A, B, C, D) = \sum m(0, 2, 4, 8, 9, 10, 11, 12, 15) + d(1, 7, 13)$$
using K-map.
(b) Why flip-flops are called bistable devices ? Explain latch. 5
(c) Draw the block diagram of DMA. 5
(d) Explain half adder along with its circuit diagram and truth table. 5
2. (a) What are Interrupts ? Explain a complete Instruction cycle with interrupts using diagrams. 10
(b) Discuss the control signals in control unit. 10
3. (a) Explain data flow in Fetch cycle, Indirect cycle and Interrupt cycle along with suitable diagrams. 10
(b) Write a note on six stages of instruction pipeline and effect of conditional branching on the same. 10
4. (a) Discuss with the help of diagram functioning of I/O module. 10
(b) Explain the working of S-R flip-flop with all its states. 10
5. (a) List and explain different addressing modes with suitable diagrams. 10
(b) Explain Flynn's classification with suitable diagrams. 10
6. (a) Discuss Bus structure, Bus types, and methods of Arbitration. 10
(b) Differentiate between Hardwired and Microprogrammed control unit. 10
7. Write short notes on :— 20
 - (a) Memory characteristics
 - (b) RISC Vs CISC
 - (c) Basic functions of Computer system
 - (d) Counters.

MCA-I (old)

21/5/13

Principles of Economics & management

365 : Con. No.-JP

Con. 7426-13.

BS-5125

(3 Hours)

[Total Marks : 100

- N.B.**
- (1) Question No. 1 is **compulsory**.
 - (2) Attempt any **two** from Question Nos. 2 to 4.
 - (3) Attempt any **two** from Question Nos. 5 to 7.

Q1.A) Discuss the nature and scope of Managerial economics (10)

Q1.B) Explain the fourteen principles given by Henri Fayol. (10)

Q2.A) Explain law of demand and elasticity of demand with suitable examples (10)

Q2.B) Explain methods of demand forecasting (10)

Q3.A) Explain the different market structures with suitable examples (10)

Q3.B) Explain price and output decision for a perfect competition (10)

Q4. Write short Notes (any Four) (20)

- a) Law of Supply
- b) Price Discrimination
- c) Break even analysis
- d) Cost control and cost reduction
- e) Economies and diseconomies of scale
- f) Role and responsibility of managerial Economist

Q5.A) Explain the decision making process in detail (10)

Q5.B) Compare the functional and product organization structures. (10)

Q6.A) Explain the four P's of Marketing with suitable examples (10)

Q6.B) Explain the Product life cycle and its impact on business (05)

Q7. Write short Notes (any Four) (20)

- a) Management by Objectives
- b) Performance appraisal
- c) Decentralization and delegation of authority
- d) Methods of Training
- e) Market Research
- f) Channels of Distribution

M.C.A. SEM I (old) May 2013
Introduction to web Tech.

AGJ 1st half (r) 43

Con. 2605-13.

BS-5131

(3 Hours)

[Total Marks : 100

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

(2) Attempt any **four** questions from the remaining **six** questions.

(3) **All** questions carry **equal** marks.

1. (a) Attempt any **two** of the following :- **10**
 - (i) Difference between Post and GET Method
 - (ii) String object in Java Script
 - (iii) Physical tag.
- (b) With suitable example explain types of operators in Java Script. **10**
2. (a) What is XHTML ? What are the benefits of XHTML ? What are the main changes in XHTML from HTML ? **10**
- (b) Explain what is event and event handler in Java Script ? Write a code to demonstrate events handling in Java Script. **10**
3. (a) What is C.S.S. ? Explain Inline style sheet, Internal style sheet and External style sheet. **10**
- (b) What is Java Script ? What can a Java Script do ? **10**
4. (a) What is object ? Explain how to create user defined object in Java Script with example. **10**
- (b) Write a HTML code to demonstrate types of lists in HTML. **10**
5. (a) Write a HTML code to demonstrate <frameset>. What are the advantages and disadvantages of using frames ? **10**
- (b) Explain how ASP page is processed with suitable diagram. **10**
6. (a) Write a short note of Web Application Development Cycle. **10**
- (b) Write is response object ? Explain its methods, properties and collections in ASP. **10**
7. (a) Write a function in Java Script to find the whether given no. is prime or not. **10**
- (b) Write a Web page that take any no. from user and print triangle for that no. **10**

1
2 1
3 2 1
4 3 2 1
5 4 3 2 1
4 3 2 1
2 1
1

(3 Hours)

[Total Marks : 100

N.B. (1) Question No. 1 is compulsory.

(2) Attempt any four questions out of remaining six questions.

(3) Assume any necessary data but justify the same.

(4) Figures to the right indicate marks.

