

SUBJECT CODE NO:- K-10
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA(CGPA) Examination Oct/Nov 2016
Computer Oriented Numerical Methods
(Revised)

[Time: Two Hours]

[Max.Marks:50]

Please check whether you have got the right question paper.

- N.B
- i. Q.6 from section A and Q.12 section B are compulsory.
 - ii. Attempt any three questions each section, from Q.1 to Q.5 and from Q.7 to Q.11.
 - iii. Use of non – programmable calculator is allowed.
 - iv. Assume suitable data, if necessary and mention it clearly.

Section A

Q.1 Solve following set of equations using Gauss – Jordan method. 07

$$2X_1 + 4X_2 - 6X_3 = -8$$

$$X_1 + 3X_2 + X_3 = 10$$

$$2X_1 - 4X_2 - 2X_3 = -12$$

Q.2 Write a program for Trapezoidal Rule. 07

Q.3 Solve $X^2 - 3 = 0$, using Bisection method, correct up to 2 decimal places. 07

Q.4 Given the equation $dy/dx = 3x^2 + 1$, with $y(1)$. Estimate $y(2)$ by Euler's method using (i) $h = 0.5$ and (ii) $h = 0.25$. 07

Q.5 Solve $X^2 - 3X + 2 = 0$, using Newton- Raphson method, correct up to two decimal places. Assume $X=0.125$, initially. 07

Q.6 Write short note on (any one) 04

- 1) Types of errors
- 2) Difference tables.

Section B

Q.7 Find the cubic polynomial which takes following values 07

X	0	1	2	3
F(x)	1	2	1	10

Also find $f(4)$.

Q.8 Find y when $x = 10$, from following set of data. 07

X	5	6	9	11
y	12	13	14	16

Q.9 Find $\int_0^1 [(1/1+x)] dx$, correct to 3 decimal places, using trapezoidal and Simson's rules with $h = 0.5$ and $h = 0.25$. 07

Q.10 What are different difference tables used in interpolation? Explain with suitable example. 07

Q.11 Find the best fit values of a and b , so that $y = a + bx$ fits the data 07

X	0	1	2	3	4
y	1	1.8	3.3	4.5	6.3

Q.12 Write short note on (any one) 04

- 1) Importance of pivoting in Gauss elimination method.
- 2) Advantages of numerical methods.

SUBJECT CODE NO:- K-11
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA Examination Oct/Nov 2016

Core Java
(Old)

[Time:Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 and Q.No.8 are compulsory.
 - ii) Solve any two questions from remaining in each section.

SECTION A

- | | | |
|-----|--|----------|
| Q.1 | Discuss Javas buzzwords in detail. | 08 |
| Q.2 | a) What is constructor? Explain different types of constructor.
b) Write a Java Applet to print Hello World. | 08
08 |
| Q.3 | a) Explain string and string Buffer chars with example.
b) Write a Java program to demonstrate Command Line arguments. | 08
08 |
| Q.4 | a) What is inheritance? Give suitable example to demonstrate the use of super keyword.
b) Create a Java swing program to calculate square of a number and display its output. | 08
08 |

SECTION B

- | | | |
|-----|--|----------|
| Q.5 | a) Explain the life cycle of thread with suitable diagram?
b) Write a Java program to create thread using Thread class. | 08
08 |
| Q.6 | a) Explain the process of exception handling in detail.
b) Write a Java program to demonstrate steps of JDBC application. | 08
08 |
| Q.7 | a) What is Stream? Explain input and output stream.
b) Write a program to copy the contents of one file to another. | 08
08 |
| Q.8 | Write short notes on (Any two)
a. Thread priorities
b. JDBC Architecture
c. Byte Streams. | 08 |

SUBJECT CODE NO:- K-31
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA (CGPA) Examination Oct/Nov 2016
Object Oriented Programming Using C++
(Revised)

[Time:Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 and Q. No. 8 are compulsory.
 - ii) Solve any two questions from the remaining in each section.

Section A

Q.1 Find the output of the following also give the reason 08

```
a) #include <iostream.h>
#include<conio.h>
Void main()
{
Char ch='B';
Clrscr();
Int x =ch;
Cout<< "ASCII code of character ("<<ch<<") is :"<<x<< endl;
Cout <<"x"<< (char )x<<endl;
getch();
}

b) #include <iostream.h>
#include<conio.h>
Void getch (int a,int b)
{
Int c=a+b;
Cout<<"\n Addition="<<c;
}
Void main()
{
Int x, y;
Clrscr();
Cout<<"\n Enter the value for x and y" <<endl;
Cin>>x>>y;
getch(x,y);
getch();
}
```

Q.2 a) Write a program to demonstrate static class members. 08

b) Write a program to display the roll number, name & age of students using array of object. 08

Q.3 a) What the benefits are of object oriented programming? Differentiate between procedure oriented languages and object oriented languages. 08

b) Write a program to accept elements for two dimensional arrays and display the addition of the two dimensional arrays. 08

Q.4 Write a short note on any four with suitable example if any.

- a) Preprocessor directives
- b) Array of Object
- c) Inline function
- d) Friend function
- e) Copy constructor
- f) Static keyword

16

Section-B

Q.5 Find the output of the following also give the reason.

08

```
a) #include <iostream.h>
#include <conio.h>
Class A
{
    Public:
    Virtual void fun()
    {
        Cout <<"A" << endl;
    }
};
Class B : public A
{
    Public:
    Virtual void fun()
    {
        Cout <<"B" << endl;
    }
};
Class C : public B
{
    Public:
    Virtual void fun()
    {
        Cout <<"C" << endl;
    }
};
Void main()
{
    Clrscr();
    A*a =newC;
    A *b=new B;
    a->fun();
    b->fun();
    getch();
}
```

```

b) #include <iostream.h>
#include<conio.h>
Void main()
{
    Clrscr();
    Int x=10, y=20;
    Int*ptr=&x;
    Int & ref =y;
    *ptr++;
    Ref++;
    Cout<<x<<""<<y<<endl;
    getch();
}

```

- Q.6 a) What is templates? Write a program for function templet for multiplication of a two numbers. 08
b) Write a program to write a student information (like roll no, name, age, marks of three subjects) into 08
a file using file constructor and append mode.
- Q.7 a) Write a program to overload* (multiplication) operator. 08
b) What is virtual base class? Explain with suitable example. 08
- Q.8 Write a short note on **any four with suitable examples.** 16
a) Template
b) Pure virtual function
c) Containership
d) Exception Handling
e) Command line argument
f) Virtual destructor

SUBJECT CODE NO:- K-61
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA(CGPA) Examination Oct/Nov 2016
Operating Systems
(Revised)

[Time:Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

N.B

- i) Q.04 & Q.08 are compulsory.
- ii) Attempt any two questions from each section from remaining.

