(Time: 3 Hours) **[Total Marks: 80]**

N.B.: (1) Question No. **1** is **Compulsory.**
(2) Attempt any **three** questions from the remaining **five** questions.
(3) Answers to **sub-questions** should be **grouped** and written **together.**

Q.1 (a) What is constructor and destructor? Write a program to implement concept of constructor overloading. 10

(b) What is template? Write a program to create function template swaps( ) that interchange value of two arguments sent to it. Write a main() program to exercise the function with several data types like int, float, and char. 10

Q.2 (a) Explain basic concepts of object oriented programming. What advantages OOP offers to the programmer and the user? 10

(b) Explain the concept of 10
i) explicit and mutable keyword
ii) constant pointer and pointer to a constant

Q.3 (a) What is dynamic binding? How it is implemented explain with suitable example. 10

(b) What are different file opening modes? Write a program to read and write an object to a file. 10

Q.4 (a) What is operator overloading? Write a program to Overload pre and post increment operators. 10

(b) Explain exception handling mechanism in C++ with suitable example. 10

Q.5 (a) What is inheritance? Explain the use of protected modifier in inheritance with suitable example. 10

(b) Explain the use of static data members and methods with a suitable example. 10

Q.6 Write short notes on any **four** :-- 20
(a) STL
(b) Dynamic memory allocation
(c) Bitwise operators in C++
(d) Inline function
(e) Static and dynamic cast

Choice Based

Paper / Subject Code: 56002 / Software Engineering & Project Management May -2018

MCA Sem. I

Q.P. Code :01596

[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 questions from remaining five questions.

1. a) Explain Spiral model in detail. 10
   b) Explain Project Life cycle. 10

2. a) What Extreme programming and Scrum. 10
   b) Explain the outsourcing and its type. 10

3. 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.
   Organic (a1=2, 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 = 0.32)
   b) What is structure chart? Explain the transaction analysis? 10

4. a) Explain the Facilitating areas of Project Management. 10
   b) Explain the structured walkthrough in detail? 10

5. a) Explain software reliability metrics 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) Stakeholder Management
   b) FAST
   c) Project Charter
   d) 3R of software engineering
   e) RAD model

choice based

(3 Hours) [Total marks: 80]

Note (1) Question No. 1 is compulsory.
(2) Attempt any three out of remaining five questions.
(3) Answer to sub-questions should be grouped together.

Q1.	(a)	Using K-Maps, simplify the following expression in four variables X, Y, Z, W. Draw logic diagram for the obtained solution. $F(X, Y, Z, W)=\Sigma(0,1,5,9,13,14,15)+d(3,4,7,10,11)$	5
	(b)	Explain the working of full adder with truth table and circuit diagram.	5
	(c)	Draw the instruction cycle state diagram indicating all of its sub cycles.	5
	(d)	Explain the role of MAR & MBR in instruction execution.	5
Q2.	(a)	Explain superscalar organization in brief. What are its limitations?	10
	(b)	What is I/O module? Explain all its function. Draw block diagram of I/O Module.	10
Q3.	(a)	Discuss 4 to 1 multiplexer & 1 to 4 de-multiplexer using truth table. Draw its implementation using the appropriate gates.	10
	(b)	Explain different types of parallel processing systems.	10
Q4.	(a)	Explain DMA technique in detail with the help of suitable diagram. Explain cycle stealing.	10
	(b)	Explain six stage instruction pipelines. How conditional branching affects pipeline performance?	10
Q5.	(a)	Define cache memory. Explain cache organization in detail.	10
	(b)	What are micro operations? Write micro operation for fetch cycle, interrupt cycle and indirect cycle.	10
Q6.		Write short note on any four of the following	20
		(a) JK Flip Flop	
		(b) Register Renaming	
		(c) SMP	
		(d) Associative Memory	
		(e) Interrupt driven I/O technique	
		(f) Asynchronous counter	

MCA
Sem - 1

May - 2019

Choice Based

(3 Hours) [Total Marks: 80]

Note:

1) **Question No. 1 is compulsory.**
2) **Attempt any Three Question between Question No.2 to 6**
3) **Figures to the right indicate marks.**

Q.1 Write a Short Note on Following (any 4) **20**

1. Outsourcing
2. Technology Acquisition
3. Business in Digital Economy
4. Ethics and Information Technology
5. M- Commerce
6. Current Trends in IT

