

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Affiliated to Osmania University)

M.C.A I Semester Final Examination, Dec/Jan- 2017/18

Subject: Probability & Statistics
Sub Code: MCA 16102

Exam Time: 3 hrs
Max Marks: 100 M

Answer the following Questions: (5*20=100M)

UNIT-I

1. (a) Explain the various methods of collecting Primary data with their merits and demerits. (10M)
(b) Represent the following data by using Sub-divided and Multiple bar diagrams. (5M+5M)

Years:	2010	2011	2012	2013	2014	2015
Boys:	100	120	140	170	200	220
Girls:	80	100	110	120	150	180

(Or)

2. (a) Explain various types of classification of Data with examples. (10M)
(b) Construct ogives For the data given below and hence calculate Median value. (4M+4M+2M)

C.I	10-20	20-30	30-40	40-50	50-60
f	10	20	40	20	10

UNIT-II

3. (a) Explain the various measures of dispersion. (10M)
(b) Calculate Mean and Mode for the data given below: (5M+5M)

C.I	0-10	10-20	20-30	30-40	40-50	50-60
f	12	8	27	20	17	6

(Or)

4. (a) Define Central and Non-Central Moments. The first Four moments of a distribution about the values 4 of a variable are 1,4,10 and 45 respectively. Find the mean and variance. (3M+3M+2M+2M)
(b) State and Prove Additional theorem and Multiplication theorem of Expectation for 2 variables x and y. (5M+5M)

UNIT-III

5. (a) Define Karl Pearson's Correlation Coefficient (r) .Calculate the correlation coefficient (r) for the following data: (3M+7M)

x:	65	66	67	67	68	69	70	72
y:	67	68	65	68	72	72	69	71

- (b) Explain the t-test for testing the significance of the difference between the two sample means. (10M)

(Or)

6. (a) Explain Chi-Square test for goodness of fit, stating the conditions for its validity. (10M)
(b) A random sample of 10 boys had the following I.Q's : 70,120,110,101,88,83,95,98,107,100.Do these data support the assumption of a population mean I.Q of 100 at 5% level.($t_{0.05}(9)=2.262$) (10M)

(P.T.O)

UNIT-IV

(10M)

7. (a) State and Prove Additional theorem of Probability for n events. (10M)
(b) An integer is selected from first 50 numbers. Find the probability it is divisible by 6 (or) 8. (10M)
(Or)
8. (a) Define Binomial distribution . Calculate the first two Non Central Moments. (3M+4M+3M)
(b) Find the MGF of Poisson distribution and hence calculate the mean and variance. (3M+3M+3M+1M)

UNIT-V

(10M)

9. (a) Out line the characteristics of Normal Distribution. (10M)
(b) Find the first four non-central moments of Rectangular distribution. (10M)
(Or)
10. (a) Find the MGF of gamma distribution of 2nd kind and hence calculate the mean and variance. (3M+3M+3M+1M)
(b) Find the mean and variance of Beta distribution of First kind. (4M+4M+2M)

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

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M.C.A I Semester Final Examination, Dec/Jan- 2017/18

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Exam Time: 3 hrs

Sub Code: MCA 16102

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(5*20=100M)

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UNIT-III

5. (a) Define Karl Pearson's Correlation Coefficient (r) .Calculate the correlation coefficient (r) for the following data: (3M+7M)

x:	65	66	67	67	68	69	70	72
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- (b) Explain the t-test for testing the significance of the difference between the two sample means. (10M)

(Or)

6. (a) Explain Chi-Square test for goodness of fit, stating the conditions for its validity. (10M)
- (b) A random sample of 10 boys had the following I.Q's : 70,120,110,101,88,83,95,98,107,100.Do these data support the assumption of a population mean I.Q of 100 at 5% level. ($t_{0.05}(9)=2.262$) (10M)

(P.T.O)

UNIT-IV

7. (a) State and Prove Additional theorem of Probability for n events. (10M)
(b) An integer is selected from first 50 numbers. Find the probability it is divisible by 6 (or) 8. (10M)
- (Or)**
8. (a) Define Binomial distribution . Calculate the first two Non Central Moments. (3M+4M+3M)
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UNIT-V

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(b) Find the first four non-central moments of Rectangular distribution. (10M)
- (Or)**
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LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Re-accredited with 'A' Grade by NAAC)

M.C.A I Semester Supplementary Examination, July/Aug- 2017

Subject: Probability & Statistics

Exam Time: 3 hrs

Sub Code: MCA 16102

Max Marks: 100 M

Answer the following Questions:

UNIT-I

1. a) Distinguish between primary & secondary data and discuss the relative advantage and disadvantage of the two types data. (10M)

b) Construct a frequency distribution for following data (10M)

34,54,10,21,51,52,14,43,48,36,48,22,39,26,34,19,10,17,47,88,13,31,30,61,59

(Or)

2. a) What is diagrammatic representation? Discuss its merits and demerits. (10M)

b) Draw a Histogram and Frequency polygon to represent the following data (10M)

Class	5-10	10-15	15-20	20-25	25-30
Frequency	15	25	30	20	10

UNIT-II

3.a) Define the moment generating function of a random variable. Find the moment generating function of $Y=aX+b$. (10M)

b) From the following data find Karl Pearson's Coefficient of Skewness. (8M)

Marks	55-58	58-61	61-64	64-67	67-70
f	12	17	23	18	11

(Or)

4. a) What are Kurtosis and Skewness? Give some suitable measure of Skewness and kurtosis, and state their important properties. (10M)

b) Find standard deviation and coefficient of Skewness from the following data. (10M)

Years under	10	20	30	40	50	60
No. of Person	15	32	61	78	97	109

UNIT-III

5. a) Define Regression. Write equation of regression lines Calculate regression lines for the following data. (12M)

x	130	140	145	150	155	160	165
y	46	45	48	50	62	63	65

b) Define Hypothesis write a procedure for testing Hypothesis and explain type I and type II errors? (8M)

(P.T.O)

(Or)

6. a) Explain F -Test for Equality of Two Variances.
b) Two random samples gave following results.