Section A

- Q.1 a) What is operating system? Discuss various types of operating system. 08
- b) List & Explain various system calls used by the OS according to services provided by operating system. 08
- Q.2 a) Consider the following set of processes $P_0, P_1, P_2, P_3, \& P_4$ arrived all at time 0. 08

Process	Burt Time	Priority
P_0	10	3
P_1	01	1
P_2	02	2
P_3	01	3
P_4	05	4

Draw a Gantt chart with total & average turnaround & waiting time using .

- i) SJF (No-preemptive)
- ii) Round Rabin (with $T_q = 3$)

- b) Consider the following snapshot of the system. The system has 5 process P1, P2, P3, P4 & P5 with three types of resources A,B & C. 08

Allocation

	A	B	C
P1	0	1	0
P2	3	0	2
P3	3	0	2
P4	2	1	1
P5	0	0	2

Max

	A	B	C
P0	7	5	3
P1	3	2	2
P2	9	0	2
P3	2	2	2
P4	4	3	3

Available

A	B	C
2	3	0

Answer the following question using Bankers algorithm.

- i) Find the need matrix of resources by the priers.
- ii) Is the system in safe state?

Q.3 a) How do semaphores provide better solutions as compared to critical section problem? 08

b) What advantages do thread have over multiple processes? What major disadvantages do they have? 08

Q.4 Write a short note on (Any Two) 08

- a) Linker & Loader
- b) Multi processing & multi programming
- c) IPC
- d) API

Section – B

Q.5 a) Explain external & Internal fragmentation with suitable diagram. 08

b) Compare the first –fit , and best –fit space allocation mechanism with suitable example . 08

Q.6 a) Consider a following page reference string A,B,C,D,B,A,E,F,A,B,C,G,F,C,F. How many page fault would occurred for the following page replacement algorithm with frame size 3. 08

- I) Optimal
- II) FIFO

b) Suppose the heads of moving –head disk with 200 tracks , rumbaed 0 to 199 & Currently the head serving A request 10. If the queue of request is kept in FIFO order . What are the total & average head movement to satisfy the requests for the following disk scheduling algorithms .

- i) FCFS
- ii) SSTF.

Q.7 a) Compare & contrast linked list allocation with indexed allocation technique of file management . 08

b) What are the various methods used for free disk space management. 08

Q.8 Write a short note on (Any Two) 08

- a) Swapping
- b) Thrashing
- c) Segmentation
- d) Hard & soft real time.

SUBJECT CODE NO:- K-62
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA Examination Oct/Nov 2016
Professional Communication Skill
(Old)

[Time: Two Hours]

[Max. Marks:50]

Please check whether you have got the right question paper.

N.B

i) All questions are compulsory.

- | | | |
|-----|---|----|
| Q.1 | Explain simple form of present past and future tense. | 10 |
| Q.2 | What are the telephonic conversion ethics, give an example to elaborate. | 10 |
| Q.3 | What do you understand by group discussion? Explain the strategies of G.D. | 10 |
| Q.4 | Write an invitation letter to your Teacher to invite him/her for house warming ceremony of your home. | 10 |
| Q.5 | Write short note on (any two) | 10 |
| | 1) Types of interview | |
| | 2) Leadership qualities in G.D | |
| | 3) Types of letters | |
| | 4) Email ethics | |

SUBJECT CODE NO:- K-91
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA (CGPA) Examination Oct/Nov 2016
Software Engineering
(Revised)

[Time:Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 and 8 are compulsory.
 - ii) Solve any two questions from each remaining section.
 - iii) Draw neat diagram wherever necessary.

Section A

- Q.1 Marketing department receives customers order over the internet. As soon as production is ready, dispatch section of the department sends the dispatch advice to the customer through email. The material is dispatched to the customer along with delivery challan cum invoice. The customer order is updated accordingly. The payment is accepted through cash or credit card. Prepare software requirement specification (SRS) 20
- Q.2 Explain why the process of project planning is iterative and why a plan must be continuously reviewed during a software project. 10
- Q.3 Compare and contrast between function point and lines code as size metrics. 10
- Q.4 Give a brief overview of the various phases of the waterfall life cycle model. 10

Section B

- Q.5 Sketch the usecase and activity diagrams for modelling a hospital information system aimed at collecting and storing complete information pertaining to the patients treatment history and disease behaviour where actors could be doctor, nurse, receptionist, visitors etc. 10
- Q.6 What is cyclomatic complexity? How to compute the cyclomatic complexity. Explain with suitable example. 10
- Q.7 Draw the DFD's for payroll system for college employees up to second level. 10
- Q.8 Write short notes (any four) 20
- a) Risk management
 - b) Design process
 - c) Decision tree
 - d) Work break down structure
 - e) CPM vs PERT

SUBJECT CODE NO:- K-92
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA Examination Oct/Nov 2016
Discrete Mathematical Structure
(Old)

[Time:Three Hours]

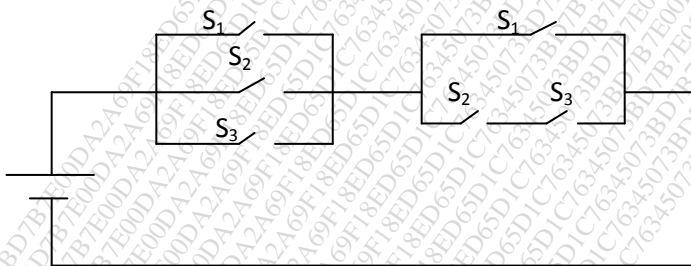
[Max. Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 & 5 are compulsory.
 - ii) Solve any two questions from the remaining each section.