Q.2 a) Explain Roles of IT in E-commerce and M-commerce? **10**

b) What is Value Chain as per Michael Porter? **10**

Q.3 a) How should managers introduce organizational changes that employ technology? **10**

b) Define Data, Information and knowledge with an example **10**

Q.4 a) Explain E-governance with suitable example? **10**

b) What is Organizational flexibility? Explain how technology helps in strengthening the organization **10**

Q.5 a) How technology can be used to gain a strategic, competitive Advantage? **10**

b) Explain International business strategies with example **10**

Q.6 a) Explain Role of Information system in business today **10**

b) Explain ethics and IT **10**

85A55AA012BBCD63B826DE55CD4AE033

[sem-I Choice based]. | **Paper / Subject Code: 56004 / Statistics and Probability** | May-2019

[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 from remaining five questions.
3. Answers to sub questions should be written together.
4. Use of scientific calculator is permitted.

1. a. In 4 tosses of a coin, let X denote number of heads. Find the possible outcomes and find the expectation of X. 5

b. The number of hardware failure system in a week of operation has the following pmf. 5

No. of failure	0	1	2	3	4	5	6
Probability	0.18	0.28	0.25	0.18	0.06	0.04	0.01

i) Find the expected number of failure in a week.
ii) Find the variance of the number of failure in a week.

c. The mean and standard deviation of 200 items are found to be 60 and 20. At the time of calculations two items are wrongly taken as 3 and 67 instead of 13 and 17. Find the correct mean and standard deviation. 5

d. Calculate the modal marks for the following 5

Marks	10-30	30-50	50-70	70-90	90-110	110-130
No. of Students	4	10	14	12	8	6

2. a. The ranks of the some 15 students in two subjects A and B are given below. Use spearman formula to find the rank correlation coefficient. 10

Rank in A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Rank in B	10	7	2	6	4	8	3	1	11	15	9	5	14	12	13

b. Test the consistency of the following data with the symbol having their usual meaning: 5
$N = 60$ $(AB) = 25$ $(A) = 51$ $(B) = 32$

3. a. The Joint probability density function of the two dimensional random variable (X,Y) is given by 10
$f(x,y) = 8/9xy, \quad 1 \le x \le y \le 2$
$= 0, \quad$ otherwise
a)Find the marginal densities of X and Y.
b)Find the conditional density function of Y given X=x and conditional density function of X given Y=y.

b. The mean weekly sales of chocolate bar in candy stores were 146.3 bars per store. After an advertising campaign the mean weekly sales in 22 stores for a typical week increased to 153.7 and showed a standard deviation of 17.2. Was the advertising campaign successful? 5

4. a. The following distribution gives marks of 100 students. 10

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of students	5	8	7	12	28	20	10	10

Find all quartiles and the coefficient of quartile deviation. Use it to determine Bowley's Coefficient of skewness.

b. From a city population, the probability of selecting (i) a male or a smoker is 7/10, (ii) a male smoker is 2/5, and (iii) a male, if a smoker is already selected is 2/3. Find the probability of selecting (a) a non-smoker, (b) a male, and (c) a smoker, if male is first selected. 5

5. a. From the data given below find: 10

i) Regression Coefficient bxy and byx
ii) Two regression equations x on y and y on x
iii) The coefficient of correlation between the marks in Economics and Statistics

Marks in Economics	25	28	35	32	31	36	29
Marks in Statistics	43	46	49	41	36	32	31

b. The number of scooter accidents per month in a certain town were as follows: 5
12,8,20,2,14,10,15,6,9,4
Are these frequencies in agreement with the belief that accident conditions were the same during this 10 months period? [Given : chi-square value at 5% level of significance at 9 degree of freedom is 16.916]

6. a. What is the probability that 4 A's come consecutively in arrangements of the letters in the word 'MAHARASHTRA' ? 5

b. Find if A and B are independent, positively associated or negatively associated: 5
N=1000, (A)=470, (B)=620 and (AB)=320

c. Suppose A and B are events with $P(A) = 0.6$, $P(B) = 0.3$ and $P(A \cap B) = 0.2$ Find the probability that 5
i) A does not occur
ii) B does not occur
iii) A or B occurs
iv) Neither A nor B occurs

d. If X is a random variable and a, b are constants, then prove that $V(aX + b) = a2\ V(x)$ 5