Sample	Size	Mean	Sum of Square of deviation from mean
1	10	15	90
2	12	14	108

Test whether two population variances are equal at 5% level of significance given

$$f_{0.05}(9,11) = 2.90$$

$$f_{0.05}(9,11) = 3.10$$

UNIT-IV

7. a) Define Binomial distribution .Obtain probability generating functions and derives the mean variance of Binomial distribution. (10M)
b) Define Poisson distribution. Find the m.g.f of Poisson distribution .Using m.g.f find mean and variance. (10M)
- (Or)
8. a) State and prove Multiplication theorem of probability.
b) A box contain 5 Red, 3 White and 4 black balls. A person draws 4 balls from box at random. Find the probability that among the balls, there is at least one ball of each color. (12M)

UNIT-V

9. a) Define Rectangle distribution . Find Moments, mean and variance through m.g.f
b) Suppose that X is uniformly distributed over $(-a,a)$; $a>0$ whenever possible find 'a' so that the following are satisfied. (12M)
- a) $P[X>1] = 1/3$ b) $P[X<1/2] = 0.7$ (8M)
- (Or)
10. a) Define Beta Distribution of First Kind. Derive its mean and variance.
b) State the relationship between Beta Distribution of First Kind and Second Kind. (10M) (10M)

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL
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M.C.A I Semester Final Examination, Dec/Jan- 2017/18

Subject: Communicative Competence
Sub Code: MCA 16101

Exam Time: 3 hrs
Max Marks: 100 M

PART-A

Answer any Five of the following:

(5*16=80M)

1. Explain the following:-
 - (a) Kinesics
 - (b) Proxemics
 - (c) Chronemics
2. What are the steps in preparing a presentation?
3. Define Written Communication. Write Merits and Demits of written Communication.
4. Write a report on "Canteen facilities available at Loyola Academy".
5. Write a letter to the Commissioner of GHMC on the topic, "spreading garbage in and around your locality".
6. Write an essay on any one of the following topics:
 - (a) Demonetization
 - (b) GST
7. Explain the idioms with examples:-
 - (a) To cry over the spilled milk
 - (b) Crocodile tears.
 - (c) To blow one's own trumpet.
8. Draft a covering letter along with resume for the post of "Graphic Designer" at TCS, Gachi Bowli , Hyderabad-500020.

PART B

I. Answer the following questions:

(10*1=10M)

1. If you had provided efficient after-sales service, it _____ you a lot of goodwill
(Insert appropriate verb).
2. A pair of shoes _____ (is/are) all I need.
3. Either of these two conditions _____ (has/have) to be fulfilled.
4. We _____ (requested to the chairman/requested the chairman) to increase the salary of the staff.

(P.T.O)

5. Sudha and Madhu are the two secretaries. The _____(later/latter) is more dynamic of the two.
6. Let us have a _____(insert synonym of 'candid') conversation about the errors committed.
7. He is a _____(insert antonym of 'notorious') person in the city.
8. Sheila is qualified _____(insert preposition) for the job of a manager.
9. I felt bad when he _____(backed out/ backed up) from his promise to help me.
10. Reema is having an exam day after tomorrow. (**Rewrite by correcting the errors**)

II. Fill in the blanks with suitable forms of verbs given in brackets:

(10*1=10M)

1. We began _____ the whole case. (investigate)
2. I like _____ the weekend with my family. (spend)
3. I dislike _____ the weekend at home. (spend)
4. We agreed _____ in the Hotel Ashok lobby in the evening. (meet)
5. _____ at hotels can be so lonely. (stay)
6. I have finished _____ the minutes. (write)
7. We cannot afford _____ the meeting at the Taj Palace . (hold)
8. _____ is not allowed at public places. (smoke)
9. Please stop _____ so loudly. The noise is disturbing me. (talk)
10. We stopped _____ enquires at a road side stall. (make)

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LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL
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M.C.A I Semester Final Examination, Dec/Jan- 2017/18

Subject: Computer Architecture
Sub Code: MCA 16106

Exam Time: 3 hrs
Max Marks: 100 M

Answer the following: **(5*20=100M)**

UNIT-I

1. a) Explain Half-Adder and Full Adder Circuits. (10M)
b) Explain different types of Flip-Flops. (10M)
- (Or)
2. a) Explain 4 to 1 line multiplexer with diagram. (10M)
b) Simplify the Boolean function and draw the circuit diagram.
(i) $f(x,y,z) = \Sigma (0,2,3,4,6)$
(ii) $f(A,B,C,D) = \Sigma (0,1,2,5,8,9,10)$ (10M)

UNIT-II

3. a) Discuss about Arithmetic Micro operations. (10M)
b) List the memory reference Instructions. (10M)
- (Or)
4. a) Explain how accumulator logic is designed. (10M)
b) Explain the role of Interrupt with suitable example. (10M)

UNIT-III

5. a) Write brief notes on Input Output (I/O) Programming with suitable examples. (10M)
b) With the help of flow chart explain about Second pass of assembler. (10M)
- (Or)
6. a) Explain Address sequencing for Control Memory. (10M)
b) What are the rules of an assembly language. (04M)
c) Explain the design of control unit. (06M)

