M.C.A. Sem-I (Choice Based)

Q.P. Code :02850

[Time: 3 Hours]

[Marks:80]

Please check whether you have got the right question paper.

N.B:
1. Q.1 is **compulsory**
2. **Attempt Any Three questions from Q.2 to Q.6**
3. **Figures to right indicates marks**
4. **Additional information can be considered but justify the same**

Q.1 Write Short on Following (Any Four)   20

    a. Role Of Computer in Modern Business

    b. E- governance

    c. Roles of IT in E-commerce

    d. International Business using IT

    e. Added Value of The CIO

    f. Value Chain

Q.2 a) Summarize key management issues for Information Technology Management   10

    b) Explain stepwise process to manage Information Technology internationally.   10

Q.3 a) Identify and evaluate different option for regulating and managing acquisition.   10

    b) Analyze the statement "Key challenge for management is the integration of information technology and the business".   10

Q.4 a) Explain benefits of a global IT strategy. Also associated risk   10

    b) Differentiate between major types of international business strategies.   10

Q.5 a) List and Explain in detail Contents of an Information System Plan   10

    b) Describe different perspectives of Information system.   10

Q.6 a) Describe and Compare the role of Information Technology in E-Commerce and M-Commerce   10

    b) Explain the necessities in acquire technology in a firm. Write down steps to check for maturity of technology.   10

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MCA-Sem-I Choice Based

23/05/17

Q.P. Code :04436

[Time: 3 Hours]   [Marks:80]

Please check whether you have got the right question paper.

N.B: 1.   Question No. 1 is compulsory
        2.   Attempt any three question of remaining
        3.   Assume any necessary data but justify the same
        4.   Figure on the right indicate the full marks
        5.   Use of scientific calculator is allowed

Q.1   a) Find the median wage of the following distribution   05

Roll no.	0-20	20-40	40-60	60-80	80-100
Marks	5	8	15	16	6

b) The age of people in an old age home is :   05
57 61 57 57 58 57 61 54 68 51 49 64 50 48 65 52 56 46 54 49 50 47 55 54 42 51
56 55 51 54 51 60 62 43 55 56 61 52 69 64
Make a stem and leaf plot of the data.
i)   How many people are 51 years old?
ii)   What age is the youngest and the oldest person?
iii)   How many people are 40-49 years old?

c) What is the probability that four A's come consecutively in the arrangement of the letters in word 05
"MAHARASHTRA"?

d) An urn contains 7 white and 3 red balls. Two balls are drawn together at random from the urn.   05
Compute the probability that neither of them is white. Find also the probability of getting one
white and one red. Hence compute the expected number of white balls drawn.

Q.2   a) Two dice are rolled. Let X denotes the random variable which counts the total number of points on   05
the upturned faces. Construct a table giving the non- zero values of the probability mass function.

b) If a continuous random variable has pdf   05
$f(x) = k(2-x), 0 \leq x < 2$
$\quad\quad = kx (x-2), 2 \leq x < 3$
$\quad\quad = 0$ otherwise
Find k.

c) Calculate mean deviation from mean for the following :   05

Experience in months	0	1	2	3	4	5	6	7	8	9
No. of members	15	46	91	162	110	95	82	26	13	2

d) Find the coefficient of variation of frequency distribution given that its men is 120, mode is 123 and   05
Karl Person's coefficient of skewness is - 0.3.

TURN OVER

1

Q.3   a)   Box A contains 5 red marbles and 3 blue marbles and Box B contains 3 red and 2 blue. A marble is   **05**
drawn at random from each box
   - Find the probability that both marbles are red
   - Find the probability that one is red and other is blue

b)   Let variable X have the distribution $P(X=0) = P(X=2)=p$, $P(X=1)=1-2p$ for $0 \leq p \leq \frac{1}{2}$.   **05**
For what p is the Var(X) a maximum?

c)   Find the regression line of y on x for the following data   **05**

X	1	2	3	4	5
Y	2	5	3	8	7

d)   A : 35   47   23   6   17   10   43   9   28   **05**
Y : 30   46   33   4   23   8   48   12   31
Compute their ranks in the two subjects and the Spearman Rank correlation coefficient