Section A

- Q.1 Define following terms with suitable examples. 08
- I. Intersection
 - II. Union
 - III. Negation
 - IV. Conjunction
- Q.2
- a) Show that if seven colours are used to paint 50 bicycles, at list 8 bicycles will be the same colour. 04
 - b) If two coins are tossed find the probability of getting two tails. 04
 - c) If two dice are thrown then what is the probability of getting the sum of the score of a number which is not divisible by 5. 08
- Q.3
- a) Prove that $5^n - 1$ is divisible by 4 for $n \geq 1$. 04
 - b) Prove the logical equivalence $p \rightarrow (q \rightarrow r) = (p \rightarrow q) \wedge r$. 04
 - c) Simplify the following circuit 08

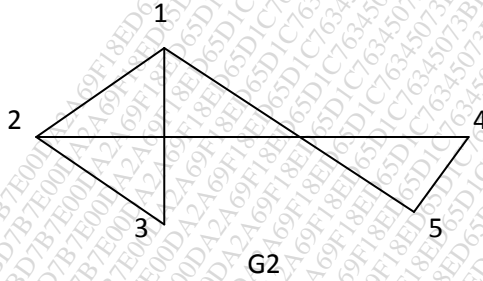
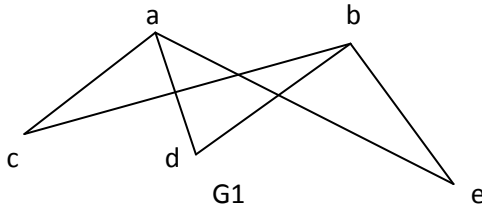


- Q.4
- a) Construct the truth table of the following statement. 04
 $((\sim p \wedge q) \vee (q \wedge r)) \rightarrow r$
 - b) State the converse & contra positive of each of the following statements. 04
 - 1. If it rains, I am not going to the city.
 - 2. I can't complete the task if I don't get help.
 - 3. I will come only if I am not too busy.
 - 4. If you complete this job, you can take a holiday.
 - c) Prove by mathematical induction $1/1.2 + 1/2.3 + 1/3.4 + \dots + 1/n(n+1) = n/n+1$ 08

Section B

- Q.5 Write short notes on 08
- I. Simple Path
 - II. Directed Graph
 - III. Forest
 - IV. Weighted Graph

Q.6 a) Determine the following graphs are Isomorphic or not Isomorphic. 04



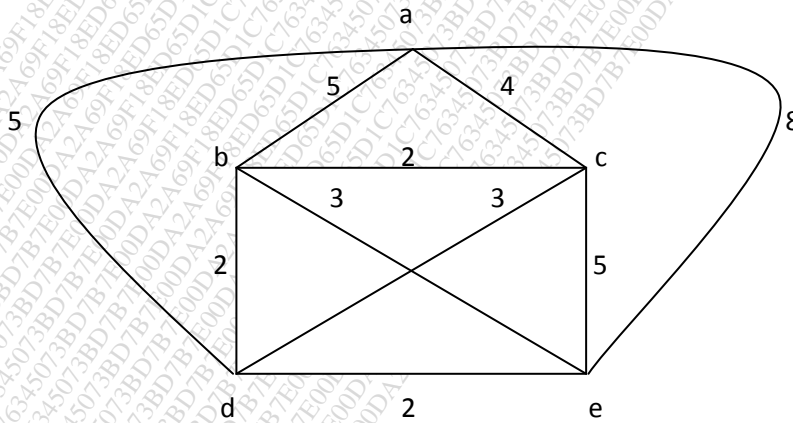
b) Explain Konigsberg Bridge Problem. 04
 c) $a_r - 7a_{r-1} + 10a_{r-2} = 0$ with initial conditions $a_0 = 4, a_1 = 17$. 08

Q.7 a) if 04

$$a_r = \begin{cases} 0, & 0 \leq r \leq 2 \\ 5^r, & r \geq 3 \end{cases} \quad b_r = \begin{cases} 3+r, & 0 \leq r \leq 1 \\ 2^r, & r \geq 2 \end{cases}$$

Find $a_r + b_r$ & $a_r * b_r$.

a) Union & Intersection of two graphs. 04
 b) Solve the following problems using nearest neighbour method. 08



Q.8 a) Construct the binary search tree from the following. 04
 22,48,15,10,74,18,54,62,26,20,51,59,14,16,88
 b) Find the numeric function for the generating function $A(z) = 2/(1-4z^2)$. 04
 c) Explain the Matrix representation of graph. 08

SUBJECT CODE NO:- K-158
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA(CGPA) Examination Oct/Nov 2016
Data Structure
(Revised)

[Time: Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

- N.B
- 1) Q.No.4 and Q.No.8 are compulsory.
 - 2) Attempt any two questions from Q.No1 to Q.no.3 and Q.No.5 to Q.No.7.