UNIT-IV

7. a) Explain different Addressing Modes. (12M)
b) Distinguish between RISC and CISC. (08M)
- (Or)
8. a) Explain about floating Point Arithmetic operations with flow charts. (20M)

UNIT-V

9. a) Explain Peripheral Devices. (05M)
b) What is DMA? Draw the block diagram of a DMA Controller. Explain DMA Transfer with a neat sketch. (15M)
- (Or)
10. a) What is an I/O Interface? Draw the block diagram of the I/O Interface. (10M)
b) What is memory hierarchy? Explain it with diagram. (10M)

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M.C.A I Semester Final Examination, Dec/Jan- 2017/18

Subject: Comp Prog & Prob Solving Using C

Exam Time: 3 hrs

Sub Code: MCA 16105

Max Marks: 100 M

Answer the following:

(5*20=100M)

UNIT-I

1. a) Define Algorithm and Flow Chart with examples. (10M)
b) Explain Fixed and Floating point representing of Numbers. (10M)
- (Or)
2. a) Explain different computer Languages with examples. (05M)
b) Explain different data types in C. (10M)
c) Explain Bit Wise operators. (05M)

UNIT-II

3. a) Explain different LOOPS in C with examples. (10M)
b) Write a program for Linear Search. (10M)
- (Or)
4. a) Explain If-else and Switch statements with examples. (10M)
b) Write a C Program to multiply two matrices of order mxn and nxp (10M)

UNIT-III

5. a) Explain storage classes in C. (10M)
b) Explain string Manipulation functions. (10M)
- (Or)
6. a) Explain Standard and user – defined functions. (08M)
b) Explain Merge Sort Techniques (06M)
c) Write a C Program to find the factorial of given number using Recursion (06M)

UNIT-IV

7. a) Explain call by value and call by reference with examples. (15M)
b) Explain Command Line Arguments. (05M)
- (Or)
8. a) Write short notes on Dynamic Memory Allocation. (12M)
b) Explain Pointers. (08M)

UNIT-V

9. a) Differentiate between structures and Unions. (10M)
b) Explain standard library functions in files. (10M)
- (Or)
10. a) Explain Type Definition (typedef) and Enumerated types. (10M)
b) Write a C Program to create a file that displays employee's Information. (10M)
(Emp-ID, Names, Designation, Salary).

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

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M.C.A I Semester Final Examination, Dec/Jan- 2017/18

Subject: Discrete Mathematics

Exam Time: 3 hrs

Sub Code: MCA 16104

Max Marks: 100 M

Answer the following:

(5*20=100M)

UNIT-I

1. a) Prove that every well ordered set is totally ordered. (5M)
- b) Define Equivalence formula. Check whether the following is equivalent or not.
 $\sim(p \wedge q) \rightarrow (\sim p \vee (\sim p \vee q)) \Leftrightarrow (\sim p \vee q)$ (5M)
- c) Define statement formula and the types of statement formula. Check whether following statement formula is a tautology or not. (10M)
 $((p \vee q) \wedge \sim(\sim p \wedge (\sim q \vee \sim r))) \vee (\sim p \wedge \sim q) \vee (\sim p \wedge \sim r)$
(Or)
2. a) Define PCNF and PDNF with an example each. (10M)
- b) Obtain PCNF of the formula given by
 $(\sim p \rightarrow r) \wedge (q \Leftrightarrow p)$ (10M)

UNIT-II

3. a) Define Equivalence relation. Show whether the following relations are transitive. (5M)
 $R_1 = \{<1, 1>\}$ $R_2 = \{<1, 2>, <2, 2>\}$
 $R_3 = \{<1, 2>, <2, 3>, <1, 3>, <2, 1>\}$
- b) Express $E(x, y, z) = (x \oplus y)^1 (x * y)^1$ in product of sums canonical form and minimize the expression. (15M)
(Or)
4. a) Let $< L, \leq >$ be a lattice. For any $a, b, c \in L$ the following properties called isotonicity hold. (10M)
$$b \leq c \begin{cases} \{a * b \leq a * c \\ \{a \oplus b \leq a \oplus c \end{cases}$$
- b) Define direct product of two lattices. Prove that the direct product of any two distributive lattice is a distributive lattice. (10M)

UNIT-III

5. a) Define Kernel of the homomorphism .Prove that the Kernel of a homomorphism of from a group $< G, * >$ to $< H, \Delta >$ is a subgroup of $< G, * >$. (10M)
- b) Prove that Every finite group of order 'n' is isomorphic to a permutation group of degree 'n'. (10M)
(Or)
6. a) Let $< G, * >$ and $< H, \Delta >$ be groups and $g: G \rightarrow H$ be a homomorphism .Then the Kernal of g is a normal subgroup? (10M)
- b) Let $< G, * >$ be a group of order 2 in which $G = \{e, a\}$.Find $< G \times G, 0 >$ the direct product of $< G, * >$ with itself. (10M)
(P.T.O)

UNIT-IV

7. a) Define recurrence relation. Solve the recurrence relation (10M)
 $a_n - 9a_{n-1} + 20a_{n-2} = 0$ for $n \geq 2$ and $a_0 = -3, a_1 = -10$
- b) Solve the recurrence relation (10M)
 $a_{n+2} + 3a_{n+1} + 2a_n = 3^n$ for $n \geq 0$, given $a_0 = 0, a_1 = 1$
(Or) (10M)
8. a) Solve the recurrence relation. (10M)
 $a_{n+2} - 10a_{n+1} + 21a_n = 3n^2 - 2, \quad n \geq 0$
- b) Find out the solution of the following recurrence equation using the substitution method. (10M)
- $f_n = f_{n-1} + 5$ for $n \geq 2$
and $f_1 = 3$ for $n=1$.