1. (a) (i) If $p \leftrightarrow q$ is true, what is the truth value of $\neg(p \vee q) \leftrightarrow \neg q$? 5
 (ii) Let $S =$ set of integers define the relation R on S as follows : 5
 aRb if and only if $a \equiv b \pmod{5}$. Read as "a congruent to b modulo 5".
 Show that R is an equivalence relation.
- (b) (i) Determine whether the set of even integers with $a*b = \frac{ab}{2}$ is a semigroup, a monoid 5
 or neither. If it is a monoid, specify the identity. If it is a semigroup or a monoid
 determine whether it is commutative.
 (ii) Is the sequence $\{a_n\}$ a solution of the recurrence relation. 5
 $a_n = 2a_{n-1} - a_{n-2}$, if $a_n = 2^n$?
2. (a) (i) Without using truth table establish the following tautology- 5
 $\sim(P \leftrightarrow Q) \leftrightarrow [(P \wedge \sim Q) \vee (Q \wedge \sim P)]$
 (ii) Write a short note on "functionally complete set of connectives". 5
- (b) Let $A = \{1, 2, 3, 4, 12\}$. Consider the relation R on A as follows : 10
 aRb iff a divides b .
 Show that R is partial order relation. Draw the Hasse diagram of the poset (A, R) .
3. (a) (i) Using mathematical induction prove that sum of the cubes of three consecutive 5
 positive integers is divisible by 9.
 (ii) Using the rules of inference show that SVR is a tautology implied by- 5
 $(P \vee Q) \wedge (P \rightarrow R) \wedge (Q \rightarrow S)$
- (b) (i) Let the universe of discourse be $D = \{0, 1, 2, \dots, 9\}$ Let $Q(x, y)$ be the 5
 statement " $x + y = x - y$ ". Determine the truth values of the following :
 (1) $Q(1, 1)$
 (2) $\exists y \forall x Q(x, y)$
 (3) $\forall y \exists x Q(x, y)$
 (4) $\exists x Q(x, z)$
 (5) $\forall x \exists y Q(x, y)$
 (ii) Find the solution of the recurrence relation- 5
 $a_n = 6a_{n-1} - 11a_{n-2} + 6a_{n-3}$
 with initial conditions $a_0 = 2, a_1 = 5$ and $a_2 = 15$
4. (a) (i) Find the particular solution of- 5
 $a_r + 5a_{r-1} + 6a_{r-2} = 3r^2$
 (ii) Let $\{a_n\}$ and $\{b_n\}$ be sequence of real numbers. Show that- 5
 $\nabla(a_n b_n) = a_{n-1} \nabla(b_n) + b_n \nabla(a_n)$
 where ∇ denotes backward difference.
- (b) Obtain the recurrence relation for "Tower of Hanoi" problem. Give suitable initial 5
 condition. Solve the recurrence relation obtained.
5. (a) (i) Let G be a group and let a be a fixed element of G . Show that the function 5
 $f_a : G \rightarrow G$ defined by $f_a(x) = axa^{-1}$ for $x \in G$ is an Isomorphism.
 (ii) For the cyclic group of order 8 with generator a , find the quotient group 5
 corresponding to the subgroup generated by a^2 .

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(b) Consider (3, 6) encoding function e as follows : 10

$$\begin{array}{lll} e(000) = 000000 & e(001) = 000110 & e(010) = 010010 \\ e(011) = 010100 & e(100) = 100101 & e(101) = 100011 \\ e(110) = 110111 & e(111) = 110001 & \end{array}$$

Check if this encoding function e is a group code. Decode the word 011110 with maximum likelihood technique.

6. (a) (i) Consider parity check matrix H given by— 5

$$H = \begin{bmatrix} 1 & 1 & 0 \\ 0 & 1 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Determine the group code $e_H : B^2 \rightarrow B^5$

(ii) Define Hamming distance between the two code words. Find Hamming distance between the following code words. 5

$$(1) \ x = 010000, \quad y = 000101 \quad (2) \ x = 001100, \quad y = 010110$$

(b) (i) Let the transition table for the finite state machine be— 5

	0	1
s_0	s_0	s_1
s_1	s_1	s_2
s_2	s_2	s_3
s_3	s_3	s_0

List values of the transition function f_w for $w = 11100$.

(ii) For the grammar specified below, describe precisely the language, $L(G)$, produced. Also give the BNF notations for the productions of the grammar 5

$$G = (V, S, v_0, \mapsto), \quad V = \{v_0, v_1, x, y, z\}, \quad S = \{x, y, z\}$$

$$v_0 \mapsto xv_0, \quad v_0 \mapsto yv_1, \quad v_1 \mapsto yv_1, \quad v_1 \mapsto z$$

7. (a) Determine whether the relation R on a set A is reflective, irreflexive, symmetric, asymmetric, antisymmetric or transitive. Give necessary explanation to your answer. 10

$$A = \{1, 2, 3, 4\} \quad \text{and} \quad R = \{(1, 1), (2, 2), (3, 3)\}$$

(b) Perform the following :— 10

- (i) $(47.125)_{10} = (?)_2$
- (ii) $(51)_8 = (?)_{10}$
- (iii) $(8C5)_{16} = (?)_{10}$
- (iv) $(10101.11)_2 \times (10110.01)_2 = (?)_2$
- (v) $(110010)_2 \div (1010)_2 = (?)_2$