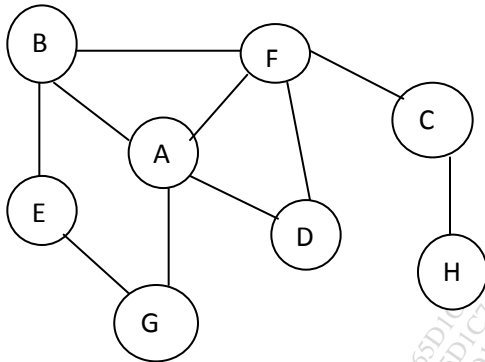
Section A

- Q.1
- a) What is hashing? Compare hashing technique- linear probing with linear search by providing suitable example. 08
 - b) Write a program to implement stack operations. 08
- Q.2
- a) Write an algorithm to perform insert- first, insert- between and search operation in case of singly circular linked list. 08
 - b) Differentiate stack implementation in case of linked list and array. 08
- Q.3
- a) What is array? Write an algorithm to insert and delete an element in one dimensional array. 08
 - b) Explain dynamically allocated array with suitable example. 08
- Q.4 Write short note on following (any two) 08
- a) Multilinked list
 - b) Structure & union
 - c) Abstract data type

Section B

- Q.5
- a) What is graph? Explain graph storage structures with suitable example. 08
 - b) Explain minimum spanning tree using prim's method with suitable example. 08

- Q.6 a) Show how following numbers can be inserted in binary search tree in the order they are given 50,40,20,80,60,28,120,78 draw the tree in each step. 08
 b) Traverse a graph using BFS & DFS. Starting vertex is A. 08



- Q.7 a) Sort following data using radix sort technique. 08
 48, 130, 2, 11, 14, 118, 300, 215, 512
 b) Write a program to implement BFS of a graph. 08
- Q.8 Write short note on following (any two) 08
 a) Threaded binary tree
 b) DFS
 c) Bubble sort.

SUBJECT CODE NO:- K-168
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA(CGPA) Examination Oct/Nov 2016
Database Management System
(Revised)

[Time: Two Hours]

[Max. Marks:50]

Please check whether you have got the right question paper.

- N.B
- i) Question 1 and 4 are compulsory.
 - ii) Attempt any one questions from each section from remaining.

Section A

- Q.1 Explain needs and characteristics of DBMS. 10
- Q.2
- a) What are the different types of DBMS users with their roles and responsibilities? 08
 - b) Differentiate between 3 tier and 2 tier architecture. 07
- Q.3 Write short note (any three) 15
- a) Data models
 - b) View of data schemas and instances
 - c) DBMS architecture
 - d) E-R model
 - e) Explain primary, candidate and super keys

Section B

- Q.4 Explain join commands in detail with example. 10
- Q.5
- a) Explain with example 1NF to 3-NF. State rules of 1NF, 2NF, and 3NF. 08
 - b) Write SQL commands for the following. 07
- Branch (Brid, Brname) student (Rno, Brid, Fname, Lname, Feespaid, Doj)
- 1. Write command to create above two tables with given PK
 - 2. Display the total fees paid by the students
 - 3. Count how many students are in college
 - 4. Display list of students who has been admitted to CSE branch
 - 5. Display all students from the student table
 - 6. List the fname, lname, feespaid for all students
 - 7. Display fname, lname, feespaid and branch name of those students who have paid fees between Rs.25,000/- to Rs.50,000/-

- Q.6 Write short note (any three) 15
- a) Explain create table command with types of constraints
 - b) Types of keys in DBMS
 - c) DCL commands in SQL
 - d) Mapping ER-to-Database
 - e) Explain Built in functions in SQL

SUBJECT CODE NO:- K-169
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA Examination Oct/Nov 2016
Principals of Programming Language
(Old)

[Time:Three Hours]

[Max. Marks:80]

N.B Please check whether you have got the right question paper.
I. Q.No.4 & Q.No.8 are compulsory.
II. Attempt any two questions from Q.1 to Q.3 and Q.5 to Q.7.

Section A

- | | | |
|-----|--|----|
| Q.1 | a) What is the need of programming languages? Explain in detail. | 08 |
| | b) Explain the art of language design. | 08 |
| Q.2 | a) Differentiate between static and dynamic scoping. | 08 |
| | b) Explain with example attribute grammars. | 08 |
| Q.3 | a) What are first class subroutines? What languages support them? | 08 |
| | b) What is left recursion? Explain the rules of elimination of left recursion. | 08 |
| Q.4 | Write short note on. (Any two) | 08 |
| | i) Bootstrapping. | |
| | ii) JIT. | |
| | iii) Pragmas. | |

Section B

- | | | |
|-----|---|----|
| Q.5 | a) What are three basic principle mechanism of object allocation procedure? | 08 |
| | b) Explain garbage collection technique. | 08 |
| Q.6 | a) Explain array with their memory layout. | 08 |
| | b) What is recursion? Explain in detail. | 08 |
| Q.7 | a) Describe backend compiler structure in detail. | 08 |
| | b) Explain loop improvement- II in detail. | 08 |
| Q.8 | Write short note on. (Any two) | 08 |
| | i) Dope vectors. | |
| | ii) Stack Allocation. | |
| | iii) Heap Allocation. | |

SUBJECT CODE NO:- K-180
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA(CGPA) Examination Oct/Nov 2016
Programming in C
(Revised)

[Time: Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Question 1 from section A & question 5 from section B are compulsory.
 - ii) Attempt any two questions each from question 2 to 4 and question 6 to 8.

Section A

- Q.1 What is an array? Explain one dimensional & two dimensional arrays in C with suitable example. 08
- Q.2
- a) Draw flowchart and develop algorithm to calculate simple interest using function. 08
 - b) Explain the input and output operations in C with suitable example. 08
- Q.3
- a) Explain file functions: fopen (), fclose(), fprintf(), fgetc(). 08
 - b) Draw flowchart and write a program to print table of a number. 08
- Q.4
- a) Find output of following code: 08
 - i)


```
void main ()
{ int i;
  for (i=10; i>0; i=i-2)
    { printf("\n % d", i); }
}
```
 - ii)


```
void main ()
{ int i;
  for (i=10; i<25; i++)
    { if( (i % 5)==0)
      continue;
      printf("\n % d ",i);
    }
}
```
 - b) Write a program to calculate factorial of a number using recursion. 08

Section B

- Q.5 Compare :- 1) Unions and structures 04
 2) Local variables & Global variables. 04
- Q.6
- a) Explain structure of C program with suitable example. 08
 - b) Explain the concept of recursive functions with suitable example. 08
- Q.7
- a) Write syntax and explain do-while loop. Also write a program to read an integer and separate it digits, using do-while loop. 08
 - b) Draw flowchart to display min number for 4*4 matrix. 08
- Q.8
- a) Explain command line arguments with example. 08
 - b) Write an algorithm and flowchart to read 10 numbers and compute the, max and minimum value. 08

SUBJECT CODE NO:- K-181
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA Examination Oct/Nov 2016
Operating System
(Old)

[Time: Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

- N.B I. Q.No.4 from section A and Q.No.8 from section B are compulsory.
 II. Attempt any two questions from each Question No. 1 to 3 and question no 5 to 7.