Q.4   a)   Two discrete random variables X and Y have joint p.m.f. given by the following table   **05**

X/Y	1	2	3
1	1/12	1/6	1/12
2	1/6	1/12	1/4
3	1/12	1/12	0

Compute the probability of each of the following events
1) $X \leq 1.5$ 2) X is odd   3) Y is odd given that X is odd.

b)   Let X be random variable with following probability distribution.   **05**

x	-3	6	9
P (X=x)	1/6	1/2	1/3

Find $E(2x+1)^2$

c)   Find the mode of the following distribution   **05**

Size (x)	1	2	3	4	5	6	7	8	9	10	11	12
Frequency (f)	3	8	15	23	35	40	32	28	20	45	6	6

d)   The first of the two samples has 100 items with mean 25 and S.D 3. If the whole group has 250 items   **05**
with mean 15.6 and S.D $(13.44)^{\frac{1}{2}}$ find the S.D. of the second group.

Q.5   a)   For a group of 200 candidates the mean and standard deviation of scores were found to be 40 and 15   **05**
respectively. Later on it was discovered that the scores 43 and 35 were misread as 34 and 53
respectively. Find the corrected mean and standard deviation of the corrected figures.

b)   What is the chance that a leap year selected at random will contain 53 Sundays?   **05**

c)   Calculate Bowley's coefficient of skewness for the following   **05**

Marks	0-10	10-20	20-30	30-40	40-50
Student	5	7	20	12	6

TURN OVER

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ICA-sem-I
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(31)

d) For 8 observations the following results were calculated $\sum x = 59$, $\sum y = 40$, $\sum x^2 = 524$, $\sum y^2 = 256$, $\sum xy = 344$ find the regression equations y on x .   05

Q.6   a) The joint density function of the two dimensional random variable (X,Y) is given by   05

$$f_{xy}(x, y) = \frac{x^3 y^3}{16}, \quad 0 \leq x \leq 2, \ 0 \leq y \leq 2$$
$$= 0 \qquad\qquad \text{otherwise}$$

Find the marginal densities of X and Y .
Also find the cumulative distribution functions of X and Y .

b) Prove that E(aX+b)=aE(X)+b and V(aX+ b) =a² V(X).   05

c) Give N=2500, (A)=420, (AB)=85, and (B)=670. Find the missing values.   05

d) The mean weekly sales of soap bars in department stores was 146.3 bars per store. After an advertising campaign the mean weekly sales in 22 stores for a typical week increases to 153.7 and showed a standard deviation of 17.2. Was the advertising campaign successful? (Given: The table value of t for 21 d.f. at 5% significant level is 1.72)   05

Q.7   a) Prove that with example that three events may be pair wise independent but need not to be mutually independent.   05

b) There are three boxes. Box I contains 1 white 2 red and 3 black balls. Box II contains 2 white 3 red and 1 black balls Box III contains 3 white 1 red and 2 black balls. A box is chosen at random. If the balls drawn are first red and second white, what is the probability that they come from Box II?   05

c) Test the consistency of the following data with the symbols having their usual meaning N=1000, (A) =600, (B) =500, (AB)=50   05

d) The observed and expected frequencies in tossing a die 120 times are given below. Test the hypothesis that the die is fair. (Use level of significance=0.05, and critical value for 5 d.f. is 11.1)   05

Die face	1	2	3	4	5	6
Observed frequencies	25	17	15	23	24	16

3

Object oriented programming   15/05/2012

MCA/ Sem I / (choice based)

Q.P. Code :02555

[Time: Three Hours]

[Marks:80]

Please check whether you have got the right question paper.

N.B:
1. **Question.No.1** is Compulsory.
2. Attempt any **three** from reaming **five** questions.

Q.1 a) What is a Class? How will you create a class in C++? What are different elements that can be added to a Class? **10** Explain with a suitable program.

b) What is inline function? What are restrictions on use of Inline functions? Write a program to implement the **10** concept of inline function.

Q.2 a) What is Operator Overloading? Explain how you will overload a binary operator with a suitable programming **10** example.

b) What is friend function? What is need of friend function? Write a program to illustrate the use of friend **10** function.