UNIT-V

9. a) State and Prove Euler's formula. (10M)
- b) Show that in any non directed graph there is an even number of vertices of odd degree and also show that (10M)
- $\sum_{i=1}^n \deg v_i = |E|$
10. a) Define isomorphism of graphs with a suitable example. (10M)
- b) Show that every graph in G_6 is isomorphic to $K_{3,3}$ (10M)

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

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M.C.A I Semester Final Examination, Dec/Jan- 2017/18

Subject: Management Organizational Behavior
Sub Code: MCA 16103

Exam Time: 3 hrs
Max Marks: 100 M

Answer the following:

(5*20=100M)

UNIT-I

1. Define Management? Discuss the process and the functions of Management.
(Or)
2. Describe briefly Fayol's principles of management and their relevance to the modern companies.

UNIT-II

3. What are individual differences? Describe the various factors affecting Individual Differences. What are the similarities and dissimilarities among individuals?
(Or)
4. Define Personality. Explain the personality traits. State in detail the big five personality traits.

UNIT-III

5. What is planning? Explain the various steps in the planning process. "Planning is not an exact science" Critically comment.
(Or)
6. Define Organizational Structure. State the steps in structuring an organization. Differentiate the features of tall organizations from those of flat organizations.

UNIT-IV

7. Define Leadership. Discuss the different Leadership styles. Explain the trait theories of Leadership.
(Or)
8. What is a group? Discuss the different stages of group formation and development. Explain the factors that affect group cohesiveness.

UNIT-V

9. Define Conflict? What are the reasons for intergroup conflicts? Suggest the strategies to resolve them.
(Or)
10. What is Organizational Change? Explain the types and reasons for change. Why do employees resist change?

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Re-Accredited with 'A' Grade by NAAC)

M.C.A I Semester Supplementary Examination, Oct/Nov - 2017

Subject : Comp Prog & Problem Solving C & C++

Sub. Code : MCA 10103

Exam Time : 3 hrs

Max. Marks : 100

Answer the following:

UNIT-I

1. (a) What are the types of operators in 'C'? Explain with an example. (8M)
- (b) Write a 'C' program to print number's between 1 and 100. (6M)
- (c) Differentiate between compiler and interpreter. (6M)

(Or)

2. (a) Explain conditional and control statements in 'C' language. (9M)
- (b) Write a 'C' program to find factorial of a given number. (6M)
- (c) Discuss the concept of operator precedence and associativity. (5M)

UNIT-II

3. (a) Write a C-program to find multiplication of two matrices using pointer notation. (12M)
- (b) Describe Parameter passing mechanisms with an example. (8M)

(Or)

4. (a) Write a C- program to sort elements using Quick sort. (10M)
- (b) Explain String handling functions with an example. (10M)

UNIT-III

5. (a) Write a program to accept customer data using structure and display the Electricity bill.
Assume own rates per unit of consumption (8M)
 $(3 \times 4 = 12M)$

(b) Explain

- (i) Self referential structures
- (ii) Enumerated data types
- (iii) Structure verses union.

(Or)

6. (a) Write a C-program to copy the contents of one file to another file. (10M)
- (b) Explain Text verse Binary streams. (10M)

UNIT-IV

7. (a) Explain OOPS Concepts in C++ (6M)
- (b) Explain Inline Functions with an example. (7M)
- (c) What is function overloading? Explain with example. (7M)

(Or)

(8M)

8. (a) Describe Access Specifiers in C++. **(6M)**
(b) Write a C++ Program to find sum of digits of a given integer. **(6M)**
(c) Explain types of functions in C++ with example.

UNIT-V

(12M)

(8M)

9. (a) Define a class .Explain virtual functions with an example

(b) Explain Operator overloading with example .

(Or)

(12M)

10. (a) What is inheritance ? Write a program to explain the multiple inheritance.

(8M)

(b) What is Template? Give example.

PART-A

Answer any Five of the following:

(5*16=80M)

1. Explain the following:-
 - (a) Kinesics
 - (b) Proxemics
 - (c) Chronemics
2. What are the steps in preparing a presentation?
3. Define Written Communication. Write Merits and Demits of written Communication.
4. Write a report on "Canteen facilities available at Loyola Academy".
5. Write a letter to the Commissioner of GHMC on the topic, "spreading garbage in and around your locality".
6. Write an essay on any one of the following topics:
 - (a) Demonetization
 - (b) GST
7. Explain the idioms with examples:-
 - (a) To cry over the spilled milk
 - (b) Crocodile tears.
 - (c) To blow one's own trumpet.
8. Draft a covering letter along with resume for the post of "Graphic Designer" at TCS, Gachi Bowli , Hyderabad-500020.

PART B

I. Answer the following questions:

(10*1=10M)

1. If you had provided efficient after-sales service, it _____ you a lot of goodwill
(Insert appropriate verb).
2. A pair of shoes _____ (is/are) all I need.
3. Either of these two conditions _____ (has/have) to be fulfilled.
4. We _____ (requested to the chairman/requested the chairman) to increase the salary of the staff.

