

**SUBJECT CODE NO:- P-11**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA (CGPA) Examination May/June 2017**  
**Programming in C**  
**(Revised)**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

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

**SECTION A**

Q.1 Find the output of the following and also specify the reason. 08

a. `#include<stdio.h>`  
`Void main()`  
`{`  
`Char C[2]= "A";`  
`Printf("\n %c",C[0]);`  
`Printf("\n %s",C);`  
`}`

b. `#include<stdio.h>`  
`void main()`  
`{`  
`Int x=4, y=0, z;`  
`While (x>=0)`  
`{`  
`If(x= =y)`  
`break;`  
`else`  
`Printf("\n%d%d",x,y);`  
`x- -; y++;`  
`}`  
`}`

Q.2 A What is constant & variables? Explain the rules for constructing integer & real point (float) constant 08

B Write a program to calculate overtime pay of 10 employees. Overtime is paid at the rate of rs.12.00 per hour 08  
for overtime hour worked above 40 hours.  
Assume that employee do not work for fractional part of an hour.

Q.3 A Explain all loop control statements in detail with proper example 08

B Write a program in C to accept a number & check whether it is Armstrong number or not. 08

Q.4 A What is an algorithm? Explain with example. 08

B Write a program to enter a number from user and calculate the sum of its digit. 08

**SECTION B**

Q.5 A What is an array? Explain with its types. 08

B Write a program to accept 10 numbers & sort them in descending of ascending order. 08

Q.6 A What is function? Explain any two standard library function 08

B Write a program to calculate area & perimeter of circle using call by reference. 08

2017

- Q.7 A What is structure? Explain nested structure with example. 08  
B Write a program to create the structure of book with author name, book name, price, pages. Take two third 08  
variables, initialize the structure data with first variable & accept the value for structure data with second  
variable. Print all the details.

- Q.8 Write a short note on the following (any two) 08  
i. Pointer  
ii. Command line arguments  
iii. Fopen statement.

**SUBJECT CODE NO:- P-12**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA Examination May/June 2017**  
**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 each from questions No. 1 to 3 questions no 5 to 7.

Section A

- |     |   |    |
|-----|---|----|
| Q.1 | a. What is operating system? Explain different tasks performed by operating system.   | 08 |
|     | b. What is process? Explain process life cycle.   | 08 |
| Q.2 | a. What is CPU scheduling? Explain Round Robin scheduling algorithm with example  | 08 |
|     | b. Describe inter process communication in detail.  | 08 |
| Q.3 | a. What is thread? Explain the difference between thread and process.   | 08 |
|     | b. What is an I/O buffer? What are the advantages of buffering? Is buffering always effective? Justify your answer with suitable example. | 08 |
| Q.4 | Explain layered structure of operating system.  | 08 |

Section B

- |     |   |    |
|-----|---|----|
| Q.5 | a. Explain Data structure used for Bankers algorithm.   | 12 |
|     | b. Define and explain following terms   | 04 |
|     | i. Fragmentation  |    |
|     | ii. compaction  |    |
| Q.6 | a. consider the following page reference string<br>1,2,3,4,2,1,5,6,2,1,3,7,6<br>How many page faults would occur for the frame size 04 frames using following page replacement algorithms? Consider all frames are initial empty. | 08 |
|     | i. FIFO   |    |
|     | ii. Optimal   |    |
|     | b. Define the file system. Explain various operations on files.   | 08 |
| Q.7 | a. Explain principles of I/O software.  | 08 |
|     | b. State and explain Reader-writers problem.  | 08 |
| Q.8 | Write short note on(Any two)  | 08 |
|     | a. Virtual file system  |    |
|     | b. Dead lock recovery mechanism   |    |
|     | c. Scheduler  |    |
|     | d. Real time operating system.  |    |

**SUBJECT CODE NO:- P-13**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Third Year MCA Examination May/June 2017**  
**Cyber Security**  
**(Revised)**

**[Time: Three Hours]**

**[Max.Marks:80]**

Please check whether you have got the right question paper.

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

Section A

- |     |   |   |    |
|-----|---|---|----|
| Q.1 | A | Explain cyber security policy definition with the help of systemigram.      | 04 |
|     | B | Discuss risk assessment & mitigation.                                       | 04 |
| Q.2 | A | Discuss the various domains of cyber security policy in detail              | 08 |
|     | B | What is E-commerce? Explain the E-commerce framework in detail.             | 08 |
| Q.3 | A | Explain security at IEEE 802.11 wireless LAN in detail                      | 08 |
|     | B | What do you mean by vulnerabilities? Explain DOS and DDOS attack in detail. | 08 |
| Q.4 | A | Discuss cyber security Myths in detail                                      | 08 |
|     | B | Explain the internet key exchange (IKE) protocol phase 1 in detail          | 08 |

Section B

- |     |    |   |    |
|-----|----|---|----|
| Q.5 |    | Write a short note on   |    |
|     | a. | ARP spoofing  | 04 |
|     | b. | Botnets   | 04 |
| Q.6 | A  | Explain in detail Buffer overflow vulnerability of software             | 08 |
|     | B  | Explain in detail SQL Injection   | 08 |
| Q.7 | A  | What is intrusion detection system? Explain its various types in detail | 08 |
|     | B  | What is DNS cache poisoning? Explain in detail                          | 08 |
| Q.8 | A  | Explain the characteristic of worms & virus in detail                   | 08 |
|     | B  | Differentiate firewall, IDS and IPS.                                    | 08 |

**SUBJECT CODE NO:- P-14**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA Examination May/June 2017**  
**Advance Java Programming**  
**[OLD]**

**[Time: Three Hours]**

**[Max.Marks:80]**

N.B Please check whether you have got the right question paper.

- N.B
- i) Solve any two questions from the 1 to 3
  - ii) Solve any two questions from the 5 to 7
  - ii) Q.No.4 and Q.No.8 are compulsory.

Section A

- |     |   |   |    |
|-----|---|---|----|
| Q.1 | A | What is an interface? How to implement interface in any other java class.   | 06 |
|     | B | Discuss any two string functions.   | 02 |
|     | C | Write commands for setting path and class path in a command prompt  | 02 |
|     | D | Write a servlet which counts how many times a user has visited a webpage.   | 06 |
| Q.2 | A | List out all the steps for JDBC connectivity.   | 06 |
|     | B | What is cookie? Explain how cookie can be created and stored in servlet?  | 04 |
|     | C | Show the use of JSP inbuilt object request and response with their use in application.  | 06 |
| Q.3 | A | Explain servlet life cycle. Also discuss various advantages of servlet.   | 08 |
|     | B | Design an Employee Bean class with details like EmpID, EmpName, Address, ContactNo, Age. Display these details in JSP using beantags' | 08 |
| Q.4 |   | Write short note on (Any two)   | 08 |
|     |   | 1. GET and POST   |    |
|     |   | 2. HttpSession object   |    |
|     |   | 3. Constructors.  |    |

Section B

- |     |      |   |    |
|-----|------|---|----|
| Q.5 | A    | What is role of the Action class in struts? Create an action class to perform user authentication.  | 08 |
|     | B    | What are session beans? List all the steps for implementing session bean.   | 08 |
| Q.6 | A    | What is an entity bean? Explain the features of entity beans  | 08 |
|     | B    | Create a hibernate application to update student information in database.   | 08 |
| Q.7 | A    | Explain hibernate architecture  | 08 |
|     | B    | Create a web application form for student registration with insert operation. Details such as id, name, address, contact no, email, and will be stored into database. Use struts framework to perform JDBC operation insert | 08 |
| Q.8 |      | Write short note on (any two)   | 08 |
|     | I.   | EJB container   |    |
|     | II.  | Message driven Bean   |    |
|     | III. | Struts validation framework.  |    |

**SUBJECT CODE NO:- P-25**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**

**Core Java**  
**(Revised)**

**[Time: Three Hours]**

**[Max.Marks:80]**

Please check whether you have got the right question paper.

- N.B
- i) Question No.1 & Question No.6 are compulsory
  - ii) Attempt any other two question from each section
  - iii) Assume suitable data in necessary
  - iv) Figures to the right indicate full marks

**Section A**

- |     |   |    |
|-----|---|----|
| Q.1 | Attempt any five of following   | 10 |
|     | i) Define class & object in java?   |    |
|     | ii) Why java is popular on internet?  |    |
|     | iii) What is super keyboard?  |    |
|     | iv) What is type conversion in java?  |    |
|     | v) What is Arithmetic exception?  |    |
|     | vi) Which are different types of inheritance?                                   |    |
|     | vii) Differentiation between checked & unchecked Exceptions?                    |    |
|     | viii) Explain in short polymorphism in java?                                    |    |
| Q.2 | a) Explain overloading of methods with suitable example?                        | 07 |
|     | b) Explain overriding of method with suitable example?                          | 08 |
| Q.3 | a) Differentiate between abstract class & interfaces?                           | 07 |
|     | b) Write a program to demonstrate Array of object?                              | 08 |
| Q.4 | a) Write a program to demonstrate user defined exceptions?                      | 07 |
|     | b) Explain string wrapper classes?  | 08 |
| Q.5 | a) Write java program for accessing input from keyboard?                        | 07 |
|     | b) Write a program to demonstrate Static variable static method & static block? | 08 |

**Section - B**

- Q.6 Attempt any five of following 10
- i) What is event handling?
  - ii) What is input stream & output stream?
  - iii) What is file writer & file reader?
  - iv) Differential between java application & java Applet?
  - v) List the classes of AWT?
  - vi) What is thread priority?
  - vii) What is event Listener?
  - viii) What is JDBC?
- Q.7 a) Explain how to handle multiple exceptions? 07  
b) Explain callable statement & result set in JDBC? 08
- Q.8 a) Explain MVC architecture in detail? 07  
b) Explain java thread model? Explain various methods defined in thread class? 08
- Q.9 a) Write a java program to implement, Label, Buttons, Text field & Text Area using AWT? 07  
b) Write a program that receives input form user that calculate sum of 2 no's using Applet? 08
- Q.10 Write short notes ( any three) 15
- a) Thread lifecycle
  - b) Applet life cycle
  - c) Event delegation model
  - d) JDBC drivers

**SUBJECT CODE NO:- P-36**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA (CGPA) Examination May/June 2017**  
**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 & Q. No. 8 are compulsory.
  - ii. Solve any two questions from the remaining from each section.

Section A

Q.1 Let  $A = \{1,2,3,4\}$  and  $R = \{(1,1), (1,2), (1,3), (2,1), (2,2), (3,1), (2,3), (3,2), (3,3), (4,4)\}$ . Show that R is an equivalence relation and determine the equivalence classes and hence find the rank of R. 08

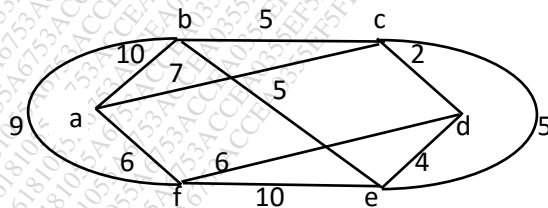
- Q.2
- a) Using Venn diagram show that
    - i.  $A \cap B \cap C = A - [(A - B) \cup (A - C)]$
    - ii.  $A - (B - C) = (A - B) \cup (A \cap B \cap C)$
  - b) There are two restaurants next to each other, one has a sign that says “good food is not cheap” and other has a sign that says. “Cheap food is not good”. Are the signs saying the same thing? 08

- Q.3
- a) Three urns identical in appearances contain respectively 2 red and 2 green balls, 1 red & 3 green ball, 2red & 3 greens balls. One ball is drawn at random from each urn. Find the probability of getting 1 green & 2red balls. 08
  - b) Explain the pigeon hole principle. Show that if 7 colors are used to paint 50 bicycles, at least 8 bicycles will be same color. 08

- Q.4
- a) In how many ways can one select a president, a general secretary and a treasurer from the members of a committee consisting of 9 men & 11 women if the treasurer must be a women, and the general secretary a man? 08
  - b) For the set  $X = \{2, 3, 6, 12, 24, 36\}$  a relation  $\leq$  is defined as  $x \leq y$  if  $x$  divides  $y$ . draw the Hasse diagram and answer the following. 08
    - i. What are the maximal & minimal elements.
    - ii. What is the maximum length of chain.
    - iii. Is the poset a lattice?

Section B

- Q.5 a) Explain travelling salesman problem. Use nearest neighboring method to find the Hamiltonian circuit starting from ‘a’ in the following graph. Find its weight’. 08





- Q.6 b) Solve the recurrence relation.  $a_r - 7a_{r-1} + 10a_{r-2} = 6 + 8r$  with initial values  $a_0 = 1, a_1 = 2$  08  
 a) Define the adjacency matrix and draw the graph corresponding to each adjacency matrix. 08

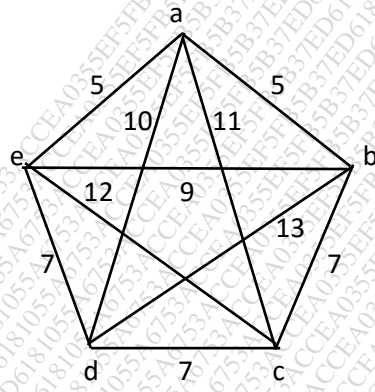
i.