SECTION A

- Q.1 a) What is system calls and explain any four types of system calls. 08
 b) Explain Layered structure of Operating System. 08
 Q.2 a) What is Process and explain PCB. 08
 b) Explain bounded buffer problem and its solution. 08
 Q.3 a) Consider Following Set of processes with the CPU burst in milliseconds. 08

Process	Burst time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, Ps, all at time 0. Calculate Waiting time and Turnaround time for FCFS, SJF and Priority Scheduling algorithm and draw Gantt chart for the same.

- Q.4 b) What is Semaphore and explain Busy waiting with Semaphore. 08
 Explain different types of operating systems. 08

SECTION B

- Q.5 a) Consider the following page reference string. Show how page will be allocated using FIFO, LRU and Optimal Page Replacement policies 08
 Reference String 5,4,3,2,1,4,3,5,4,3,2,1,5
 Assume 3 Frames.
 b) What is page fault and explain steps to handle page fault. 08
 Q.6 a) What is deadlock and explain how to avoid deadlock with suitable example. 08
 b) Discuss various techniques that can be used to share file among different users. 08
 Q.7 a) What is TLB? Explain what information is stored in typical TLB table. 08
 b) Given memory partitions of 100K, 500K, 200K, 300K and 600K in given order. Apply first fit, best fit and worst fit algorithms to place processes with the space requirements of 212K, 417K, 112K and 426K in order. Which algorithm makes the most efficient use of memory? 08
 Q.8 What is Thread? Explain the difference between thread and process. 08

SUBJECT CODE NO:- K-205
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA(CGPA) Examination Oct/Nov 2016
Discrete Mathematical Structure
(Revised)

[Time: Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

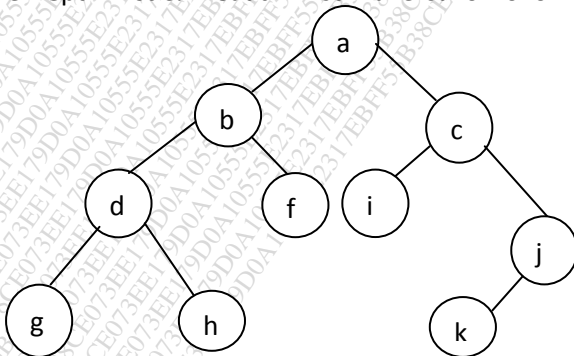
- N.B
- i) Q.No.1 and Q.No.5 are compulsory.
 - ii) Solve any TWO questions from the remaining each section.

Section A

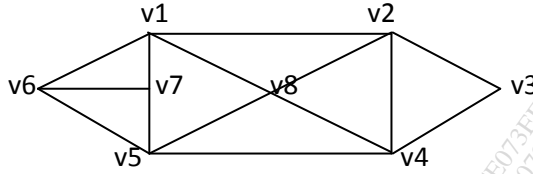
- Q.1 a) If $A = \{2,4,6,8,10\}$ & $B = \{a,b,c,2,4,d,e\}$ then find following terms. 04
 $A \cap B, A \cup B, A \oplus B, A - B$
- b) Express the following statements in logical form. 04
1. If I am not waiting for one hour, then I am not bored.
 2. Gopal is tall but not handsome
 3. The sun is bright and humidity is not high
 4. If you know Object Oriented Programming & Oracle, then you will get job.
- Q.2 a) Prove that $5^n - 1$ divisible by 4 for $n \geq 1$ by mathematical induction. 04
 b) Show that if there are eight people born in a week. How many people are born on the same day? 04
 c) $A = \{1,2,3,4\}$ $R_1 = \{(1,1), (1,2), (2,3), (2,4), (3,4), (4,1), (4,2)\}$ & 08
 $R_2 = \{(3,1), (4,4), (2,3), (2,4), (1,1), (1,4)\}$ then verify
1. $M_{R_1.R_2} = M_{R_1} \cdot M_{R_2}$
 2. $M_{(R_1.R_2)^c} = M_{R_1^c} \cdot M_{R_2^c}$
- Q.3 a) Determine which of the forms given below is tautology, contradiction or neither. 04
 $(p \rightarrow q) \wedge (q \rightarrow r) \rightarrow (p \rightarrow r)$
- b) $A = \{a, b, c, d\}, R = \{(a, a), (b, a), (b, b), (c, c), (d, d)\}$ Determine whether R equivalence relation 04
- c) Two dice are rolled together. Event A denotes that the sum of the numbers on the top faces is even & event B denotes that there is a 4 on at least one of the top faces. Find $P(A \cup B)$ & $P(A \cap B)$. 08
- Q.4 a) Explain Rule of sum & rule of product with suitable examples. 04
 b) Let $A = \{1,2,3,4,12\}$. Consider the partial order divisibility on A. $a \leq b$ if & only if $a|b$. Draw the Hasse diagram of the poset (A, \leq) . 04
 c) Solve the following mathematical induction. 08
 $1+3+5+\dots+(2n-1)=n^2$

Section-B

- Q.5 Find the Depth first & Breadth First Traversal of following Binary Tree. 08



- Q.6 a) Determine the generating function of the numeric function a_r .
 $a_r = 3^r + 4^{r+1}, r \geq 0.$ 04
 b) Determine whether the given graph has Hamiltonian path & circuit. 04