(P.T.O)

5. Sudha and Madhu are the two secretaries. The _____ (later/latter) is more dynamic of the two.
6. Let us have a _____ (insert synonym of 'candid') conversation about the errors committed.
7. He is a _____ (insert antonym of 'notorious') person in the city.
8. Sheila is qualified ____ (insert preposition) for the job of a manager.
9. I felt bad when he _____ (backed out/ backed up) from his promise to help me.
10. Reema is having an exam day after tomorrow. (**Rewrite by correcting the errors**)

II. Fill in the blanks with suitable forms of verbs given in brackets: **(10*1=10M)**

1. We began _____ the whole case. (investigate)
2. I like _____ the weekend with my family. (spend)
3. I dislike _____ the weekend at home. (spend)
4. We agreed _____ in the Hotel Ashok lobby in the evening. (meet)
5. _____ at hotels can be so lonely. (stay)
6. I have finished _____ the minutes. (write)
7. We cannot afford _____ the meeting at the Taj Palace . (hold)
8. _____ is not allowed at public places. (smoke)
9. Please stop _____ so loudly. The noise is disturbing me. (talk)
10. We stopped _____ enquires at a road side stall. (make)

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Affiliated to Osmania University)

M.C.A I Semester Final Examination, Dec/Jan- 2017/18

Subject: Management Organizational Behavior

Exam Time: 3 hrs

Sub Code: MCA 16103

Max Marks: 100 M

Answer the following:

(5*20=100M)

UNIT-I

1. Define Management? Discuss the process and the functions of Management.
(Or)
2. Describe briefly Fayol's principles of management and their relevance to the modern companies.

UNIT-II

3. What are individual differences? Describe the various factors affecting Individual Differences. What are the similarities and dissimilarities among individuals?
(Or)
4. Define Personality. Explain the personality traits. State in detail the big five personality traits.

UNIT-III

5. What is planning? Explain the various steps in the planning process. "Planning is not an exact science" Critically comment.
(Or)
6. Define Organizational Structure. State the steps in structuring an organization. Differentiate the features of tall organizations from those of flat organizations.

UNIT-IV

7. Define Leadership. Discuss the different Leadership styles. Explain the trait theories of Leadership.
(Or)
8. What is a group? Discuss the different stages of group formation and development. Explain the factors that affect group cohesiveness.

UNIT-V

9. Define Conflict? What are the reasons for intergroup conflicts? Suggest the strategies to resolve them.
(Or)
10. What is Organizational Change? Explain the types and reasons for change. Why do employees resist change?

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Affiliated to Osmania University)

M.C.A I Semester Final Examination, Dec/Jan- 2017/18

Subject: Discrete Mathematics
Sub Code: MCA 16104

Exam Time: 3 hrs
Max Marks: 100 M

Answer the following:

(5*20=100M)

UNIT-I

1. a) Prove that every well ordered set is totally ordered. (5M)
b) Define Equivalence formula. Check whether the following is equivalent or not.
 $\sim(p \wedge q) \rightarrow (\sim p \vee (\sim p \vee q)) \Leftrightarrow (\sim p \vee q)$ (5M)
c) Define statement formula and the types of statement formula. Check whether following statement formula is a tautology or not.
 $((p \vee q) \wedge \sim(\sim p \wedge (\sim q \vee \sim r))) \vee (\sim p \wedge \sim q) \vee (\sim p \wedge \sim r)$
(Or)
d) a) Define PCNF and PDNF with an example each. (10M)
b) Obtain PCNF of the formula given by (10M)
 $(\sim p \rightarrow r) \wedge (q \Leftrightarrow p)$

UNIT-II

3. a) Define Equivalence relation. Show whether the following relations are transitive. (5M)
 $R_1 = \{<1, 1>\}$ $R_2 = \{<1, 2>, <2, 2>\}$
 $R_3 = \{<1, 2>, <2, 3>, <1, 3>, <2, 1>\}$
b) Express $E(x, y, z) = (x \oplus y)^{-1} (x * y)^{-1}$ in product of sums canonical form and minimize the expression. (15M)
(Or)
4. a) Let $< L, \leq >$ be a lattice. For any $a, b, c \in L$ the following properties called isotonicity hold. (10M)
 $b \leq c \left\{ \begin{array}{l} \{a * b \leq a * c \\ \{a \oplus b \leq a \oplus c \end{array} \right.$
b) Define direct product of two lattices. Prove that the direct product of any two distributive lattice is a distributive lattice. (10M)

UNIT-III

5. a) Define Kernel of the homomorphism .Prove that the Kernel of a homomorphism of from a group $< G, * >$ to $< H, \Delta >$ is a subgroup of $< G, * >$. (10M)
b) Prove that Every finite group of order 'n' is isomorphic to a permutation group of degree 'n'. (10M)
(Or)
6. a) Let $< G, * >$ and $< H, \Delta >$ be groups and $g: G \rightarrow H$ be a homomorphism .Then the Kernal of g is a normal subgroup? (10M)
b) Let $< G, * >$ be a group of order 2 in which $G = \{e, a\}$.Find $< G \times G, 0 >$ the direct product of $< G, * >$ with itself. (10M)
(P.T.O)

UNIT-IV

7. a) Define recurrence relation. Solve the recurrence relation (10M)
 $a_n - 9a_{n-1} + 20a_{n-2} = 0$ for $n \geq 2$ and $a_0 = -3, a_1 = -10$
- b) Solve the recurrence relation (10M)
 $a_{n+2} + 3a_{n+1} + 2a_n = 3^n$ for $n \geq 0$, given $a_0 = 0, a_1 = 1$
(Or) (10M)
8. a) Solve the recurrence relation (10M)
 $a_{n+2} - 10a_{n+1} + 21a_n = 3n^2 - 2, \quad n \geq 0$
- b) Find out the solution of the following recurrence equation using the substitution method.
 $f_n = f_{n-1} + 5$ for $n \geq 2$
and $f_1 = 3$ for $n=1$.