	$V_1$	$V_2$	$V_3$	$V_4$	$V_5$
$V_1$	0	1	1	0	0
$V_2$	1	0	1	0	0
$V_3$	1	1	0	1	0
$V_4$	0	0	1	0	1
$V_5$	0	0	0	1	1

ii.

	$a$	$b$	$c$	$d$
$a$	1	0	0	1
$b$	0	0	2	1
$c$	0	2	0	0
$d$	1	1	0	1

- b) What is minimal spanning tree? Use Kruskal's algorithm to find Minimum spanning tree for the graph shown below. 08



- Q.7 a) Define sum & product of numeric function. Calculate  $C_r = a_r + b_r, d_r = a_r \cdot b_r$  for the numeric function 08

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

- b) Determine the generating function of the numeric function  $a_r$ . Where  $a_r = 3^r + 4^{r+1}, r \geq 0$ . 08

- Q.8 Explain the terms with examples. 08
- Isomorphism
  - Factors of graph
  - Binary search tree
  - Eulerian path & Eulerian circuit

**SUBJECT CODE NO:- P-37**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA Examination May/June 2017**  
**Computer Organization**  
**[OLD]**

[Time: Two Hours]

[Max.Marks:50]

Please check whether you have got the right question paper.

- N.B
- i. 1<sup>st</sup> and 4<sup>th</sup> questions is compulsory.
  - ii. Attempt any one question from each section.
  - iii. Use only blue and black pen.

Section A

- Q.1 Explain RAID level 0&5 in detail with example. 10
- Q.2
- a) Explain in detail direct mapping with suitable example. 08
  - b) Explain the types of internal memory. 07
- Q.3 Write short note on (any three) 15
- a) First in first out (FIFO)
  - b) Access time
  - c) Hamming code
  - d) Primary memory
  - e) Write through and write back policies.

Section B

- Q.4 Draw the internal architecture of 8086 and explain the following 10
- a) Queue
  - b) General purpose registers
- Q.5
- a) Explain the following instructions with example 08
    1. MOV
    2. MUL
    3. DIV
    4. XCHG
  - b) Draw the block diagram of DMA controller and explain it briefly. 07
- Q.6 Write short notes (any three) 15
- a) Memory mapped I/O.
  - b) 82C59A interrupt controller
  - c) RAID5
  - d) Direct addressing mode.

**SUBJECT CODE NO:- P-38**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Third Year MCA Examination May/June 2017**  
**Cloud Computing**  
**(Revised)**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- 1) Question No. 1 and 5 are compulsory.
  - 2) Attempt any two questions from Q.2 to Q.4 and any two questions from Q.6. to Q.8.

Section A

- |     |  |    |
|-----|--|----|
| Q.1 | Write short note on (any two)  | 08 |
|     | a) Multi tenancy & velocity of attack  |    |
|     | b) Infrastructure as a service   |    |
|     | c) Hypervisor role cloud architecture.   |    |
| Q.2 | a) Explain virtualization along with its type in detail.   | 08 |
|     | b) Elaborate different types of deployment methods in cloud computing.   | 08 |
| Q.3 | a) Discuss history and evolution of cloud computing in detail.   | 08 |
|     | b) Explain how virtualization is beneficial as far as cost, administration, fast deployment and reduced infrastructure cost are concerned. | 08 |
| Q.4 | a) Differentiate between distributed system model and cloud computing model.   | 08 |
|     | b) Describe platform as a service & software as model in detail.   | 08 |

Section B

- |     |  |    |
|-----|--|----|
| Q.5 | Write short note on (any two))   | 08 |
|     | a) Cloud security fundamental  |    |
|     | b) Cloud consumer responsibilities   |    |
|     | c) Denial of service, hyper jacking.   |    |
| Q.6 | a) Describe third part management recommendations in detail.                           | 08 |
|     | b) Discuss Governance recommendations for cloud computing.                             | 08 |
| Q.7 | a) Explain cloud customer responsibilities compliance & audit security recommendation. | 08 |
|     | b) Explain the security concerns & security threats in detail.                         | 08 |
| Q.8 | a) Explain enterprise risk management & recommendation.                                | 08 |
|     | b) Explain information security Governance process in detail.                          | 08 |

**SUBJECT CODE NO:- P-39**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA Examination May/June 2017**  
**System Prog. & Adv. Operating System**  
**[OLD]**

**[Time: Three Hours]**

**[Max.Marks:80]**

Please check whether you have got the right question paper.

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

Section A

- |     |  |    |
|-----|--|----|
| Q.1 | Explain various services provided by operating system.             | 08 |
| Q.2 | a) Differentiate between distributed OS, network OS & parallel OS. | 08 |
|     | b) Explain producer – consumer problem.                            | 08 |
| Q.3 | a) Explain various states of processes.                            | 08 |
|     | b) Explain characteristics of distributed OS.                      | 08 |
| Q.4 | a) Explain Request – Reply – Acknowledge protocol.                 | 08 |
|     | b) Explain following terms.  | 08 |
|     | i. Race condition  |    |
|     | ii. Mutual exclusion   |    |
|     | iii. Critical section.   |    |

Section B

- |     |   |    |
|-----|---|----|
| Q.5 | Explain the criteria that must be fulfilled by the algorithm for solution the critical section problem. | 08 |
| Q.6 | a) Explain characteristics of multimedia OS.  | 08 |
|     | b) Write notes on   | 08 |
|     | i. RPC  |    |
|     | ii. Context switching   |    |
| Q.7 | a) Explain rate monolithic algorithm.   | 08 |
|     | b) Explain process migration mechanisms.  | 08 |
| Q.8 | a) Explain process scheduling in multimedia OS.   | 08 |
|     | b) Explain memory management & process management in parallel OS.                                       | 08 |

**SUBJECT CODE NO:- P-40**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**  
**Relational Database Management System**  
**(Revised)**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B Q. 1 & Q.5 are compulsory.  
Solve any two questions from Q.2 to Q.4.  
Solve any two questions from Q.6. to Q.8.

Section A

- Q.1 What is functional dependency? Explain any two types of functional dependency. 08
- Q.2 a) Write short note on Domain relational calculus. 08  
b) Explain normalization up to 3NF with the help of example. 08
- Q.3 a) Explain different types of data storage in computer system. 08  
b) Describe concept of static hashing with example. 08
- Q.4 a) Explain selection operation in query processing. 08  
b) Explain different levels of redundant array of independent disk. 08

Section B

- Q.5 What is transaction? Explain ACID properties. 08
- Q.6 a) Write short note on log based recovery. 08  
b) Explain two phase locking protocol. 08
- Q.7 a) Write PL/SQL code to calculate factorial of number. 08  
b) What is trigger? Explain with one example. 08
- Q.8 a) Write PL/SQL code to increase salary of employees by 7% in table EMP (emp\_id, emp\_name, department, branch) for branch 'Delhi' and count number of all employees in table EMP. 08  
b) What is cursor? Explain with one example. 08

**SUBJECT CODE NO:- P-69**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA (CGPA) Examination May/June 2017**  
**Account & Financial Management**  
**(Revised)**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i)Q.1 & Q.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) Journalise the following transaction in the books of Mr. Mathur. 10  
1992 June:  
1.Shri. Mathur invested in business Rs.6000 cash, good Rs.3000 & building Rs.12000  
2.Borrowed from Bank Rs.8000  
3.Purchased goods for cash Rs.5000  
4.Sold goods on credit to pratap Rs.3000  
5.Cash received from pratap Rs. 1000  
6.Purchased goods on credit from jeevan Rs.6000  
7.Paid salary Rs.1500  
8.Received commission Rs.500  
9.Repaid loan to Bank Rs.5000  
10.Bad debt Rs.10000.
- b) Explain Any six terms from the following. 06  
1.Bad debt    2.Creditor    3.Drawing    4.Folio    5.Insolvency    6.Revenue  
7.Live Asset
- Q.2 a)What is ledger. Explain it with neat proforma . Explain the process of ledger positing. 06  
b)What is cash book . Explain different methods of preparing cash book. 06
- Q.3 a)A company purchased machinery worth Rs.2,10,000 on 1<sup>st</sup> April 2003. The estimated life is 10 years and scrap value is Rs.10,000. Prepare machinery A/c under straight line method for three years end 31<sup>st</sup> march every year. 06  
b)What is profit & loss Account. Explain it with its neat proforma. 06
- Q.4 a)What is Balance Sheet. Explain with neat proforma. 06  
b) Write short note on any two. 06  
i)Purchase Book  
ii)Trading Account  
iii)Balance method of Trial Balance.

Section -B

Q.5 What is final Account, prepare the profit & loss Account from the following Balances.

16

Opening stock	2000	Interest paid	200
Wages	2000	Bills Receivable	3000
Salaries	2500	Bills payable	2500
Carriage Inward	300	Rent	200
Purchases	6000	Discount Received	250
Purchase Return	300	Closing stock	4000
Sales	12000	Travel Exp.	150
Sales Return	600	Commission paid	190
		Carriage outward	400

Note:- Gross profit transferred to PL A/c is Rs.5400

- Q.6 a)What is Ratio Analysis .Explain Activity Ratio and profitability Ratio. 06  
 b) Describe the concept of cost Accountancy. Explain the terms. Fixed cost, semifixed cost & variable cost. 06
- Q.7 a) Describe the term Budget. Explain steps involved in organization of Budget. 06  
 b)What is CVP Relationship. Explain the advantages and limitations of Break even chart. 06
- Q.8 a)What is Depreciation. Explain WDY method of depreciation. 06  
 b)Write short Note on (Any two) 06  
 i)Steps for Budgetary control.  
 ii)Relevant cost  
 iii) Leverage ratio.

**SUBJECT CODE NO:- P-70**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA Examination May/June 2017**  
**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**

1. Solve the following equation using bisection method up to 5 iterations. 10  
 $x^2 - 4x - 10 = 0$  Consider the initial values  $x_0 = -2, x_1 = -1$
2. Explain regression analysis and scatter diagram. 10
3. Solve following example using Karl Pearson's coefficient of correlation. 10

X	48	35	17	23	47
Y	45	20	40	25	45

4. Compute Mean, Median and mode from the following data. 10

Class	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45
Frequency	5	11	26	36	41	45	47	49

5. Solve the linear algebraic equation using Gauss seidel method. 10  
 $8x - 3y + z = 20$   
 $4x + 11y - z = 33$   
 $6x + 3y + 12z = 35$

**Section B**

6. Solve following example using Lagrange's interpolation, Find y when x=2.5 10

x <sub>0</sub> =1	x <sub>1</sub> =3	x <sub>2</sub> =4	x <sub>3</sub> =6
y <sub>0</sub> =-2	y <sub>1</sub> =7.5	y <sub>2</sub> =21	y <sub>3</sub> =53

7. Explain probability and give importance of probability. 10
8. Explain the terms i)Random Experiment      ii)Exhaustive event      iii)Mutually Exclusive event. 10
9. Explain numerical methods and give advantages of numerical methods. 10
10. Evaluate  $\int_0^5 \frac{dx}{1+x^2}$  by using, h=1 10  
 i)Simpson's 1/3 rule      ii)Simpson's 3/8 rule



**SUBJECT CODE NO:- P-71**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Third Year MCA Examination May/June 2017**  
**Enterprise Resource Planning**  
**(Revised)**

**[Time: Three Hours]**

**[Max.Marks:80]**

Please check whether you have got the right question paper.

- N.B
- i) Question No.04 & 08 are compulsory.
  - ii) Solve any two questions from the remaining questions of each section.

Section A

- |     |   |    |
|-----|---|----|
| Q.1 | A)What is Business integration & how do the ERP achieve it? Explain in detail.              | 08 |
|     | B) Explain steps involved in the implementation of an ERP packages.                         | 08 |
| Q.2 | A) What is Business process Reengineering (BPR)? Discuss the various steps involved in BPR. | 08 |
|     | B) Describe the financial & operational Factors affecting on ERP System implementation.     | 08 |
| Q.3 | A) Discuss the role & importance of project management in ERP implementation.               | 08 |
|     | B) Who is Consultant? Write and explain the selection procedure of ERP Consultant.          | 08 |
| Q.4 | Write a short note on following (Any Two)   | 08 |
|     | a) CRM  |    |
|     | b) DSS  |    |
|     | c) OLAP   |    |
|     | d) GAP analysis   |    |

Section B

- |     |  |    |
|-----|--|----|
| Q.5 | A) Explain the sub-systems of production planning module in ERP system.              | 08 |
|     | B) Discuss the ERP with cloud ERP with suitable example.                             | 08 |
| Q.6 | A) Discuss the finance & Accounting module of ERP System.                            | 08 |
|     | B) List & explain the post – implementation factors affecting on ERP System.         | 08 |
| Q.7 | A) Explain Sales & Distribution module in ERP System with suitable example.          | 08 |
|     | B) Discuss the importance of ERP Auditing & evaluation in post-implementation phase. | 08 |
| Q.8 | Write a short notes on following (Any two)   | 08 |
|     | A) ERP & E-Commerce  |    |
|     | B) ERP vendors   |    |
|     | C) ERP Customization.  |    |
|     | D) Analytical Hierarchy Process.   |    |

**SUBJECT CODE NO:- P-89**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA Examination May/June 2017**  
**Computer Networks**  
**[OLD]**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Question No.4 and 8 are compulsory.
  - ii) Solve any two questions from each section from remaining from each section
  - iii) Figure to the right indicates full marks.