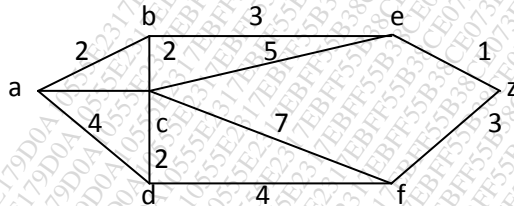


- c) If $a_r = \begin{cases} 2, & 0 \leq r \leq 3 \\ 2^{-r} + 5, & r \geq 4 \end{cases}$
 Determine $S^2 a, S^{-2} a$ from the numeric function a_r . 08

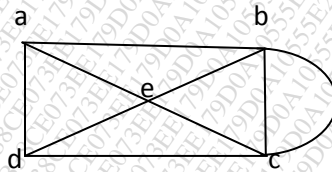
- Q.7 a) Explain Binary Tree & Prefix code of binary tree with suitable example. 04
 b) Draw the graph corresponding to each adjacency matrix. 04

	a	b	c	d	e
a	1	0	0	2	1
b	0	0	1	1	0
c	0	1	0	2	1
d	2	1	2	1	0
e	1	0	1	0	0

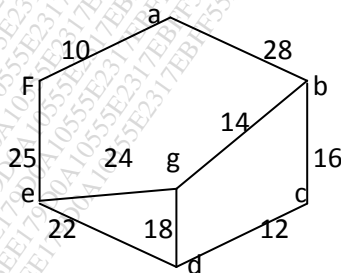
- c) Find the shortest path between the vertex a to z. 08



- Q.8 a) Explain the terms Subgraph & Spanning subgraph in following given graph G. 04



- b) Construct the expression binary tree of the following algebraic expression. 04
 $((x + y)z/3) + (19 + (x*x))$
 c) Construct the minimum spanning tree using Prim's & Kruskal's algorithms. 08



SUBJECT CODE NO:- K-206
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA Examination Oct/Nov 2016
Computer Organization
(Old)

[Time: Two Hours]

[Max. Marks:50]

Please check whether you have got the right question paper.

- N.B
- I. 1st and 4th question is compulsory.
 - II. Attempt any one question from each section from remaining.
 - III. Use only blue and black pen.

Section A

- Q.1 Explain Booth's algorithms for twos complement multiplication with flowchart. 10
- Q.2
- a) Describe Magnetic read write mechanisms. 08
 - b) Explain replacement algorithms. 07
- Q.3 Write short note (Any three) 15
- a) Associative mapping.
 - b) Magnetic Tape.
 - c) RAM.
 - d) Transfer time.
 - e) Write policy.

Section – B

- Q.4 Draw the internal architecture of 8086 microprocessor. Explain its BIU. 10
- Q.5
- a) Explain the operation of DMA controller with suitable interfacing diagram with 8086 microprocessor. 07
 - b) What is interrupt? Explain different types of interrupts available in 8086 microprocessor. 08
- Q.6 Write short note (Any three) 15
- a) Programmed I/O and Interrupt driven I/O.
 - b) 82C59A Interrupt Controller.
 - c) Addressing mode.
 - d) Isolated I/O.
 - e) Queue.

SUBJECT CODE NO:- K-305
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA(CGPA) Examination Oct/Nov 2016
Computer Organization
(Revised)

[Time: Two Hours]

[Max. Marks:50]

Please check whether you have got the right question paper.

- N.B
- i) Question 1 from section A & Question 4 from section B are compulsory.
 - ii) Attempt any one question each from question2 to 3 and question 5 to 6.

Section A

- Q.1 Explain following pins of 8086 processor. 10
1. ALE (2) INTR (3) $\overline{BHE}/s7$ (4) READY (5) AD_0-AD_{14}
- Q.2
- a) Explain various bus data transfer types. 08
 - b) Explain importance of busy and ready status signals while performing I/O operations. 07
- Q.3 Write short notes on (Any three) 15
- a) Machine cycle and instruction cycle.
 - b) Floating point representation.
 - c) Interrupt Service routine
 - d) Program status word
 - e) Cache addresses

Section – B

- Q.4 Explain bus architecture in detail. 10
- Q.5
- a) Explain control, test, read and write operations while performing I/O operations. 08
 - b) Write an assembly language program to perform basic arithmetic operations of two 8- bit numbers. 07
- [Assume result is 8-bit].
- Q.6
- a) Differentiate between interrupt driven I/O and programmed I/O. 08
 - b) Explain various functional groups of PCI. 07

SUBJECT CODE NO:- K-306
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA Examination Oct/Nov 2016
Object Oriented Programming Using C++
(Old)

[Time:Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 and Q.No.8 are compulsory.
 - ii) Solve any two questions from the remaining in each section.

Section A

- | | | |
|-----|--|----|
| Q.1 | Elaborate the characteristics of object oriented programming? | 08 |
| Q.2 | a) Explain the different forms of if with suitable example. | 08 |
| | b) Write a program to calculate cube of a number using inline function | 08 |
| Q.3 | a) Explain constructor and destructor with example | 08 |
| | b) Write a program to generate Fibonacci series up to 5 terms | 08 |
| Q.4 | a) Explain with example the concept of friend function. | 08 |
| | b) Write a program to demonstrate function overloading | 08 |

Section B

- | | | |
|-----|---|----|
| Q.5 | a) Explain operator overloading with suitable example. | 08 |
| | b) Write a program for single inheritance | 08 |
| Q.6 | a) Explain the concept of containership giving example. | 08 |
| | b) Write a program to demonstrate virtual function. | 08 |
| Q.7 | a) What is template? Explain class template? | 08 |
| | b) Write a program to display contents of file on screen. | 08 |
| Q.8 | Write short notes on (<u>any two</u>) | 08 |
| | a) Virtual base class | |
| | b) Command line arguments | |
| | c) Abstract class | |

SUBJECT CODE NO:- K-362
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA(CGPA) Examination Oct/Nov 2016

Soft Skills - I
(Revised)

[Time: Two Hours]

[Max. Marks:50]

Please check whether you have got the right question paper.

N.B

i) Attempt all the questions.