UNIT-V

9. a) State and Prove Euler's formula. (10M)
- b) Show that in any non directed graph there is an even number of vertices of odd degree and also show that (10M)
 $\sum^n \deg v_i = |E|$
10. a) Define isomorphism of graphs with a suitable example. (10M)
- b) Show that every graph in G_6 is isomorphic to $K_{3,3}$ (10M)

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Affiliated to Osmania University)

M.C.A I Semester Final Examination, Dec/Jan- 2017/18

Subject: Computer Architecture
Sub Code: MCA 16106

Exam Time: 3 hrs
Max Marks: 100 M

Answer the following:

(5*20=100M)

UNIT-I

1. a) Explain Half-Adder and Full Adder Circuits. (10M)
b) Explain different types of Flip-Flops. (10M)
(Or)
2. a) Explain 4 to 1 line multiplexer with diagram. (10M)
b) Simplify the Boolean function and draw the circuit diagram.
(i) $f(x,y,z) = \Sigma(0,2,3,4,6)$
(ii) $f(A,B,C,D) = \Sigma(0,1,2,5,8,9,10)$

UNIT-II

3. a) Discuss about Arithmetic Micro operations. (10M)
b) List the memory reference Instructions. (10M)
(Or)
4. a) Explain how accumulator logic is designed. (10M)
b) Explain the role of Interrupt with suitable example. (10M)

UNIT-III

5. a) Write brief notes on Input Output (I/O) Programming with suitable examples. (10M)
b) With the help of flow chart explain about Second pass of assembler. (10M)
(Or)
6. a) Explain Address sequencing for Control Memory. (10M)
b) What are the rules of an assembly language. (04M)
c) Explain the design of control unit. (06M)

UNIT-IV

7. a) Explain different Addressing Modes. (12M)
b) Distinguish between RISC and CISC. (08M)
(Or)
8. a) Explain about floating Point Arithmetic operations with flow charts. (20M)

UNIT-V

9. a) Explain Peripheral Devices. (05M)
b) What is DMA? Draw the block diagram of a DMA Controller. Explain DMA Transfer with a neat sketch.
(Or)
10. a) What is an I/O Interface? Draw the block diagram of the I/O Interface. (10M)
b) What is memory hierarchy? Explain it with diagram. (10M)

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Affiliated to Osmania University)

M.C.A I Semester Final Examination, Dec/Jan- 2017/18

Subject: Comp Prog & Prob Solving Using C

Exam Time: 3 hrs

Sub Code: MCA 16105

Max Marks: 100 M

Answer the following:

(5*20=100M)

UNIT-I

1. a) Define Algorithm and Flow Chart with examples. (10M)
 - b) Explain Fixed and Floating point representing of Numbers. (10M)
- (Or)**
2. a) Explain different computer Languages with examples. (05M)
 - b) Explain different data types in C. (10M)
 - c) Explain Bit Wise operators. (05M)

UNIT-II

3. a) Explain different LOOPS in C with examples. (10M)
 - b) Write a program for Linear Search. (10M)
- (Or)**
4. a) Explain If-else and Switch statements with examples. (10M)
 - b) Write a C Program to multiply two matrices of order mxn and nxp (10M)

UNIT-III

5. a) Explain storage classes in C. (10M)
 - b) Explain string Manipulation functions. (10M)
- (Or)**
6. a) Explain Standard and user – defined functions. (08M)
 - b) Explain Merge Sort Techniques (06M)
 - c) Write a C Program to find the factorial of given number using Recursion (06M)

UNIT-IV

7. a) Explain call by value and call by reference with examples. (15M)
 - b) Explain Command Line Arguments. (05M)
- (Or)**
8. a) Write short notes on Dynamic Memory Allocation. (12M)
 - b) Explain Pointers. (08M)

UNIT-V

9. a) Differentiate between structures and Unions. (10M)
 - b) Explain standard library functions in files. (10M)
- (Or)**
10. a) Explain Type Definition (typedef) and Enumerated types. (10M)
 - b) Write a C Program to create a file that displays employee's Information. (10M)
(Emp-ID, Names, Designation, Salary).

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Affiliated to Osmania University)

M.C.A I Semester Final Examination, Dec/Jan- 2017/18

Subject: Discrete Mathematics

Exam Time: 3 hrs

Sub Code: MCA 16104

Max Marks: 100 M

Answer the following:

(5*20=100M)

UNIT-I

1. a) Prove that every well ordered set is totally ordered. (5M)
- b) Define Equivalence formula. Check whether the following is equivalent or not.
 $\sim(p \wedge q) \rightarrow (\sim p \vee (\sim p \vee q)) \Leftrightarrow (\sim p \vee q)$ (5M)
- c) Define statement formula and the types of statement formula. Check whether following statement formula is a tautology or not. (10M)
 $((p \vee q) \wedge \sim(\sim p \wedge (\sim q \vee \sim r))) \vee (\sim p \wedge \sim q) \vee (\sim p \wedge \sim r)$
(Or)
2. a) Define PCNF and PDNF with an example each. (10M)
- b) Obtain PCNF of the formula given by
 $(\sim p \rightarrow r) \wedge (q \Leftrightarrow p)$ (10M)

UNIT-II

3. a) Define Equivalence relation. Show whether the following relations are transitive. (5M)
 $R_1 = \{<1, 1>\}$ $R_2 = \{<1, 2>, <2, 2>\}$
 $R_3 = \{<1, 2>, <2, 3>, <1, 3>, <2, 1>\}$
- b) Express $E(x, y, z) = (x \oplus y)^1 (x * y)^1$ in product of sums canonical form and minimize the expression. (15M)
(Or)
4. a) Let $< L, \leq >$ be a lattice. For any $a, b, c \in L$ the following properties called isotonicity hold. (10M)
$$b \leq c \begin{cases} \{a * b \leq a * c \\ \{a \oplus b \leq a \oplus c \end{cases}$$
- b) Define direct product of two lattices. Prove that the direct product of any two distributive lattice is a distributive lattice. (10M)