**Section A**

- |     |  |    |
|-----|--|----|
| Q.1 | (a) Explain EIGRP in detail.   | 08 |
|     | (b) Explain fiber optic cable in detail with advantage and disadvantage. | 08 |
| Q.2 | (a) Explain OSI model in detail.   | 08 |
|     | (b) Discuss the following adaptive routing tech's with an example.       | 08 |
|     | (1) Distance vector routing  |    |
|     | (2) Link State Routing   |    |
| Q.3 | (a) Explain different types of error correction tech's.                  | 08 |
|     | (b) Explain simplex, half duplex and full duplex with suitable example.  | 08 |
| Q.4 | Write short notes:-  | 08 |
|     | (A) IPV 6  |    |
|     | (B) Cyclic redundancy code.  |    |

**Section B**

- |     |  |    |
|-----|--|----|
| Q.5 | (a) Explain the working concept of Secured Socket Layer (SSL). | 08 |
|     | (b) Discuss the importance of DHCP server.                     | 08 |
| Q.6 | (a) What is VPN and explain relation with security.            | 08 |
|     | (b) Explain the working of DNS in detail.                      | 08 |
| Q.7 | (a) State working of Data Encryption Standard (DES).           | 08 |
|     | (b) Difference between POP3 and IMAP4.                         | 08 |
| Q.8 | Write short notes:-  | 08 |
|     | (a) SMTP   |    |
|     | (b) MIME   |    |

**SUBJECT CODE NO:- P-90**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**  
**Advanced 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) Attempt any two questions from the remaining questions of each section.
  - iii) Assume suitable data wherever necessary.

Section A

- Q.1 Answer the following (Any two)
- (a) Explain static and dynamic routing. 04
  - (b) Describe networking terms 04
    - (i) TTL
    - (ii) PROTOCOL
    - (iii) HOP
  - (c) Physical address, Logical address and Port address. 04
- Q.2 (a) Draw and explain IPv 6 header formats and explain. 08
- (b) What is intra domain Routing? Explain Distance Vector Routing Algorithm. 08
- Q.3 (a) What is Flow Control? How TCP implements flow control? 08
- (b) Differentiate features of UDP and TCP. Draw UDP header and explain. 08
- Q.4 (a) For a given IP ADDRESS.205.16.37.39./28 find 08
- (i) First IP ADDRESS
  - (ii) Last IP ADDRESS
  - (iii) Total IP ADDRESS
- (b) What are AREAS? Explain types of LINKS in OSPF Routing Algorithm. 08

Section B

- Q.5 Answer the following (Any two)
- (a) What is Digital Signature? 04
  - (b) What is Leasing of IP ADDRESS? Explain the role of DHCP for it. 04
  - (c) What is the difference between POP3 and IMAP protocols? 04
- Q.6 (a) Describe **Message Transfer Agent** (SMTP) and explain briefly the commands and responses. 08
- (b) What is HTTP transaction? Explain in detail. 08
- Q.7 (a) Explain SSL protocol stack diagram explaining the four Protocols. 08
- (b) Describe the types of Firewalls. 08
- Q.8 (a) Explain two modes of IPSEC Protocol. 08
- (b) Explain about symmetric and Asymmetric key Cryptography in detail. 08

**SUBJECT CODE NO:- P-101**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA (CGPA) Examination May/June 2017**  
**Computer Networks**  
**(Revised)**

**[Time:ThreeHours]**

**[Max.Marks:80]**

Please check whether you have got the right question paper.

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

**Section A**

- Q.1 a. Describe protocol and its standards. 08
- b. Explain OSI model in detail. 08
- Q.2 a. Explain the role of transport layer in OSI/ISO Model. 08
- b. Explain the term addressing in detail. 08
- Q.3 a. Explain any two network topologies in detail. 08
- b. Explain frequency division multiplexing in detail. 08
- Q.4 Define (Any two) 08
- i. Block coding
- ii. checksum
- iii. protocol

**Section-B**

- Q.5 a. Explain IPV<sub>6</sub> logical addressing. 08
- b. Describe channelization 08
- Q.6 a. Explain CSMA. 08
- b. Define HDLC 08
- Q.7 a. Define (Any two) 08
- i. Repeaters   ii. Routers   iii. Gateway
- b. Explain types of noiseless channels available in data link layer. 08
- Q.8 Explain IEEE standards in detail. 08

**SUBJECT CODE NO:- P-102**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA Examination May/June 2017**  
**Account & Financial Management**  
**[OLD]**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Q.1 and Q.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) What is accounts? Classify different types of accounts with their Rules. 08  
 (b) What is Ledger? Explain the process of ledger posting. 08
- Q.2 (a) What is subsidiary Books? Draw the purchase book for following transactions. 06  
 March 2009.  
 1.-Purchased goods from Mr. Sudhir in cash-Rs.1000.  
 2.-Mr. Anand purchased good Rs.-2500.  
 3.-Purchased goods from Ratan-Rs.5000.  
 4.-Purchased typewriter- Rs.2000.  
 Give your comment on each transaction below purchase book.
- (b) What is depreciation? Explain straight line method of depreciation. 06
- Q.3 (a) Describe the term Bank Reconciliation statement. 06  
 (b) What is trial balance? Explain Net and Gross trial balances. 06
- Q.4 (a) What is Journal? Journalize the following transactions. 06  
 Feb. 2005.  
 1. Vijay started business with cash Rs. 10,000 and bank balance Rs.20,000.  
 2. Bought goods Rs.5000 @ 12% Trade discount.  
 3. Purchased good from Mr. Ajay Rs. 800.  
 4. Salary paid to Foreman Rs. 950.  
 5. Sold goods Rs.2000 cash.  
 6. Damage goods returned to Mr. Ajay Rs. 80.
- (b) What is final Accounts. Explain trading Account with proper format. 06

Section B

- Q.5 From the following Trial Balance of Brijesh traders prepare Trading & Profit and Loss account for the year ended 31<sup>st</sup> March 2006. 16

Stock as on 1 <sup>st</sup> April 2005	1400
Purchases	10900
Carriage Inward	870
Return Inward	1300
Discount allowed	450
Salary	2540
Printing	330
Interest on Investment	1800

Heating and Lighting	320
Carriage outward	750
Sales	35300
Discount Received	710
Wages	1820
Return Inward	750
Interest paid on loan	280
Advertisement	1500
Office expenses	190
Sales commission	590
Octroi	640
Royalty on sales	740
Audit fees	500
Accountancy charges	640
Stock as on 31 <sup>st</sup> March 2006	3100

- Q.6 (a) Define ratio? Explain leverage ratios in detail. 06
- (b) What is cost? Explain irrelevant costs with their types. 06
- Q.7 (a) Explain advantages and limitations of break-even chart. 06
- (b) Describe the elements of cost account. 06
- Q.8 (a) Define budget. Explain functional and master budget in detail. 06
- (b) Write short notes on (any two):- 06
1. Variance analysis
  2. CVP analysis
  3. WDV method of depreciation

**SUBJECT CODE NO:- P-103**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Third Year MCA Examination April/May 2017**  
**Elective-I: Mobile Computing**  
**(Revised)**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Solve any two questions from Q.1 to Q.4 & Q.6 to Q.9 from A&B section.
  - ii) Q.5 and Q.10 is compulsory.

Section A

- |     |   |    |
|-----|---|----|
| Q.1 | (a) Explain mobile technologies in detail.                                  | 08 |
|     | (b) What is cellular communication? Explain in detail.                      | 08 |
| Q.2 | (a) Wireless network is rapidly increasing day by day. Justify your answer. | 08 |
|     | (b) Explain FDMA, TDMA & CDMA.  | 08 |
| Q.3 | (a) Explain medium access control in detail.                                | 08 |
|     | (b) Draw and explain CDPD architecture.                                     | 08 |
| Q.4 | (a) Draw and explain GSM architecture.                                      | 08 |
|     | (b) Explain signal propagation in detail.                                   | 08 |
| Q.5 | Write short notes on (any TWO):-  | 08 |
|     | (a) Handover procedure  |    |
|     | (b) CDPD  |    |
|     | (c) Bluetooth   |    |
|     | (d) Hidden and exposed terminals  |    |

Section B

- |      |   |    |
|------|---|----|
| Q.6  | (a) Draw and explain WAP architecture                                       | 08 |
|      | (b) Explain the concept of ad-hoc networks.                                 | 08 |
| Q.7  | (a) Explain in detail mobile IP.  | 08 |
|      | (b) Describe fast retransmit/fast recovery mechanism with reference to TCP. | 08 |
| Q.8  | (a) Explain:-   | 08 |
|      | (i) I-TCP   |    |
|      | (ii) Snooping TCP   |    |
|      | (b) Explain congestion control with reference to mobile TCP.                | 08 |
| Q.9  | (a) Draw and explain neat labeled diagram of IEEE 802.11.                   | 08 |
|      | (b) Give syntax of:-  | 08 |
|      | (i) WML   |    |
|      | (ii) Card and Deck  |    |
|      | (iii) Navigation  |    |
|      | (iv) Formatting tent.   |    |
| Q.10 | Write short notes on (any Two):-  | 08 |
|      | (a) Control structures in WML.  |    |
|      | (b) WATM  |    |
|      | (c) Mobile TCP  |    |
|      | (d) IPV6  |    |

**SUBJECT CODE NO:- P-104**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Third Year MCA Examination May/June 2017**  
**Elective-I: Embedded System**  
**(Revised)**

**[Time: Three Hours]**

**[Max.Marks:80]**

Please check whether you have got the right question paper.

- N.B
- i) Q.1 and Q.5 are compulsory.
  - ii) Solve any two questions from Q.2 to Q.4 from section A and Q.6 to Q.8 from section B.

**Section A**

- |     |  |    |
|-----|--|----|
| Q.1 | (a) Define Embedded systems. Explain various applications of embedded systems. | 04 |
|     | (b) Discuss evaluation of microprocessor.                                      | 04 |
| Q.2 | (a) Discuss internal architecture of microprocessor and microcontroller.       | 08 |
|     | (b) Discuss the classification of embedded system.                             | 08 |
| Q.3 | (a) What are addressing modes? Define any two with examples.                   | 08 |
|     | (b) Differentiate between computer and embedded system.                        | 08 |
| Q.4 | (a) Draw a neat labeled diagram of internal architecture of 8086 and explain.  | 10 |
|     | (b) Explain flags present in 8086, explain any two with example.               | 06 |

**Section B**

- |     |  |    |
|-----|--|----|
| Q.5 | Write short note on (any two):-<br>(i) 8 bit, 16 bit, 32 bit processor<br>(ii) RISC and CISC<br>(iii) System on chip | 08 |
| Q.6 | (a) What is watchdog timer? Explain its functioning.   | 06 |
|     | (b) Draw and explain the internal architecture of PIC controller.  | 10 |
| Q.7 | (a) What are ARM embedded systems?   | 06 |
|     | (b) Explain various instructions set available with ARM processor. Explain any two with example.                     | 10 |
| Q.8 | (a) Perform the comparative study of different addressing modes available with 8086, 8051 and PIC controller.        | 10 |
|     | (b) Explain CAN and SPI communication links.   | 06 |



**SUBJECT CODE NO:- P-123**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA Examination May/June 2017**  
**Relational Database Management System**  
**[OLD]**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

- i) Q.No.1 & 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.
- iii) Assume suitable data, whenever necessary.

Section A

- Q.1 What is partial & full functional dependency? Explain 2NF with suitable example. 08
- Q.2 a) Differentiate between physical data independence and logical data independence. 08  
b) What is loss & lossless join? Explain 5NF with example. 08
- Q.3 1. Construct an ER diagram for a author- publisher relation. An author can write for more than one publisher. The publisher publishes the work of many different authors. The database includes data about author, publisher & work the author has done. 08  
2. What are the main functions of database users? Explain. 08
- Q.4 a) What is attribute? Explain different types of attributes. 08  
b) Explain the concept of relational algebra & discuss various set operations that serve to define relational algebra. 08

Section-B

- Q.5 Why there is need of concurrency control system? Explain. 08
- Q.6 a) What is recovery? Explain shadow pegging technique in brief. 08  
b) What is deadlock? Explain preventive measures to avoid deadlock. 08
- Q.7 a) What do you mean by serializability? Explain view serializability with example. 08  
b) Describe the states of transaction in detail. 08
- Q.8 a) Explain primary indexing technique with suitable example. 08  
b) Explain ACID property of transaction. 08

**SUBJECT CODE NO:- P-124**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**  
**EL- I Principles of Programming Languages**  
**(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.6 are compulsory.
  - ii) Attempt any two questions from Q.no.2 to Q.no. 5 and from Q.no.7 to Q.no. 10 of each section
  - iii) Figure to the might indicate full marks.