- Q.1 Fill in the blanks with appropriate tense form of the verbs given in the brackets. 10
1. Sachin ----- (play) handball very well.
 2. Two weeks ago, the boy ----- (get) a new bicycle.
 3. I was exhausted at the end of the exam. I ----- (write) for over two hours.
 4. By 2020, he ----- (work) as the director of this company for thirty years.
 5. Bad driving----- (cause) many accidents.
 6. Wait! I ----- (drive) you to the station.
 7. Meena ----- (live) in Germany since 1992.
 8. Before Tara ----- (lay) the table, she had a talk with her mother.
 9. Tomorrow after school, I ----- (go) to the beach.
 10. I never ----- (drink) coffee.
- Q.2 What is Group-Discussion? Explain various types of topics with examples in Group – Discussions. 10
- Q.3 Prepare your own Resume'. 10
- Q.4 Explain the elements of an effective Presentation. 10
- Q.5 Write short notes on the following topics. (any two) 10
1. Assertiveness.
 2. Write down 10 words containing |Λ| Sound.
 3. Skimming and scanning.
 4. Future Tense: Types and structure.
 5. Parts of a formal letter.

Subject Code : 32

FACULTY OF ENGINEERING & TECHNOLOGY

First Year M.C.A. (Old) Examination

NOVEMBER/DECEMBER, 2016

Data Structure Using C++

Time: Three Hours

Max. Marks : 80

“Please check whether you have got the right the question paper”

- Note: i) *Q.No. 4 and Q.No. 8 are compulsory.*
ii) *Attempt two questions from each section from the remaining questions.*

SECTION-A

- Q.1 (a) What is Data Structure? Explain various types of data structure with examples. **08**
(b) Write a program to implement queue operations. **08**
- Q.2 (a) What is linked representation? Explain various operations of doubly linked list. **08**
(b) Write a program for creation of list. **08**
- Q.3 (a) Differentiate the stack implementation using linked list with stack implementation using Arrays, with examples. **08**
(b) Write a program for searching an element in the singly linked list. **08**
- Q.4 Write short notes (any two) : **08**
(a) Circular queue
(b) Time complexity
(c) Hashing Technique
(d) FIFO and LIFO structures.

SECTION-B

- Q.5 (a) What is tree? Explain tree traversal techniques with suitable example. **08**
(b) Define following terminologies of Tree (i) Degree (ii) Depth (iii) Keys (iv) Breadth **08**
- Q.6 (a) What is Radix sort? Sort the following elements using radix sort.
399, 733, 585, 233, 332, 466, 212, 914, 111
(b) Explain the various operations of Binary search tree. **08**
- Q.7 (a) Explain minimum spanning tree with suitable examples. **08**
(b) Explain DFS, BFS techniques with suitable examples. **08**
- Q.8 Write short notes on the following (any two) : **08**
(a) Quick sort
(b) Threaded binary tree
(c) Bubble sort
(d) Prim's algorithm.

K – 2016

SUBJECT CODE NO:- K-238
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA(CGPA) Examination Oct/Nov 2016
Account & Financial Management
(Revised)

[Time: Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

- N.B
1. Q.1 and Q.5 are compulsory.
 2. Solve any two questions from Q.2 to Q.4.
 3. Solve any two questions from Q.6 to Q.8
- Section A**
- Q.1
- a) Journalize the following transactions in the books of k & co. 10
- 1992 Jan.
2. Mr. Rao started the business with Rs.8000.
 3. Bought furniture for RS.1200.
 5. Purchased goods for cash Rs.2000.
 9. Sold goods on cash Rs.500.
 11. Sold to Desai goods Rs.1000 with 10% discount.
 12. Goods stolen Rs.500.
 13. Deposited cash in SBI Bank Rs.10000.
 15. Received commission Rs.400.
 17. Received defective goods from Desai Rs.300.
 19. Sold old vehicle and invested in business Rs.6000.
- b) What is Account? Explain different types of Accounts with Rules. 06
- Q.2
- a) Define following terms(Any four) 06
1. Posting.
 2. Debtor.
 3. Bad debt.
 4. Livestock.
 5. Solvency.
 6. Depreciation.
- b) What is ledger? Explain the process of ledger posting. 06
- Q.3
- a) What is purchase Book? Record the following transactions in purchase Book. 1984 July 06
1. Bought goods from Arvind & co. → 500.
 3. Sunder & co. Invoiced goods to us → 700.
 4. Purchased typewriter for office use → 1000.
 6. Dinesh sold goods to us (Rs.500 less 5% discount) → 475.
 7. Cash purchase → 300.
- b) What is depreciation? Explain WDY method of depreciation with example. 06
- Q.4
- a) Describe Trial balance in detail. Explain Net, gross Trial Balance. 06
- b) What is final Account? Describe profit & loss Account in detail. 06

Section B

Q.5 From the following trial Balance prepare Trading & profit & loss Account year ended 31Mar1993.

16

particular	Debit	credits
Capital		38,000
Drawings	2,500	
Purchases	16,000	
Sales return	400	
Purchase return		900
Furniture	6,000	
Sales cash		12,000
Sales credit		16,000
Building	12,000	
Stock on 1 Apr 1992	6,000	
Sundry expenses	500	
Bills payable		900
Commission Received		250
Rent & Rates	250	
Wages	7250	
Carriage inward	250	
Carriage outward	350	
Bills receivable	800	
Travelling expenses	600	
Bad debt	400	
Sundry debtor	10,800	
Insurance premium	300	
Postage	150	
Motor car Exp	1200	
Cash In hand	880	
Sundry Creditors		4380
Motor car	5800	

Closing stock on 31st March 1993 Rs.12250.

- Q.6 a) What is Ratio Analysis? Explain liquidity & activity Ratio with their types. 06
 b) Explain the steps involved in construction of Break-even chart. Write Advantages of Break-even chart. 06
- Q.7 a) Explain the terms- 06
 1. Marginal cost.
 2. Differential cost.
 3. Opportunity cost.
 4. Imputed cost.
 b) What is Budget- Explain the steps involved in budgetary control? 06
- Q.8 a) What is depreciation explain straight line method of depreciation with proper example. 06
 b) Write a short notes on(Any two) 06
 1. CVP Relationship.
 2. Net profit & Gross profit.
 3. Master Budget & Functional Budget.