UNIT-III

5. a) Define Kernel of the homomorphism .Prove that the Kernel of a homomorphism of from a group $< G, * >$ to $< H, \Delta >$ is a subgroup of $< G, * >$. (10M)
- b) Prove that Every finite group of order 'n' is isomorphic to a permutation group of degree 'n'. (10M)
(Or)
6. a) Let $< G, * >$ and $< H, \Delta >$ be groups and $g: G \rightarrow H$ be a homomorphism .Then the Kernal of g is a normal subgroup? (10M)
- b) Let $< G, * >$ be a group of order 2 in which $G = \{e, a\}$.Find $< G \times G, 0 >$ the direct product of $< G, * >$ with itself. (10M)
(P.T.O)

UNIT-IV

7. a) Define recurrence relation. Solve the recurrence relation
 $a_n - 9a_{n-1} + 20a_{n-2} = 0$ for $n \geq 2$ and $a_0 = -3, a_1 = -10$ (10M)
- b) Solve the recurrence relation
 $a_{n+2} + 3a_{n+1} + 2a_n = 3^n$ for $n \geq 0$, given $a_0 = 0, a_1 = 1$ (10M)
(Or) (10M)
8. a) Solve the recurrence relation.
 $a_{n+2} - 10a_{n+1} + 21a_n = 3n^2 - 2, \quad n \geq 0$ (10M)
- b) Find out the solution of the following recurrence equation using the substitution method.
- $f_n = f_{n-1} + 5$ for $n \geq 2$
and $f_n = 3$ for $n=1$.

UNIT-V

9. a) State and Prove Euler's formula. (10M)
- b) Show that in any non directed graph there is an even number of vertices of odd degree and also show that
 $\sum^n \deg v_i = |E|$ (10M)
10. a) Define isomorphism of graphs with a suitable example. (10M)
- b) Show that every graph in G_6 is isomorphic to $K_{3,3}$ (10M)

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Re-accredited with 'A' Grade by NAAC)

M.C.A I Semester Supplementary Examinations, July/August - 2017

Subject: Management Organizational Behavior

Exam Time: 3 hrs

Sub Code: MCA 16103

Max Marks: 100 M

Answer the following:

(5*20=100 M)

UNIT-I

1. Define management. Explain the various levels of management in an organization.
(Or)
2. Explain the functions of Management.

UNIT-II

3. Explain the concept of organization behavior. List out the factors which influence the behavior of an individual
(Or)
4. Define perception. Enumerate and explain the characteristics of the perceiver.

UNIT-III

5. Define a Plan. Explain the about the various types of plans.
(Or)
6. Define Organizational culture and enumerate the factors shaping organizational culture citing examples.

UNIT-IV

7. Explain the concept of group development and discuss the stages in group development.
(Or)
8. Change is an inevitable part of any organization. Explain. And if there is resistance towards change how is it dealt with.

UNIT-V

9. Define power. Explain the various sources of power.
(Or)
10. Define communication and describe the barriers to communication.

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Re-accredited with 'A' Grade by NAAC)

M.C.A I Semester Supplementary Examination, July/Aug- 2017

Answer all Questions:

UNIT-I

- UNIT-1**

 1. a) What are the various symbols used in a flowchart? Write appropriate algorithm to find result of a student given marks in one subject.
b) Perform the following conversions .
 - i Convert $101111001_{(2)}$ to octal and hexadecimal
 - ii Convert $572_{(10)}$ to binary and octal

(10M+10M)

(Or)

 - 2. a) Differential between symbolic constants and literals in C programming language.
b) Explain arithmetic operators and ternary operator with examples
c) Write a program to illustrate conversion of float data type to int data type (7+6+7M)

UNIT-II

3. a) Differentiate between while loop and do while loop using an appropriate example.
b) What are two dimensional arrays. Write a program to implement matrix addition (10+10M)
(Or)

4. a) Write a program to display the number of days in a given month using switch case.
b) Write a program to search for a given number in an array using binary
search technique. (10+10M)

UNIT-III

5. a) Explain the register and auto storage classes. Write a function to find minimum of two numbers.
b) Write a program to sort an array of numbers using merge sort method. (10+10M)

(Or)

6. a) What are preprocessor commands? Write a program to implement the various string manipulation functions.
b) Explain scope of a variable with respect to functions. Write a program to swap two numbers. (10+10M)

UNIT-IV

7. a) What are pointers? Write a program to demonstrate pointer arithmetic.
b) Write a program to illustrate pointer to functions. (10+10M)

(Or)

8. a) Write a program to illustrate pointers to arrays.
b) What are command line arguments? Write a program to demonstrate command line arguments. (10+10M)

(P.T.O)

UNIT-V

9. a) What are unions? Write a program to demonstrate unions.
b) Write a program to demonstrate array of structures.

(10+10M)

(Or)

10. a) Write a short note on character I/O functions and file manipulation functions.
b) Write a program to demonstrate reading from a file.