Section A

- |     |    |  |    |
|-----|----|--|----|
| Q.1 | A  | Explain character of programming language.   | 05 |
|     | B  | What are the types of assignment statements used in programming?                       | 05 |
| Q.2 | A  | Define Records. Explain reference and record fields.                                   | 07 |
|     | B  | How to use multiple selection statement in programming language? Explain with example. | 08 |
| Q.3 | A  | What is mean by parsing? Explain types of parser.                                      | 07 |
|     | B  | Explain variables with reference to name address, types & value.                       | 08 |
| Q.4 | A  | Explain in detail operator evaluation order.   | 07 |
|     | B  | With a suitable example explain primitive data types used in programming language.     | 08 |
| Q.5 |    | Write a short note on: (Any three)   | 15 |
|     | a. | ALGOL 60   |    |
|     | b. | Type conversions   |    |
|     | c. | NFA to DFA conversion.   |    |
|     | d. | Prolog programming   |    |

Section B

- |      |    |  |    |
|------|----|--|----|
| Q.6  | A  | Explain fundamentals of subprogram                             | 05 |
|      | B  | Explain generic function used in java                          | 05 |
| Q.7  | A  | Explain in detail design issues of programming language.       | 08 |
|      | B  | How to implement object oriented construct?                    | 07 |
| Q.8  |    | Explain local referencing Environment                          | 07 |
|      |    | What is mean by blocks? explain                                | 08 |
| Q.9  |    | Explain exception handling with suitable control flow diagram. | 08 |
|      |    | Explain in detail semaphores.                                  | 07 |
| Q.10 |    | Write short note on: (any three)                               | 15 |
|      | 1. | Message passing  |    |
|      | 2. | Thread class in java   |    |
|      | 3. | Dynamic scoping  |    |
|      | 4. | Event handling in c#   |    |

**SUBJECT CODE NO:- P-125**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**  
**EL- I Soft Computing**  
**(Revised)**

[Time:ThreeHours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Q.no.1 from section A and Q.no.6 from section B are compulsory
  - ii) Attempt any two questions from the remaining questions in each section.
  - iii) Assume suitable data ,if necessary

Section A

- Q.1 Answer the following (any two) 10
- a) Explain soft computing. State the difference between soft computing and hard computing.
  - b) What is ANN?
  - c) Compare biological neuron and artificial neuron.
- Q.2 08
- a) What are the different basis models of artificial neural network?
  - b) Explain machine learning in detail. 07
- Q.3 07
- a) Explain perceptron network in detail. 07
  - b) What is Adeline network? 08
- Q.4 08
- a) What is back propagation network? 08
  - b) Explain unsupervised learning networks. 07
- Q.5 Write short notes on (any three) 15
- a. Back propagation learning methods
  - b. Associative memory network
  - c. Back propagation algorithm
  - d. Multiple adaptive linear neurons
  - e. Biological neural network

Section B

- Q.6 Answer the following (any two) 10
- a. Write the difference between fuzzy set and crisp set.
  - b. Write the features of membership functions
  - c. What is fuzzy clustering? Explain with example
- Q.7 07
- a. Explain neuro-fuzzy systems 08
  - b. Explain pattern recognition with example
- Q.8 08
- a. Write down the different applications of soft computing 08
  - b. Explain traveling sales person problem using genetic algorithm 07
- Q.9 08
- a. Explain image processing with example 08
  - b. What is information retrieval system 07
- Q.10 Write short notes on (any three) 15
- a. Importance of fuzzy sets.
  - b. Genetic algorithms
  - c. Methods of representation of classical sets
  - d. Fuzzification
  - e. Share market analysis

**SUBJECT CODE NO:- P-136**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA (CGPA) Examination May/June 2017**  
**Computer Organization**  
**(Revised)**

[Time: Two Hours]

[Max.Marks:50]

Please check whether you have got the right question paper.

- N.B
- i) Question No.1<sup>st</sup> and 4<sup>th</sup> is compulsory.
  - ii) Attempt any one question from each section from remaining.

Section A

- |     |   |    |
|-----|---|----|
| Q.1 | Explain memory Hierarchy in computer system with diagram. | 10 |
| Q.2 | (a) Describe magnetic read write mechanism.               | 08 |
|     | (b) Explain cache memory.                                 | 07 |
| Q.3 | Write short note (Any three).                             | 15 |
|     | (a) ROM   |    |
|     | (b) Optical disk  |    |
|     | (c) Least recently used (LRU)                             |    |
|     | (d) Set associative mapping                               |    |
|     | (e) Seek time   |    |

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) Explain in detail maskable and non-maskable interrupt.  | 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) Control unit  |    |
|     | (e) Mirroring in RAID   |    |

**SUBJECT CODE NO:- P-137**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA Examination May/June 2017**  
**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.5 are compulsory.  
 ii) Solve any two questions from the remaining in each section.

Section A

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

08

(a) #include<iostream.h>

#include<conio.h>

void main()

{

    Int i;

    Clrscr();

    For(i=1;i<=10;i++)

    {

        Cout<<"\ni="<<(2\*i);

    }

    getch();

}

(b) #include<iostream.h>

#include<conio.h>

class demo

{

    int a,b,c;

public:

void gate()

{

    a=9;

    b=4;

}

void mod()

{

    c=a%b;

    cout<<"C="<<c;

}

};

void main()

{

    clrscr();

    demo d;

    d.get();

    d.mul();

    getch();

}

- Q.2 (a) Explain the characteristic of object oriented programming language. 08  
 (b) Write a program to demonstrate array of object. 08
- Q.3 (a) Write a program to demonstrate returning an object to the function. 08  
 (b) Write a program to accept elements for two dimensional arrays and display the additional of that two dimensional arrays. 08
- Q.4 Write a short note on any four with suitable example if any. 16  
 (a) Default function argument  
 (b) Cascading and manipulators  
 (c) Scope resolution operator  
 (d) Pitfalls of operator overloading  
 (e) Member function  
 (f) Variables

Section B

- Q.5 Find the error of the following also give the reason. 08

```

(a) #include<iostream.h>
    #include<conio.h>
    Class testing
    {
        Int a,b;
        Testing()
        {
            Cout<<"\n Hey I am a constructor"<<endl;
        }
        ~Testing()
        {
            Cout<<"\n Hey Call the destructor"<<endl;
            getch();
        }
    };
    void main()
    {
        clrscr();
        Testing t1;
        {
            Testing t2;
        }
        getch();
    }
  
```

```

(b) #include<iostream.h>
    #include<conio.h>
    class Base
    {
        private:
        Int a,b,c;
        public:
        Base()
  
```

```

    {
        a=10;
        b=28;
    }
};
class Derived:public Base
{
    public:
    Derived()
    {
        c=a*b;
        cout<<"\n Multiplication is "<<<<endl;
    }
};
Void main()
{
    clrscr();
    Derived d;
    getch();
}

```

- Q.6 (a) Write a program single inheritance. 08  
 (b) What is virtual function? Explain with suitable example. 08
- Q.7 (a) Write a program for pure virtual function having a base class name as shape and derived class name as rectangle and triangle to find area for each shape. 08  
 (b) What is Template? Explain template with suitable example. 08
- Q.8 Write a short note on any four with suitable examples. 16  
 (a) File pointer  
 (b) Template  
 (c) Inheritance  
 (d) Character I/O  
 (e) Multiple Exception  
 (f) Base Class

**SUBJECT CODE NO:- P-138**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Third Year MCA Examination May/June 2017**  
**Image Processing and GIS**  
**(Revised)**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Q No.1 and 5 are compulsory.
  - ii) Solve any three questions from each section.
- Section A
- Q.1 Explain fundamental steps in digital image processing with diagram. 08
- Q.2 (a) What is intensity transformation? Explain negative image transformation of an image. 08
- (b) Define morphology. Explain erosion operation with example. 08
- Q.3 (a) Explain use of single sensor and sensor array in image acquisition. 08
- (b) What is histogram? Explain four basic intensity characteristic of it. 08
- Q.4 Write short notes on:- 16
- (i) Boundary extraction
  - (ii) Neighbors of a pixel
  - (iii) Resolution of a image
  - (iv) Impulses and its sifting properties
- Section B
- Q.5 How regions are splitted and merged in an image? Explain. 08
- Q.6 (a) Explain dam constitution in image segmentation. 08
- (b) What are patterns and its classes? Explain. 08
- Q.7 (a) Explain steps in creation of map projection. 08
- (b) What is GIS? Explain components of GIS. 08
- Q.8 Write short notes on any two. 16
- (i) Satellite system
  - (ii) History of GIS
  - (iii) Image gradient



**SUBJECT CODE NO:- P-184**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA Examination May/June 2017**  
**Software Engineering-I**  
**[OLD]**

**[Time: Three Hours]**

**[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B	1) Q. No.04 and 08 are compulsory. 2) Solve any two questions from remaining questions in each section	
Section A		
Q.1	A) Explain decomposition technique in detail B) Explain spiral model in detail	08 08
Q.2	A) Discuss the term Software Project estimation B) Explain RISK management process in detail	08 08
Q.3	A) Explain PERT and CPM scheduling in detail B) Explain LOC based estimation technique in detail	08 08
Q.4	Write short note on A) Prototyping B) Software Configuration item (SCI)	08
Section B		
Q.5	A) Explain behavioral modeling in detail B) Explain design principles an design concepts in detail	08 08
Q.6	A) Explain with the help of diagram pyramids of web apps B) Explain software requirement specifications in detail (SRS)	08 08
Q.7	A) Explain construction and testing in detail B) Explain the term requirement engineering in detail	08 08
Q.8	Write Short notes on A) Design model B) SRS	08

**SUBJECT CODE NO:- P-185**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**  
**Web Engineering**  
**(Revised)**

[Time: Two Hours]

[Max.Marks:50]

N.B Please check whether you have got the right question paper.

- i) Q.No.1 Q and Q.No.4 are compulsory.
- ii) Attempt any one question from each section from remaining.
- iii) Use suitable diagram with labels whenever required.

Section A

- |     |   |          |
|-----|---|----------|
| Q.1 | What is web engineering? Explain characteristics and categories of web engineering.                                   | 10       |
| Q.2 | a. Explain client side technologies with example<br>b. Describe different web service with suitable example           | 08<br>07 |
| Q.3 | Write short notes (Any 3)<br>1. Middleware technologies<br>2. XML schemas<br>3. Active X control<br>4. WSDL<br>5. XML | 15       |

Section B

- |     |  |          |
|-----|--|----------|
| Q.4 | What is layered Architecture? Explain 2-layer and N-layered architecture with detail diagram.  | 10       |
| Q.5 | A Explain fundamentals of modeling web application.<br>B Explain architecture for multimedia data with suitable diagram.   | 08<br>07 |
| Q.6 | Write short note on (any 3)<br>a. Relation to content modeling<br>b. Hypertext structure modeling concepts<br>c. Developing Architecture<br>d. Modeling requirements<br>e. JSP-model 2 architecture implementation in structs. | 15       |

**SUBJECT CODE NO:- P-185**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**  
**Web Engineering**  
**(Revised)**

[Time: Two Hours]

[Max.Marks:50]

N.B Please check whether you have got the right question paper.

- i) Q.No.1 Q and Q.No.4 are compulsory.
- ii) Attempt any one question from each section from remaining.
- iii) Use suitable diagram with labels whenever required.

Section A

Q.1	What is web engineering? Explain characteristics and categories of web engineering.	10
Q.2	a. Explain client side technologies with example b. Describe different web service with suitable example	08 07
Q.3	Write short notes (Any 3) 1. Middleware technologies 2. XML schemas 3. Active X control 4. WSDL 5. XML	15

Section B

Q.4	What is layered Architecture? Explain 2-layer and N-layered architecture with detail diagram.	10
Q.5	A Explain fundamentals of modeling web application. B Explain architecture for multimedia data with suitable diagram.	08 07
Q.6	Write short note on (any 3) a. Relation to content modeling b. Hypertext structure modeling concepts c. Developing Architecture d. Modeling requirements e. JSP-model 2 architecture implementation in structs.	15

**SUBJECT CODE NO:- P-189**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA (CGPA) Examination May/June 2017**  
**Soft Skills - I**  
**(Revised)**

**[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 What do you mean by tense? Explain future tense and present tense with types. 10  
OR  
Write a script to show inter cultural informal discussion.
- Q.2 What do you mean by skimming and scanning? Explain lexical and contextual meaning of sentences. 10  
OR  
Explain the importance of ethics to be followed while face to face conversation.
- Q.3 What are different types of letters? Explain in detail with example, the complaint writing. 10  
OR  
Write an application to BSNL for new connection of landline telephone with 3G internet facility.
- Q.4 What do you mean by group discussion? State the importance of GD in selection process. Enlist the ethics to the followed in GD. 10  
OR  
What are presentation skills? Explain the element of presentation skills.
- Q.5 Write short note on (Any two) 10  
1. Email ethics  
2. Interview techniques  
3. Face to face communication  
4. Stress and time management.