SUBJECT CODE NO:- K-239
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA Examination Oct/Nov 2016
Numerical Methods & Statistical Techniques
(Old)

[Time: Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

N.B i) Solve **any Four** questions from each section.**Section A**

Q.1 Find the root of the equation $x^2 - 25 = 0$ and initial guess values are $x_0 = 2, x_1 = 7$ using Regular falsi method. 10

Q.2 Solve the following using Gauss elimination method. 10

$$3x_1 + x_2 - 3x_3 = 14$$

$$x_1 + 3x_2 + 2x_3 = 13$$

$$2x_1 + 2x_2 + 4x_3 = 18$$

Q.3 10

X	0	2	3	6
Y	648	704	729	792

Find Y when $x=5$, using Lagrange's Interpolation.

Q.4 Evaluate $\int_0^{10} \frac{dx}{1+x^2}$ by using, $h=1$ 10

i) Simpson's 1/3 rule. ii) Trapezoidal rule.

Q.5 Explain what is numerical computing and give advantages of numerical methods. 10

Section – B

Q.6 Compute Mean, Median and Mode from the following data. 10

X	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45
Y	15	19	32	48	60	52	43	39	20

Q.7 Explain what probability is, and give importance of probability. 10

Q.8 10

a) An integer is chosen from 2 to 15. What is the probability that it is prime?

b) Out of sample of 200 bulbs, 20 bulbs are found to be defective, find the probability that a bulb chosen at random from the sample is not defective.

Q.9 From the following data calculate Karl Pearson's coefficient of correlation. 10

X	10	6	9	10	12	13	11	9
Y	9	4	6	9	11	13	8	4

Q.10 Explain Permutation and combination with example. 10

SUBJECT CODE NO:- K-270
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA (CGPA)Examination Oct/Nov 2016
Computer Networks
(Revised)

[Time: Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

N.B

- i) Q.No.1 and Q.No.5 are compulsory.
- ii) Solve any TWO questions from the remaining from each section.

Section A

- | | | |
|-----|---|----|
| Q.1 | a) Why is a data link layer switch preferred over a hub? | 04 |
| | b) List out the advantages and disadvantages of Bus Topology. | 04 |
| Q.2 | a) Write the name of Network Devices working on Data Link Layer & it's working in detail. | 08 |
| | b) Explain all Network Topologies & discuss its advantages & disadvantages. | 08 |
| Q.3 | a) What is transmission impairment? And explain its causes. | 08 |
| | b) What is Multiplexing? Explain Frequency Division Multiplexing (FDM) in details with diagram. | 08 |
| Q.4 | a) Describe pulse code modulation mechanism for conversion of Analog signal to Digital Signal. | 08 |
| | b) Explain Bandwidth. | 08 |
| | • A TV channel has a bandwidth of 6 MHz if we send a digital signal using one channel, what are the data rates if we use one harmonic, three harmonics, and five harmonics? | |

Section B

- | | | |
|-----|--|----|
| Q.5 | Write short notes on. | 08 |
| | I. Optical fibre and twisted pair | |
| | II. CSMA/CD. | |
| Q.6 | a) Explain pure – ALOHA and slotted – ALOHA systems. Give the expression for throughput. | 08 |
| | b) Discuss the Header of IPv4 with suitable diagram. | 08 |
| Q.7 | a) Write in brief about point to point protocol. | 08 |
| | b) Explain IEEE standard 802.11 in detail. | 08 |
| Q.8 | Write a short notes (any 4) | 16 |
| | a) Fast Ethernet. | |
| | b) WAN. | |
| | c) Virtual Circuit Network. | |
| | d) Checksum . | |
| | e) Hubs & its types. | |

SUBJECT CODE NO:- K-271
FACULTY OF ENGINEERING AND TECHNOLOGY
First Year MCA Examination Oct/Nov 2016
Account & Financial Management
(Old)

[Time: Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 and Q.No.5 are compulsory.
 - ii) Solve any two questions from Q.2 to Q.4.
 - iii) Solve any two questions from Q.6 to Q.8.

Section A

- Q.1 a) Define following accounting terms (any four) 08
1) Capital
2) Folio
3) Posting
4) Bad debt
5) Insolvency
6) Debtor
- b) What is accounting? Explain different types of accounts with example. 08
- Q.2 a) What is journal? Journalise the following transactions. 06
April 2006
2- Started business-Rs. 50,000.
3- Deposited cash in bank Rs.10, 000.
5- Purchase machinery Rs. 20,000.
7- Sale good to Mr. Ratan in cash Rs.1,200
9- Paid electricity bill Rs.22, 000.
10- Purchase goods from Mr. Ram Rs. 25,000.
- b) What is a subsidiary book? Discuss any two subsidiary books. 06
- Q.3 a) What is ledger? Describe it with proper proforma. 06
b) What is cash book? Explain different types of cash books. 06
- Q.4 a) Define depreciation? Explain WDV method of depreciation. 06
b) What do you mean trial balance? Explain different method to prepare trial balance. 06

Section B

Q.5 a) From the following balances prepare trading account for the year ended 31st March 2006. 08

Stock as on 1 st April,2005	2700
Purchase cash	11300
Carriage on purchase	1230
Credit sales	56700
Wages	4800
Return outwards	1200
Coal and coke	710
Sales cash	21200
Motive power	920
Gas & water	310
Sales return	900
Stock as on 31 st march 2006	4900

b) What is a final account? Explain profit and loss account with proper format. 08

Q.6 a) Define financial ratio? Explain activity ratios in detail. 06

b) Define cost? Describe elements of cost 06

Q.7 a) What is CVP analysis? Explain term break even chart. 06

b) Define variance? Discuss material cost variance. 06

Q.8 Write short notes on (any two) 12

a) Budget & steps for budgetary control

b) Bank, reconciliation statement

c) Marginal cost

d) Balance sheet