(10+10M)

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL
(An Autonomous and Reaccredited with 'A' Grade by NAAC)
MCA (I semester) Semester Supplementary Examination, April - 2017

Subject : Comp Prog & Prob Solving C& C++ **Exam Time : 3hrs**
Sub Code : MCA 10103 **Max. Marks : 100**

Answer the following questions: (5*20=100M)

Exam Time : 3hrs
Max. Marks : 100

(5*20=10)

Answer the following questions: (5*20=100M)

UNIT-I

- CNA-1

 1. a) What are the basic datatypes in C? Explain with the help of examples. (7M)
b) Discuss various bitwise operators in ‘C’ Language. (7M)
c) Write a C- program to calculate fibonacci series. (6M)
 - (Or)
 2. a) Describe about type casting in C- language. (7M)
b) Write a C- program to check for a vowel or a consonant using case statement. (6M)
c) Explain the precedence of operators. (7M)

UNIT-II

- UNIT-II**

3. a) What is recursion? Write a recursive program for finding the sum of natural numbers from 1 to n. (7M)
b) Describe about Pointer Arithmetic. (7M)
c) Differentiate between Call BY Value and Call by Address. (6M)

(Or)

4. a) Explain various string functions. (7M)
b) Write a 'C' program for finding multiplication of two matrices. (6M)
c) Explain various memory allocation functions. (7M)

UNIT-III

UNIT-IV

- UNIT-IV**

7. a) What is function overloading ? Explain with suitable example. (6M)
b) Write a program for addition of two numbers using function template. (6M)
c) Explain user defined function in C++. (8M)

(Or)

8. a) Explain : (4*3=12M)
(i) inline function (ii) default parameter
(iii) Parameter Casting (iv) reference parameter

b) write a C++ program to find whether a given number is Armstrong number or not.(8)

UNIT-V

9. (a) Explain different types of inheritances with example (12 M)
(b) Differentiate between Copy Constructor and Default Constructor with example (8 M)

(or)

10. (a) Define a class "Matrix" for adding two matrices using operator overloading. (10M)
(b) Explain dynamic Polymorphism and virtual function with example. (10 M)

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Re-accredited with 'A' Grade by NAAC)

M.C.A I Semester Supplementary Examination, July/Aug- 2017

Subject: Computer Architecture

Exam Time: 3 hrs

Sub Code: MCA 16106

Max Marks: 100 M

Answer all Questions:

1. a) Write a short note on logic gates (10M)
b) What are sequential circuits? Write a short note on flip flops (10M)
(Or)
2. a) Explain the working of multiplexers and decoders (10M)
b) Write short notes on memory unit and error detection codes (10M)

3. a) Explain arithmetic micro operations with appropriate examples. (10M)
b) Explain timing - control and instruction cycle (10M)
(Or)
4. a) Write a short note on the various computer registers (10M)
b) What are interrupts? Draw the flow chart for interrupt cycle and explain. (10M)

5. Explain first pass and second pass of an assembler. (20M)
(Or)
6. a) Write a short note on arithmetic and logic operations (10M)
b) Explain how address sequencing is done in control memory. (10M)

7. a) Explain the various addressing modes (10M)
b) Explain different Instruction Formats. (10M)
(Or)
8. a) Explain Booth's multiplication algorithm. (10M)
b) Explain the BCD adder (10M)

9. a) Explain strobe control and Hand shaking methods of asynchronous data transfer. (10M)
b) Explain DMA (10M)
(Or)
- 10.a) Explain memory Hierarchy with help of diagram. (10M)
b) What is cache memory? Explain direct mapping in cache memory. (10M)

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Re-accredited with 'A' Grade by NAAC)

M.C.A I Semester Final Examination, Jan/Feb - 2017

Subject: Management Organizational Behavior
Sub Code: MCA 16103

Exam Time: 3 hrs
Max Marks: 100 M

Answer the following:

(5*20=100 M)

UNIT-I

1. Define the term manager. Explain the various roles played by a manager of a MNC company providing software solutions.
2. Explain the process of Management.

(Or)

UNIT-II

3. Explain about Big -5 Model of Personality
4. Define perception. Enumerate and Explain about the various problems in perception.

UNIT-III

5. Define Planning. Explain the process of planning in a dynamic environment.
6. Define Organisational culture and enumerate the factors shaping organizational culture citing examples.

UNIT-IV

7. Explain about Equity and Expectancy theory of Motivation.
8. Change is an inevitable part of any organization. Explain. And if there is resistance towards change how is it dealt with.

UNIT-V

9. Explain the various causes and consequences of conflict and also discuss the strategies to overcome conflict.
10. Define communication and describe the process of communication.

(Or)

LOYOLA ACADEMY DEGREE & PG COLLEGE, OLD ALWAL

(An Autonomous and Re-accredited with 'A' Grade by NAAC)

M.C.A I Semester Final Examination, Jan/Feb- 2017

Subject: Computer Architecture

Exam Time: 3 hrs

Sub Code: MCA 16106

Max Marks: 100 M

Answer all Questions:

1. a) Write a short note on Karnaugh maps (10M)
b) What are combinational circuits? Write a short note on flip flops (10M)
(Or)
2. a) Explain the working of shift registers and binary counters (10M)
b) Explain fixed and floating point representation (10M)

3. a) Explain shift micro operations with appropriate examples. (10M)
b) Explain the working of arithmetic logic shift unit (10M)
(Or)
4. a) Write a short note on the input ,output and interrupts (10M)
b) What are instruction codes? Draw the flow chart for instruction cycle (10M)

5. Explain first pass and second pass of an assembler. (20M)
(Or)
6. a) Explain the design of control unit (10M)
b) Explain subroutines with an appropriate example (10M)

7. a) Explain general register organization and stack organization (10M)
b) Write a short note on various instruction formats . (10M)
(Or)
8. a) Explain 2's complement addition and subtraction (10M)
b) Write a short note on floating point arithmetic operations (10M)

9. a) Explain the difference between isolated and memory mapped I/O . (10M)
b) Explain about asynchronous data transfer and daisy chaining priority Interrupt. (10M)
(Or)
- 10.a) Write a short note on memory hierarchy. (10M)
b) What is main memory? Differentiate between RAM and ROM . (10M)