**SUBJECT CODE NO:- P-197**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**  
**Statistical Methods**  
**(Revised)**

[Time: Two Hours]

[Max.Marks:50]

Please check whether you have got the right question paper.

- N.B i) Q.1 from section A & Q.7 from section B are compulsory  
ii) Solve any other three questions from each section.
- Section A
- Q.1 a) Explain statistics as statistical data & statistics as statistical methods 05  
b) Explain Frequency distribution with the help of example. 05
- Q.2 Find the arithmetic mean at the following frequency distribution 05  
X : 1 2 3 4 5 6 7  
Y : 5 9 12 17 14 10 6
- Q.3 What is mean by harmonic mean? Explain its merits & demerits 05
- Q.4 Explain in detail classification of statistical data 05
- Q.5 Explain: 1. Histogram with example 05  
2. Frequency polygon
- Q.6 Explain the properties of arithmetic mean 05
- Section B
- Q.7 a) Explain dispersion & its significant 05  
b) What are the limitation of correlation coefficient? 05
- Q.8 Calculate the mean & standard deviation for the following, giving the age distributing of 542 members 05  
Age in Years : 20-30 30-40 40-50 50-60 60-70 70-80 80-90  
No. of Members: 3 61 132 153 140 51 2
- Q.9 Explain coefficient of skewness in detail 05
- Q.10 Define and explain Karl-parsons correlation coefficient 05
- Q.11 Calculate the correlation coefficient for the following heights ( in inches) of fathers ( x) & their sons (y) 05  
X : 65 66 67 67 68 69 70 72  
Y : 67 68 65 68 72 72 69 71
- Q.12 What is mean by kurtosis? Explain with the help of example 05

**SUBJECT CODE NO:- P-207**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**  
**Design and Analysis of Algorithms**  
**(Revised)**

[Time: Three Hours]

[Max.Marks:80]

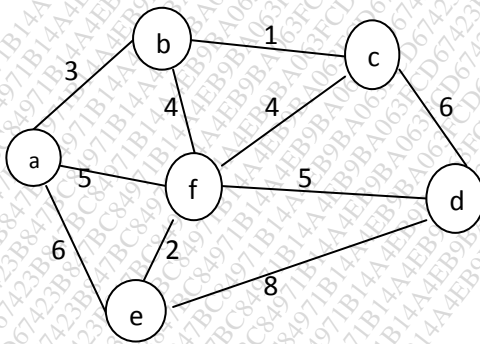
Please check whether you have got the right question paper.

N.B i) Q. No. 4 and Q. No. 8 are compulsory. Solve any two questions from each section from remaining.  
 Section A

- |     |     |  |    |
|-----|-----|--|----|
| Q.1 | (a) | Write an algorithm for binary search using d & c method.   | 08 |
|     | (b) | What are asymptotic notations? Explain with suitable example.  | 08 |
| Q.2 | (a) | What is d and c ? Apply d and c method to find max and min element from the following elements.<br>39, 15, 1, 6, 14, 18, 30. | 08 |
|     | (b) | Explain linear probing method to avoid hash collision.   | 08 |
| Q.3 | (a) | Explain job sequencing with deadlines with suitable example.   | 08 |
|     | (b) | Write an algorithm for Knapsack problem using Greedy method.   | 08 |
| Q.4 |     | Write short note on following:-<br>(a) Optimal storage on tape<br>(b) Strassen's matrix multiplication                       | 08 |

Section B

- |     |     |   |    |
|-----|-----|---|----|
| Q.5 | (a) | Explain Backtracking. How the 4-queens problem is solved using this process.                    | 08 |
|     | (b) | Write an algorithm to implement Prim's algorithm.   | 08 |
| Q.6 | (a) | Compute a minimum cost Spanning tree or the following graph Using prim's & Kruskal's algorithm. | 08 |



- |     |     |   |    |
|-----|-----|---|----|
| Q.7 | (b) | Write an algorithm for string editing problem using dynamic programming.  | 08 |
|     | (a) | Explain optimal merge pattern. Find optimal binary merge pattern for following files.<br>28, 32, 12, 5, 84, 53, 91. | 08 |
|     | (b) | Explain matrix chain multiplication problem using dynamic programming.  | 08 |
| Q.8 |     | Write short note on following:-<br>(a) Hamiltonian cycle<br>(b) Kruskal's algorithm                                 | 08 |

Total No. of Printed Pages:2

**SUBJECT CODE NO:- P-218**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA (CGPA) Examination May/June 2017**  
**Computer Oriented Numerical Methods**  
**(Revised)**

[Time: TwoHours]

[Max.Marks:50]

Please check whether you have got the right question paper.

- N.B
- i) Q.6 from section A and Q. 12 from section B are compulsory
  - ii) Attempt any three question each from Q.1 to Q.5 and form 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 Evaluate  $\int_0^6 dx/(1+x^2)$  using 07
- (i) Trapezoidal rule,
  - (ii) Simpson's 1/3 rule,
  - (iii) Simpson's 3/8 rule.
- Q.2 Obtained the solution of the following system using Gauss elimination method 07
- $$3X_1 + X_2 - 3X_3 = 14$$
- $$X_1 + 3X_2 + 2X_3 = 13$$
- $$2X_1 + 2X_2 + 4X_3 = 18$$
- Q.3 Form the following data estimate the number of students who obtained marks between 40 and 45: 07
- | Marks:           | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 |
|------------------|-------|-------|-------|-------|-------|
| No. of Student : | 31    | 42    | 51    | 35    | 31    |
- Q.4 Write a program for bisection method 07
- Q.5 Solve  $X^2 - 4x - 10 = 0$ , using Bisection method. 07
- Q.6 Write short notes on ( Any one) 04
- 1) Triangularisation of equations
  - 2) Regression analysis

2017

Section B

Q.7 Explain steps of performing addition and subtraction in floating point representation. Perform  $0.964572 E2 - 0.586351 E5$ , using floating point arithmetic 07

Q.8 Solve  $X^3 - 9X + 1 = 0$  for the root lying between 2 and 4 by the method of false position 07

Q.9 Explain  $\Delta$ ,  $\nabla$  and  $\delta$  operators and its uses in interpolation 07

Q.10 The population of a town decennial census was as given below. Estimate the population for year 1975 07

Year	1971	1981	1991	2001	2011
Population (in thousand)	46	66	81	93	101

Q.11 Find Lagrange's interpolation polynomial to find square root of 2.5 from following data 07

X	1	2	3	4	5
f ( x )	1	1.4142	1.7321	2	2.2361

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

- 1) Interpolation
- 2) Iterative method to find roots of non-linear equations



**SUBJECT CODE NO:- P-219**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA Examination May/June 2017**

**Core Java**  
**[OLD]**

**[Time:ThreeHours]**

**[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 | Describe java program structure along with compilation process of applet and application. | 08 |
| Q.2 | a) What is inheritance? Explain types of inheritance.                                     | 08 |
|     | b) Write a java program to demonstrate the use of static variables, methods and blocks.   | 08 |
| Q.3 | a) What are the different layouts- Manager in AWT? Explain with example.                  | 08 |
|     | b) Write a program to demonstrate use of packages.  | 08 |
| Q.4 | a) What is swing? Explain swing features in detail.                                       | 08 |
|     | b) Explain with example low parameters are passed to applet                               | 08 |

Section B

- |     |  |    |
|-----|--|----|
| Q.5 | a) Explain delegation event model in detail.                               | 08 |
|     | b) Write a program for simple exception                                    | 08 |
| Q.6 | a) Explain the concept of multithreading? How threads are created in java. | 08 |
|     | b) Write a program to demonstrate thread priorities                        | 08 |
| Q.7 | a) Define stream? Explain Reader stream classes and writer stream classes. | 08 |
|     | b) Write a program to insert record to database.                           | 08 |
| Q.8 | Write shot notes on (Any two)  | 08 |
|     | a. Synchronization   |    |
|     | b. Character stream  |    |
|     | c. Built in exceptions   |    |

**SUBJECT CODE NO:- P-229**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA Examination May/June 2017**  
**Design & Analysis of Algorithm**  
**[OLD]**

[Time: Three Hours]

[Max.Marks:80]

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

- N.B
1. Q.No.4 & Q.No.8 are compulsory.
  2. Solve any 2 questions from each section from remaining.

Section A

- |     |   |    |
|-----|---|----|
| Q.1 | a) Discuss various elementary data structures with suitable examples.           | 08 |
|     | b) Write an algorithm to perform merge sort using d & c method.                 | 08 |
| Q.2 | a) Define algorithm. Explain various algorithm specifications.                  | 08 |
|     | b) Write an algorithm to find max & min element using d & c method.             | 08 |
| Q.3 | a) Apply quick sort on following data<br>12, 23, 78, 45, 11, 89, 55, 65, 34, 44 | 08 |
|     | b) What is d & c method? Explain recursive binary search algorithm.             | 08 |
| Q.4 | Explain the following terms with example  |    |
|     | a) Space & time complexity  | 04 |
|     | b) Strassen’s matrix multiplication   | 04 |

Section B

- |     |   |    |
|-----|---|----|
| Q.5 | a) Find the optimal solution to the knapsack instance $n=5, m=18$<br>$(p_1, p_2, p_3, p_4, p_5) = (12, 45, 22, 18, 30)$<br>$(w_1, w_2, w_3, w_4, w_5) = (2, 3, 11, 5, 6)$ | 08 |
|     | b) Explain tree vertex splitting problem with suitable example.   | 08 |
| Q.6 | a) What is Greedy method? Explain “job sequencing with deadlines” with example  | 08 |
|     | b) Find the optimal solution to convert the string “abaa” to “babb”.  | 08 |
| Q.7 | a) Write an algorithm to perform longest common subsequence problem.  | 08 |
|     | b) Explain Minimum cost spanning tree with suitable example.  | 08 |
| Q.8 | Explain the following terms with example  |    |
|     | a) Graph coloring   | 04 |
|     | b) Sum of subsets   | 04 |

**SUBJECT CODE NO:- P-230**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**

**Advance Java**  
**(Revised)**

**[Time: Three Hours]**

**[Max.Marks:80]**

Please check whether you have got the right question paper.

- N.B
- i. Q. No. 1 & 8 compulsory.
  - ii. Solve any two questions from Q. No. 2 to Q. No. 4 and Q. No. 5 to Q. No. 7.

Section A

- Q.1 Explain how does HTTP servlet handle client request? 08
- Q.2
- a) Write a JDBC code to update the salaries of all employees with 10% hike in their basic salary. 06
  - b) Explain session management in detail. 06
  - c) Demonstrate how to handle exceptions? 04
- Q.3
- a) Write a Java code using servlet to store username in cookies & display the same username in another servlet class using cookies. 06
  - b) Explain implicit object of jsp. 06
  - c) What is object serialization? 04
- Q.4
- a) Explain RMI architecture in detail. 08
  - b) What is inheritance? How to implement multiple inheritance in Java 08

Section B

- Q.5
- a) Design a Registration.jsp page with input details like first name, last name, choose username, confirm password. After submitting this details. Display the same details onto the display. jsp page using struts. 08
  - b) Differentiate stateless and stateful session beans. 08
- Q.6
- a) Write a program to fetch all student details using Hibernate frameworks. 08
  - b) Explain in brief struts architecture. 08
- Q.7
- a) What is Hibernate frameworks? Explain the benefits of using hibernate frameworks.. 08
  - b) Demonstrate the use of built in validators of struts validation frameworks. 08
- Q.8 Write a short note on (any two) 08
- a) MVC architecture
  - b) Bean managed persistence entity bean.
  - c) Message driven bean.

**SUBJECT CODE NO:- P-230**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**

**Advance Java**  
**(Revised)**

**[Time: Three Hours]**

**[Max.Marks:80]**

Please check whether you have got the right question paper.

- N.B
- i. Q. No. 1 & 8 compulsory.
  - ii. Solve any two questions from Q. No. 2 to Q. No. 4 and Q. No. 5 to Q. No. 7.

Section A

- Q.1 Explain how does HTTP servlet handle client request? 08
- Q.2
- a) Write a JDBC code to update the salaries of all employees with 10% hike in their basic salary. 06
  - b) Explain session management in detail. 06
  - c) Demonstrate how to handle exceptions? 04
- Q.3
- a) Write a Java code using servlet to store username in cookies & display the same username in another servlet class using cookies. 06
  - b) Explain implicit object of jsp. 06
  - c) What is object serialization? 04
- Q.4
- a) Explain RMI architecture in detail. 08
  - b) What is inheritance? How to implement multiple inheritance in Java 08

Section B

- Q.5
- a) Design a Registration.jsp page with input details like first name, last name, choose username, confirm password. After submitting this details. Display the same details onto the display. jsp page using struts. 08
  - b) Differentiate stateless and stateful session beans. 08
- Q.6
- a) Write a program to fetch all student details using Hibernate frameworks. 08
  - b) Explain in brief struts architecture. 08
- Q.7
- a) What is Hibernate frameworks? Explain the benefits of using hibernate frameworks.. 08
  - b) Demonstrate the use of built in validators of struts validation frameworks. 08
- Q.8 Write a short note on (any two) 08
- a) MVC architecture
  - b) Bean managed persistence entity bean.
  - c) Message driven bean.