Q.3 a) What is inheritance? What type of ambiguity occurs in multiple inheritances and how is it resolved? **10**

b) Explain the differences between: **10**
   1) Static and Constant

   2) C and C++

Q.4 a) What is Template? Explain the concept of Class Template. Write a program to implement the use of class **10** template.

b) What is polymorphism? Explain with example how polymorphism can be achieved at run-time. **10**

Q.5 a) Declare a student class-with roll no, name and address. Write a program to store and access the object of **10** student class into and from binary file.

b) What is Exception Handling? Write a program to create and handle user defined exception. **10**

Q.6   Write short notes on **(any four)** **20**
a) New and delete operators

b) This pointer

c) Namespaces in C++

d) Manipulators

e) Loops in C++

Please check whether you have got the right question paper.

N.B:
1. Question No. 1 is compulsory.
2. Attempt any three questions from remaining five questions.

1. a) Explain Waterfall model in detail. 10
   b) What is outsourcing and explain its different types. 10

2. a) Explain the Feasibility study and its types and need. 10
   b) Explain the Project Life cycle. 10

3. a) What are requirement Elicitation techniques? List and brief them in detail. 10
   b) Explain the Knowledge areas of Project Management. 10

4. a) Assume that the size of organic type s/w project has been estimated to be 35 KLOC. 10
   The Avg. Determine the effort required to develop the s/w product & development time,
   average staff size and productivity for all three modes. Given:
   Organic (a1=2.4, a2=1.05, b1= 2.5, b2 = 0.38), semi-detached (a1 = 3.0, a2 = 1.12, b1 = 2.5, b2 = 0.35) Embedded (a1 = 3.6, a2 = 1.20, b1 = 2.5, b2 = 0.3)
   b) Explain the structured walkthrough in detail? 10

5. a) Explain Procurement Management in detail. 10
   b) Consider a project with following functional units: 10
   No. of user inputs = 50
   No. of User outputs = 40
   No. of User Inquiries = 35
   No. of User files = 06
   No. of External Interfaces = 04
   Assume all Complexity adjustment factors and weighting factors are average.
   Compute the Function point for the project.

7. Short Note (any 4 out of 5) 20
   a) Resource loading
   b) Reliability Metrics
   c) 3 R in software engineering
   d) Role of Project Manager
   e) Extreme Programming

(3 Hours)   **Total Marks : 80**

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

          2) Attempt any three **four** from the remaining five questions.

          3) Draw suitable diagrams wherever required.

          4) Answers to sub-questions should be grouped together.

1. (a) Explain the role of the registers MAR and MBR in instruction execution.   **(05)**

    (b) Construct a logic circuit using AND, OR and NOT gates.   **(05)**

$$Y = \overline{(A + B)} \cdot (A + C) \cdot (B + C)$$

    (c) Simplify the following expression using Karnaugh Maps   **(05)**

       $F(A, B, C, D) = \sum m (1, 2, 7, 8, 10, 15) + d(3, 5)$

    (d) Explain the working of a DRAM.   **(05)**

2. (a) What is cache memory? Explain the organisation of cache memories in detail.   **(10)**

    (b) Discuss the role of a Bus in computer organisation. Explain various bus interconnection structures.   **(10)**

3. (a) What are Flip Flops? How are they useful in digital circuits? Explain the construction and working of a J-K and D-Flip Flops with their truth tables.   **(10)**

    (b) Discuss various factors that affect the design of an instruction in the instruction set of a processor.   **(10)**

4. (a) Explain the structure and working of a Control Unit.   **(10)**

    (b) What are interrupts? Explain methods for handling interrupts.   **(10)**

5. (a) Explain the role of registers in a CPU. Discuss the organisation of registers in a CPU.   **(10)**

    (b) Discuss various RAID levels with suitable diagrams. Explain advantages and disadvantages of each of them.   **(10)**

6. Write Short Notes on **any four** of the following: **(20)**

      (a) Array Processors

      (b) Instruction Pipelining

      (c) Full Adder

      (d) De-multiplexer

      (e) Optical Memory.