**SUBJECT CODE NO:- P-241**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA (CGPA) Examination May/June 2017**  
**Object Oriented Programming Using C++**  
**(Revised)**

[Time:ThreeHours]

[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 in each section

Section A

Q.1 Find the output following also give the reason

08

```
a. #include < iostream.h >
#include < conio.h >
Void main ()
{
int a = 10, b=2, c=3 ;
clrscr ();
cout <<(((++a+b--)+(a+--c)+(++b));
getch();
}

b. #include<iostream.h>
#include <conio.h>
Class Test
{
Int a, b;
Public:
Void get (int p, int q)
{
a=p;
b=q;
}
Void inc (Test t)
{
++t.a;
--t.b;
}
Void disp()
{
cout <<"\n value of A="<<a;
cout<<" \n value of b="<<b<<endl;
}
};
```

```

Void main ()
{
Test t1;
Int a=10 ,b=20;
Clrscr();
t1.get(a,b) ;
cout <<"\n Before increment value"<<endl;

t1.disp ();
t1.inc(t1);
cout<<"\n After increment value"<<endl;
t1.disp ();
getch();
}

```

- Q.2 a) Elaborate the characteristics of Object Oriented programming? 08  
b) write a program of check the largest number among three numbers using default argument. 08
- Q.3 a) Explain dynamic memory allocation operator with suitable examples 08  
b) Write a program to find out the student details using multiple inheritances (i.e. roll no, marks of 2 subjects, marks of sports and finally total and average of that marks.) 08
- Q.4 Write a short note on any four with suitable example 16
- Manipulators
  - Access specifiers.
  - New and delete
  - Call by value & call by reference
  - Inheritance
  - Polymorphism

**Section B**

Q.5 Find the output of the following also give the reason 08

```

a. #include<iostream.h>
#include<conio.h>
class Testing
{
Int a, b;
Public :
Testing (int x, int y)
{
a=x;
b=y;
int c=a+b;
cout<<"\nC="<<c<<endl;
}
~Testing ()
{
}
}

```

```

        cout << "\n Hey call the destructor " << endl;
        getch ();
    }
};
void main()
{
    clrscr ();
    Testing t1(3,4);
    {
        Testing t2(1,2);
    }
    getch();
}

```

```

b. #include<iostream.h>
#include<conio.h>
class base
{
    Protected:
    Int a;
Public :
Base ()
{
    a= 10;
}
~Base()
{
    cout << "\n Base destructor " << endl;
    getch();
};
class Derived : public Base
{
    Int b;
Public:
    Derived ()
    {
        b=2;
    }
    Void mul()
    {
        Int c=a*b;
        cout << "\n Multiplication is " << c << endl;
    }
    ~Derived()
    {
        Cout << "\n Derived destructor " << endl;
        getch();
    }
}

```

```

};
Void main()
{

    clrscr();
    Derived d;
    d.mul();
    getch();
}

```

- Q.6
- Write a program to accept 2 numbers from keyboard and perform addition and average of that two numbers using pointer to the object. 08
  - write a program for pure virtual function having a base class name as shape and derived class name as rectangle and triangle to find area for each shape 08
- Q.7
- Explain inheritance and type of inheritance 08
  - Write a program to write and read a file in binary mode using open () function 08
- Q.8 Write a short note on any four with suitable example if any 16
- Pitfalls of Operator Overloading
  - Virtual function
  - Stream class hierarchy
  - Try and catch
  - Pointer to the base class
  - Abstract class



**SUBJECT CODE NO:- P-242**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA Examination May/June 2017**  
**Data Structure using C ++**  
**[OLD]**

[Time:ThreeHours]

[Max.Marks:80]

Please check whether you have got the right question paper.

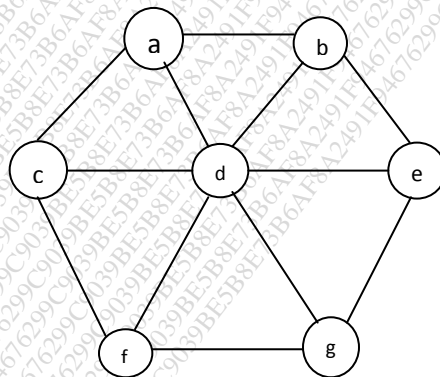
- N.B
- i) Q.No.4 and Q.No.8 are compulsory
  - ii) Attempt any two questions from each section from the remaining questions

Section A

- |     |                                |  |    |
|-----|--------------------------------|--|----|
| Q.1 | a.                             | Write is data structure? Explain various types of data structure with examples.  | 08 |
|     | b.                             | Write a program to implement stack operations.                                   | 08 |
| Q.2 | a.                             | What is linked representation? Explain various operations of singly linked list. | 08 |
|     | b.                             | Write a program for inserting a node at the end of list.                         | 08 |
| Q.3 | a.                             | Write a program for linked representation of stack.                              | 08 |
|     | b.                             | Write a program for searching an element in the singly linked list.              | 08 |
| Q.4 | Write a short notes ( any two) |  | 08 |
|     | a.                             | Priority queue   |    |
|     | b.                             | Time space complexity  |    |
|     | c.                             | Heap   |    |
|     | d.                             | FIFI and LIFO structures   |    |

Section B

- |     |    |   |    |
|-----|----|---|----|
| Q.5 | a. | What is tree? Explain tree traversal techniques with suitable example.                          | 08 |
|     | b. | Define terminologies of Tree  | 08 |
| Q.6 | a. | What is pivot element? Sort the following elements using quick sort.<br>45,89,30,15,10,35,55,40 | 08 |
|     | b. | Explain the various operations of Binary search tree  | 08 |
| Q.7 | a) | What is minimum spanning tree explain? Draw 3 different spanning trees from the following graph | 08 |



- |     |  |  |    |
|-----|--|--|----|
|     | b)   | Explain DFS, BFS techniques with suitable example. | 08 |
| Q.8 | Write a short notes on the following (any two) |  | 08 |
|     | a)   | Bubble sort  |    |
|     | b)   | Threaded binary tree                               |    |
|     | c)   | Insertion sort                                     |    |
|     | d)   | Kruskal's Algorithm                                |    |

**SUBJECT CODE NO:- P-260**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA Examination May/June 2017**  
**Cryptography**  
**[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 from the remaining question from each section
  - iii) Use of non-programmable calculator is allowed.
  - iv) Assume suitable data, if necessary.
- Section A
- Q.1 a. Explain the following term 04
- 1. Modular multiplicative Inverse
  - 2. One way trap door function
  - 3. Cryptanalysis
  - 4. "a" congruent to "b" modulo "n"
- b. Evaluate the following Jacobi symbol 04
- $$\left(\frac{659}{1131}\right)$$
- Q.2 a. With the help of example explain in detail 'Miller Rabin' primality testing algorithm. 08
- b. With key K(11,5) encrypt the text "secrete" to the cipher text. Decrypt the corresponding cipher text to obtain the original text. Use 'Affine cipher' 08
- Q.3 a. Explain 'Hill cipher' algorithm with the help of example. 12
- b. Using extended Euclidean solve the equation  $173x + 95y = 1$  to obtain the value of "x" & "y". 04
- Q.4 Write short notes on (any four) 16
- 1. Solovay strassen
  - 2. Fermat's little theorem
  - 3. Properties of Jacobi symbol
  - 4. Substitution cipher
  - 5. Euler's phi function
  - 6. quadratic sieve
- Section B
- Q.5 Discuss public key cryptography. Explain RSA algorithm with the help of example 08
- Or
- Discuss in detail SHA-1 08
- Q.6 a. Write pollard's p-1 integer factorization algorithm to find nontrivial factors of n. 08
- b. With the help of example explain 'Taher Elgamal' algorithm in detail 08
- Q.7 a. Explain in detail Chinese Remainder Theorem. 08
- b. Explain 'Elliptical curves over prime field in detail. 08
- Q.8 Write short notes on (any four) 16
- i. Diffie Hellman key Exchange algorithm
  - ii. Security of Hash function
  - iii. Message Authentication code
  - iv. Primitive root modulo n
  - v. Baby step giant step algorithm
  - vi. Basic principles of modern cryptography.

**SUBJECT CODE NO:- P-261**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**  
**Data Warehouse and Data Mining Techniques**  
**(Revised)**

[Time:ThreeHours]

[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. no.2 to Q.4 and any two questions from Q.6 to Q.8 respectively.

Section A

- Q.1 Explain the operational data stores in detail. 08
- Q.2 a. Explain the different operations performed on multidimensional data model. 08  
b. Explain the Informational and operational data in detail. 08
- Q.3 a. Writes short notes on any two. 08
  - i. Metadata
  - ii. Mining text database
  - iii. mining the WWW
- b. Define DSS. Explain the feature of DSS. 08
- Q.4 a. Use the method below to normalise the following groups of data 100, 200, 300, 500, 900. 10
  - i Use min-max normalization to transform the values 300 onto range [0.0, 1.0]
  - ii. Use z-score normalization the value 300
  - iii. Use normalization by decimal scaling to transform the value 300.
- b. Explain OLTP in detail. 06

Section B

- Q.5 What is market-basket analysis? Give suitable example of this application in business. 08
- Q.6 a. Explain sequential rule mining. 08  
b. Explain cluster analysis in detail. 08
- Q.7 a. Explain categorization of clustering method. 08  
b. Explain classification and prediction in detail. 08
- Q.8 a. Explain knowledge discovery in detail. 06  
b. Find frequent data set in the following database. Consider min-sup=3 10

<u>TID</u>	<u>Items</u>
1	a, b, e
2	b, d
3	b, c
4	a, b, d
5	a, c
6	b, c
7	a, c
8	a, b, c, e
9	a, b, c

**SUBJECT CODE NO:- P-272**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA (CGPA) Examination May/June 2017**  
**Operating Systems**  
**(Revised)**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

- 1) Q.NO.4 and 08 are compulsory.
- 2) attempt any two question from each section from remaining.

Section A

- Q.1 a) Define operating system. Discuss the layered structure of operating system with diagram. 08  
 b) Discuss the following terms 08  
 i) PCB  
 ii) Process states
- Q.2 a) Assume that following jobs have arrived in order P<sub>1</sub>,P<sub>2</sub>,P<sub>3</sub>,P<sub>4</sub> & P<sub>5</sub> 08

Jobs	Arrival time	burst time	Priority
P <sub>1</sub>	0	10	1
P <sub>2</sub>	1	3	0
P <sub>3</sub>	3	4	1
P <sub>4</sub>	4	7	2
P <sub>5</sub>	5	9	4

Draw the Gantt chart & calculate avg. & total turnaround time & waiting time for

- i) FCFS
- ii) SJF (preemptive )
- b) Consider the following snapshot of the system. A system consider 5 processes A,B,C,D,E & four resource type R<sub>1</sub>,R<sub>2</sub>,R<sub>3</sub> & R<sub>4</sub> 08

ALLOCATION				
	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>
A	5	2	3	3
B	2	3	2	2
C	3	3	3	2
D	3	3	2	3
E	2	2	2	2

MAX				
	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>
A	6	3	3	3
B	2	4	3	4
C	6	4	3	2
D	3	3	3	3
E	4	3	3	2

TOTAL NO .OF RESORCES			
R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>
16	13	14	12

Answer the following questions using Bankers algorithm

- i) Find the need matrix of resources by process
  - ii) Is the system in safe state?
- Q.3 a) Differentiate the process with threads with suitable diagram & examples. 08
- b) List & discuss various inter-process communication mechanism used by operating system 08
- Q.4 Write a short notes on following (any two) 08
- a) Critical section
  - b) Deadlock
  - c) Semaphore
  - d) Compiler

### Section B

- Q.5 a) What is fragmentation? Differentiate the internal fragmentation with external fragmentation. 08
- b) List & explain any two file allocation methods in file system. 08
- Q.6 a) Consider the following page reference string A,B,C,D,B,A,E,F,B,A,B,C,G,F,C,B,A, assume page frame size is 3. calculate the page fault occurred for 08
- i) FIFO
  - ii) Optimal
- b) Suppose the head moving -head disk with 200 tracks, numbered 0 to 199 is currently serving a request 61. If the queue of requests is kept in FIFO order 88,147,191,177,104,15,100,75,13,129, what is total head movement to satisfy these requests for the following disk scheduling algorithms? 08
- i) FCFS
  - ii) SSTF
- Q.7 a) Discuss the various components used by multimedia operating system. 08
- b) Differentiate general purpose operating system with real purpose operating system 08
- Q.8 Write a short notes on 08
- a) VFS
  - b) Paging
  - c) RAID
  - d) Thrashing

**SUBJECT CODE NO:- P-273**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA Examination May/June 2017**  
**Professional Communication Skill**  
**[OLD]**

**[Time: Two Hours]**

**[Max.Marks:50]**

Please check whether you have got the right question paper.

N.B

1) All questions are compulsory.

- |     |  |    |
|-----|--|----|
| Q.1 | State and explain the importance of time management.                 | 10 |
| Q.2 | What are reading techniques? Explain any one technique with example. | 10 |
| Q.3 | What are different parts of speech? Give examples.                   | 10 |
| Q.4 | What is articulateness? List out the benefits of being articulate.   | 10 |
| Q.5 | Write short note on (any two)  | 10 |
|     | 1) Psychometric test.  |    |
|     | 2) Creativity in personal and professional life.                     |    |
|     | 3) Intonations.  |    |
|     | 4) Common errors In English.   |    |

**SUBJECT CODE NO:- P-292**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA Examination May/June 2017**  
**Operation Research**  
**[OLD]**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
1. All questions carries 10 marks.
  2. Q. No. 1 & 6 are compulsory.
  3. Solve any three questions from (2 to 5) section 'A' & any three questions from (7 to 10) section 'B'.

Section A

Q.1 Solve the following problem by using Graphical method. 10  
 Maximize  $z = 3x + 2y$   
 Subject to constraints,  
 $2x + y \leq 18$   
 $2x + 3y \leq 42$   
 $3x + 2y \leq 24$   
 $x \geq 0, y \geq 0$

Q.2 The regal china company produces two products daily plates & Mugs. The company has limited amount of two resources used in production of these products clay & labour. Given these limited resources the company desires to know how many plates to produce each day, in order to maximize profit. The two products have the following resource requirement for production & profit per item produced (i.e. model parameters) 10

Product	Labour (hours/ unit)	Clay (Lbs / unit)	Profit (Rs/unit)
Plate	1	4	4
Mug	2	3	5

There are 40 hours of labour & 120 pounds of clay available each day for production. Formulate this problem as a LPP. (Linear programming problem)

Q.3 Find the initial basic feasible solution for the following problem using VAM method & optimize solution using stepping stone. 10

	$P_1$	$P_2$	$P_3$	Supply
$M_1$	5	8	11	100
$M_2$	7	13	9	350
$M_3$	18	22	17	500
Demand	200	600	150	950

Q.4 Write short note on (any two) 10

1. Degeneracy in transportation problem
2. Unbalanced transportation problem
3. Hungarian method.

Q.5 Four Jobs ( $J_1, J_2, J_3$  &  $J_4$ ) Need to be executed by four workers ( $W_1, W_2, W_3, W_4$ ) one job per workers. The matrix below shows the cost of assigning a certain worker to a certain job. The objective is to minimize 10

the total cost of assignment.

	$J_1$	$J_2$	$J_3$	$J_4$
$W_1$	82	83	69	92
$W_2$	77	37	49	92
$W_3$	11	69	5	86
$W_4$	8	9	98	23

Section B

- Q.6 Write down the steps to solve transportation problem by using. 10
1. North west corner rule
  2. Least cost method.

- Q.7 There are seven jobs, each of which has to go through the machine A & B in the order AB. Processing times in hours are given as. 10

Job	1	2	3	4	5	6	7
Machine A	3	12	15	6	10	11	9
Machine B	8	10	10	6	12	1	3

- Q.8 A project schedule has the following characteristics. 10

Activity	Time
1 – 2	4
1 – 3	1
2 – 4	1
3 – 4	1
3 – 5	6
4 – 9	5
5 – 6	4
5 – 7	8
6 – 8	1
7 – 8	2
8 – 10	5
9 – 10	7

1. Construct the N/W.
2. Compute E & L for each event and
3. Find critical path.

- Q.9 Define the following terms 10

1. Feasible region
2. Optimal solution
3. Degenerate solution
4. Unbalanced transportation problem.

- Q.10 What do you mean by linear programming problem? Explain different methods to solve linear programming problem. 10

2017



**SUBJECT CODE NO:- P-293**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**  
**Object Oriented Analysis and Design**  
**(Revised)**

**[Time: Two Hours]**

**[Max.Marks:50]**

Please check whether you have got the right question paper.

N.B

- i) Q.No.1 is compulsory.
- ii) Attempt any 3 questions from the remaining questions

Q.1	Solve any four question	08
	a) Axions	
	b) class visibility	
	c) Metaclasses	
	d) Extensibility	
	e) Association	
Q.2	a) What is object ? Explain state, behavior and identity of an object	07
	b) What is classification? Explain problem of classification	07
Q.3	a) Explain micro development process	07
	b) Explain object oriented system development life cycle	07
Q.4	a) Explain macro level process	07
	b) What is use case diagram? Draw & explain it	07
Q.5	a) How is activity diagram used to model an operation? Enumerate the steps with an example	07
	b) Explain unified modeling language in detail	07

**SUBJECT CODE NO:- P-304**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA (CGPA) Examination May/June 2017**  
**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 & 8 are compulsory.
  - ii) Solve any two from remaining in each section.
  - iii) Draw neat diagrams wherever necessary.
- Section A
- Q.1 'DELTA SOLUTION'S is a software company that is consultant to large manufacturing company where more than 2000 employees are working in three shifts. There is always a rush for card punching to mark attendance at the time of shift-change. This results in problems in recording attendance, over-time and calculating payroll of employees. The management has been advised by consultant to go for RFID smart cards. Every employee will possess a RFID card and will use for time –In and time –out to mark attendance. The card will be just shown in front of special readers placed at gate to mark attendance and attendance record will be updated in database. For various leaves, a formatted leave application form is to be filled by employees. This format will be scanned through scanner and leave record will be updated directly into data base. Data thus gathered will be used further for computing the salary and processing the allied reports. Prepare SRS for the above case study. 20
- Q.2 Why LOC is a popular size estimation method? Give the advantages and disadvantages of LOC as a size measure? 10
- Q.3 Explain the risks you anticipate in requirement gathering for an in-house project. What can be done to reduce these risks? 10
- Q.4 A Library system is developed using Php and MYSQL. Design a GUI based data entry form for issuing books from Library. The GUI should use all the web features. Also prepare the Data dictionary for the same. 10
- Section B
- Q.5 Prepare WBS for any web based application. And also draw the network and Gantt chart diagrams based on the same WBS. 10
- Q.6 Centralized purchase system collects requisitions from other Departments. Supplier sends Quotations accordingly to the requirements given. Supplier is Short listed and purchase order released on him Draw necessary E-R diagram. 10
- Q.7 What is DFD? Differentiate logical and physical DFD in detail with suitable case study. 10
- Q.8 Write short notes : (any four) 20
- a) Levels of testing
  - b) Information hiding
  - c) Decision tree
  - d) Object-oriented Design
  - e) UML Diagrams.

**SUBJECT CODE NO:- P-305**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA Examination May/June 2017**  
**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 from each section.

Section A

- Q.1 Determine whether the following statements are true or false. Justify your answers. 08
- 1.  $\{a, \Phi\} \in \{a, \{a, \Phi\}\}$
  - 2.  $\{a, b\} \subseteq \{a, b, \{a, b\}\}$ .
  - 3.  $\{a, b\} \in \{a, b, \{a, b\}\}$ .
  - 4.  $\{a, c\} \in \{a, b, c, \{a, b, c\}\}$ .
- Q.2
- a) If A & B are independent events then A' & B' are also independent. 04
  - b) If  $p \rightarrow q$  is true, can we determine the truth value of  $\sim p \vee (p \rightarrow q)$ ? Explain your answer. 04
  - c) If two dice are thrown then what is the probability of getting the sum of the score a number which is not divisible by 5. 08
- Q.3
- a) Show that  $(A-B) - C = A - (B \cup C)$  using Venn diagram. 04
  - b) Show that statement  $(\sim p \vee \sim q) \wedge r$  is neither tautology nor contradiction. 04
  - c) Show the following logical equivalence. 08
    - 1)  $(p \rightarrow q) = (\sim p \rightarrow \sim q)$
    - 2)  $p \wedge (q \vee r) = (p \wedge q) \vee (p \wedge r)$
- Q.4
- a) Explain Mutual Exclusive & Independent event. 04
  - b) Determine whether the following is a valid argument. 04
    - If Geeta goes to class, she is on time.
    - But Geeta is late
    - She will therefore miss class.
  - c) If A & B are two events then show that  $P(A \cup B) = P(A) + P(B) - P(A \cap B)$  08

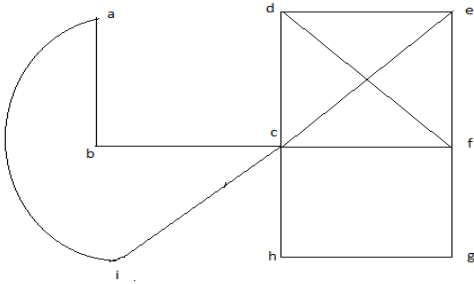
Section B

- Q.5 Write short notes on 08
- 1) Circuit
  - 2) Binary Tree
  - 3) Cut Set
  - 4) Graph

Q.6

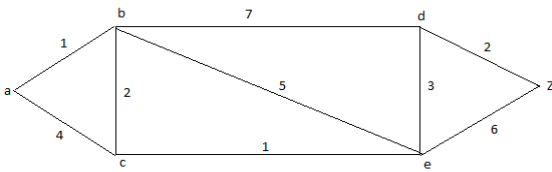
- a) Determine the concept of Sub Graph.
- b) Explain Eulerian Circuit & Find out Eulerian Circuit in the following graph.

04  
04



- c) Find out shortest path from vertices A to Z.

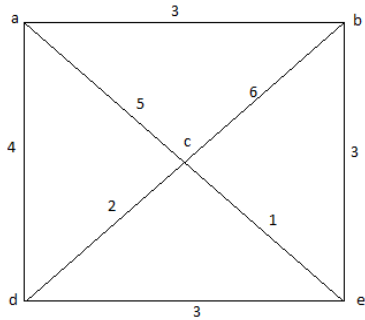
08



Q.7

- a) Explain the concept of Planar Graph with suitable example.
- b) Explain the concept of Rooted Tree.
- c) Find out minimum spanning tree by using Kruskal Algorithm.

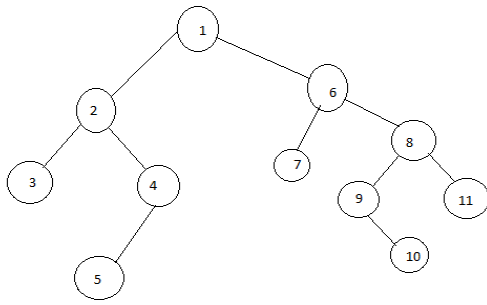
04  
04  
08



Q.8

- a) Determine the preorder, post order & in order traversal of binary tree.

04



b) Find the numeric function for the generating function  $A(z) = 1/(1+z)$ .

c) Solve the following Homogeneous equation.

$$a_r - 10a_{r-1} + 9a_{r-2} \text{ with } a_0 = 3 \text{ \& } a_1 = 11$$

04

08

**SUBJECT CODE NO:- P-356**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA Examination May/June 2017**  
**Data Warehousing & Data Mining**  
**[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) Attempt any two questions from Q.2 to Q.4 .
  - iii) solve any two question from Q.6 to Q.8
  - iv) Assume suitable data whenever necessary

Section A

- Q.1 What is DSS? Explain characteristics of DSS 08
- Q.2 a) Explain various OLAP operations in multidimensional model 08  
b) Discuss data cleaning techniques in detail 08
- Q.3 a) Suppose that the data for analysis includes the attributes age values for tuples as follows 08  
13, 15, 16, 16, 19, 20, 20, 21, 22, 22, 25, 25, 25, 25, 30, 33, 33, 35, 35, 35, 35, 36, 40, 45, 46, 52, 70.  
Using above data find out mean, median, mode, mid-range & draw boxplot
- Q.4 a) Why there is used of OLAP ? Explain different OLAP tools? 08  
b) What is role of data model in data warehousing? Explain star scheme with an example? 08

Section B

- Q.5 What is data mining? Explain knowledge discovery in detail 08
- Q.6 a) Find frequent data set in the following database with minimum support =2 08
- | TID | Items      |
|-----|------------|
| 100 | a, c, d    |
| 200 | b, c, e,   |
| 300 | a, b, c, e |
| 400 | b, a       |
- Q.7 a) Describe major steps in decision tree induction 08  
b) How to compute the dissimilarity between objects described by the following types of variables 08  
i) Interval scale variables  
ii) Asymmetric binary variables
- Q.8 a) What is market basket analysis? explain with an example 08  
b) Discuss mining multimedia databases 08
- Q.8 a) Suppose that the data mining task is to cluster the following eight point into three clusters 08  
 $A_1(2,10)$ ,  $A_2(2, 5)$ ,  $A_3(8, 4)$ ,  $B_1(5, 8)$ ,  $B_2(7, 5)$ ,  $B_3(6, 4)$ ,  $C_1(1, 2)$ ,  $C_2(4, 9)$   
The distance function is Euclidean distance. suppose initially we assign  $A_1$ ,  $B_1$  &  $C_1$  as the center of each cluster, resp. Use the K-means algorithm to show final three clusters

**SUBJECT CODE NO:- P-357**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**  
**Operation Research (EL- II)**  
**(Revised)**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Attempt any three questions from each section
  - ii) Assume suitable data if necessary
  - iii) figure to the right indicate full marks

Section A

- Q.1 Solve the following L.P problem by graphical method 13  
 Maximize ( Z ) =  $45x_1 + 80x_2$   
 Subject to :  $5x_1 + 20x_2 \leq 400$   
 $10x_1 + 15x_2 \leq 450$   
 &  $x_1, x_2 \geq 0$
- Q.2 Solve the following LPP by simplex method 14  
 Maximize ( z ) =  $2x_1 + 4x_2 + 3x_3$   
 Subject to :  $3x_1 + 4x_2 + 2x_3 \leq 60$   
 $2x_1 + x_2 + 2x_3 \leq 40$   
 $x_1 + 3x_2 + 2x_3 \leq 80$   
 &  $x_1, x_2, x_3 \geq 0$
- Q.3 Explain the following 09  
 1) Slack, surplus and artificial variables  
 2) Duality in L.P. problem 04
- Q.4 A company has its plants at A, B and C which supply warehouses at D, E, F and G. Monthly capacities of plants are 160 , 150 and 190 units respectively and monthly requirements of the warehouses are 80 , 90, 110 and 160 units respectively. Unit shipping cost are as follows 13
- |   | D  | E  | F  | G  |
|---|----|----|----|----|
| A | 42 | 48 | 38 | 37 |
| B | 40 | 49 | 52 | 51 |
| C | 39 | 38 | 40 | 43 |
- Q.5 Explain the following 05  
 1) Explain the steps involved in V.A.M 08  
 2) What is degeneracy in transportation problem? How is it resolved?

Section B

- Q.6 A company has six jobs which go through three m/c's in the order M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>. Table below gives the processing time in minutes for each job on each m/c. what should be the sequence of jobs? Find also total elapsed time, idle time of each m/c 13

Jobs	Machines		
	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
1	20	9	21
2	14	14	14

3	31	13	25
4	38	4	49
5	45	8	30
6	39	14	38

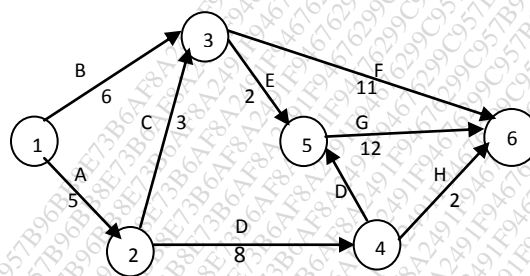
Q.7 Solve the following assignment model

13

		Jobs			
		A	B	C	D
Workers	1	18	26	17	11
	2	13	28	14	26
	3	38	19	18	15
	4	19	26	24	10

Q.8 Determine the critical path for the project network of figure shown below

13



Q.9 Table shows activities with three time estimates. Draw the network, find critical path

14

- 1) What is the probability of work completion for 42 days
- 2) Which duration will assure 99% probability of work completion ?

Z	0.9	1.0	1.1	2.35
P%	81.59	84.13	86.43	99.00

Activity	$t_o$	$t_m$	$t_p$
1-2	6	8	10
1-3	7	10	13
1-4	5	6	13
2-5	5	6	7
3-4	0	0	0
3-5	3	5	7
3-6	3	10	11
4-6	9	12	15
5-7	9	11	13
6-7	11	14	17
7-8	1	4	7

- Q.10 1) Explain Fulkerson's rule to construct network diagram
- 2) Explain: Slack, activity, critical activity and dummy activity

06  
07



**SUBJECT CODE NO:- P-358**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA (CGPA) Examination May/June 2017**  
**Natural Language Processing (EL- II)**  
**(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) Attempt any two questions from Q.2 to Q.4 and Q.6 to Q.8 respectively .

Section A

- Q.1 Explain NLP and its linguistic terminology in detail 08
- Q.2
  - a) Why NLP is difficult to process 08
  - b) Describe NL generation process in detail 08
- Q.3
  - a) Write short note on 10
    - i) Machine learning
    - ii) Question answering system
  - b) Explain text entailment 06
- Q.4
  - a) What is sentiment analysis? Explain its challenges 08
  - b) Find the class label of 08

X=( age = middle age, income = medium, student = No, credit rating = fair )

From the following training data set by Naive Bayesian classification

Age	Income	Student	Credit rating	Class buy-comp
Youth	High	No	Fair	No
Middle age	High	No	Excellent	No
Senior	High	No	Fair	Yes
Senior	Medium	No	Fair	yes
Senior	Low	Yes	Fair	Yes
Middle age	Low	Yes	Excellent	No
Youth	Low	Yes	Excellent	Yes
Youth	Medium	No	Fair	No
senior	Low	Yes	Fair	Yes
Youth	Medium	Yes	Fair	Yes
Middle age	Medium	No	Excellent	No
Middle age	High	Yes	Fair	Yes
Senior	medium	No	Excellent	No

Section B

- Q.5 Explain finite state machine based morphology 08
- Q.6
  - a) What do you mean by chunking? 08
  - b) Explain shallow parsing with suitable example 08
- Q.7
  - a) Write short note on 10
    - i) Scope ambiguity
    - ii) Attachment ambiguity
  - b) Differentiate between inflectional and derivational morphology 06
- Q.8
  - a) What are the different applications of NLP? 08
  - b) What do you mean by parsing? Explain dependency parsing ? 08

2017

**SUBJECT CODE NO:- P-369**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA (CGPA) Examination May/June 2017**  
**Data Structure**  
**(Revised)**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

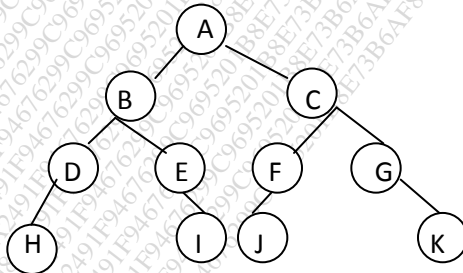
- N.B
1. Q. No.4 and Q.No.8 are compulsory.
  2. Attempt any two questions from Q. No.1 to Q.No.3 and any two questions from Q.No.5 to Q. No.7.

Section A

- Q.1 a) What is linked list? Explain various operations in case of doubly linked list. 08  
b) Write an algorithm to perform stack operations. 08
- Q.2 a) What is Hashing? Explain linear probing with suitable example 08  
b) Write an algorithm to perform insert-first, insert – last & delete first in case of singly linked list 08
- Q.3 a) What is Queue? Write an algorithm to perform insert, delete and display operation in Queue. 08  
b) What is data structure? Explain different types of data structures with suitable example 08
- Q.4 Write short note on following (any two) 08  
a) Priority Queue  
b) Dynamically allocated array  
c) 3D array

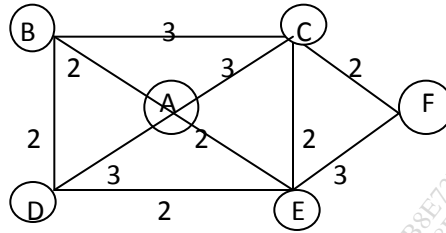
Section-B

- Q.5 a) What is Graph? Explain Graph traversal techniques with suitable example. 08  
b) Sort following data using bubble sort technique 08  
5, 4, 3, 2, 1
- Q.6 a) Traverse a tree using Pre order, in order and Post order traversal techniques 08



- b) Write a program to convert infix expression into postfix expression 08

Q.7 a) Draw minimum spanning tree for a Given graph. Also find its cost (Use Prim's method) 08



b) What is tree? Write tree traversal algorithms 08

Q.8 Write short note on following (any two) 08

- a) binary tree
- b) Adjacency matrix
- c) BFS

**SUBJECT CODE NO:- P-370**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Second Year MCA Examination May/June 2017**  
**Software Engineering -II**  
**(OLD)**

[Time:ThreeHours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 from section A and Q.No.6 from section B are compulsory.
  - ii) Attempt any two questions from the remaining questions in each section

Section A

- Q.1 Attempt any five from the following 10
- a) Define Software Quality
  - b) Explain in brief ISO 9126 Quality Factors
  - c) Explain in brief cost of Quality
  - d) Explain in brief Garvin's Quality Dimension
  - e) Explain in brief Reuse Landscape.
  - f) Explain in brief Safety and Security
  - g) Explain in brief Availability and Reliability
  - h) Explain in brief Reliability Metrics.
- Q.2 a) Explain in detail different levels of software testing. 08  
b) Explain in details elements of software quality assurance 07
- Q.3 a) Explain in detail Defect Life Cycle 08  
b) Explain in detail statistical SQA 07
- Q.4 a) Explain in detail static Analysis 07  
b) Explain in detail Risk driven Requirement Specification 08
- Q.5 Write a short note on (Any Three) 15
- a) Security Testing
  - b) Six Sigma for Software engineering
  - c) Process Assurance
  - d) COTs Product

Section -B

- Q.6 Attempt any Five from the Following 10
- a) Define the terms
    - i) Agility            ii) Agile Teams
  - b) Explain in brief agility principles
  - c) Explain in brief qualities of Human Factors in agile development.
  - d) Define Aspect oriented Software Development
  - e) Explain in brief potential solutions for software maintenance.
  - f) Define software reusability

- g) Describe various categories of S/W Maintenance
- h) Define Software maintenance.

- Q.7 a) Explain in detail Dynamic System Development Method 08  
 b) Explain in detail Aspect Viewing 07
- Q.8 a) Explain in detail Feature Driven Development 08  
 b) Explain in detail Iterative enhancement Model 07
- Q.9 a) Explain in detail Boehm’s Model 07  
 b) A Software project has development effort of 500 PM. It is assumed that code will be modified per 08  
 year  
 Some of the multiplier’s are given as:  
 1. Required Software Reliability (RELY); High  
 2. Database size (DATA); High  
 3. Analyst capability (ACAP); High  
 4. Application Experience (AEXP): Very High  
 5. Programming Language Experience (LEXP) : High
- Other multipliers are nominal. Calculate the Annual Maintenance Effort (AME).

- Q.10 Write a short note on (Any Three) 15  
 a) Software reengineering  
 b) Maintenance Process  
 c) Separation of concern  
 d) Reuse Oriented Model

**SUBJECT CODE NO:- P-381**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA (CGPA) Examination May/June 2017**  
**Database Management System**  
**(Revised)**

[Time: Three Hours]

[Max.Marks:50]

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 and Q.No.4 are compulsory.
  - ii) Attempt any one questions from each section from remaining.

Section A

- Q.1 Draw and explain with diagram the DBMS architecture. 10
- Q.2
- a. Explain the term generalization, specification and aggregation with suitable example. 08
  - b. Explain the following term with example. 07
    - 1. Simple vs. composite attribute
    - 2. Store Vs. derived attribute.
    - 3. Single Vs. multilevel attribute.
- Q.3 Write Short note (Any three) 15
- a. E-R models
  - b. Advantages of using DBMS approach
  - c. Roles and responsibilities of DBA
  - d. Advantages of DBMS over file organization
  - e. Difference between 2-tier and 3-tier architecture.

Section B

- Q.4 Explain various keys in database with an example 10
- Q.5
- a. What is 3 NF? What are the advantages of BCNF over 3NF? 08
  - b. Illustrate use of SUM (), Avg(). Count (), min () and max () commands. 07
- Q.6 Write Short note (Any three) 15
- i. DDL command with constraints
  - ii. DML commands with example
  - iii. Differentiate between physical and logical data independency
  - iv. Explain view in SQL
  - v. Explain join command.

**SUBJECT CODE NO:- P-382**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**First Year MCA Examination May/June 2017**  
**Principals of Programming Language**  
**(OLD)**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

- i) Q.No.4 and Q.No.5 are compulsory.
- ii) Attempt any two questions from Q. 1 to 3 and 6 to 8.

Section A

- |     |   |       |
|-----|---|-------|
| Q.1 | a) Describe in detail classification of programming languages   | 08    |
|     | b) Explain in brief eight kinds of tools that commonly support the work of compiler within a larger programming environment   | 08    |
| Q.2 | a) If G is the grammar<br>S→Sb Sl a<br>Show that G is ambiguous   | 08    |
|     | b) Define finite Automaton & state the difference between NFA & DFA   | 08    |
| Q.3 | a) When discussing context free languages what is derivation? What is sentential form?  | 08    |
|     | b) What is lexical scoping? why is the distinction between declaration & definition important   | 08    |
| Q.4 | Differentiate between ( attempt any 2)<br>1) Static semantics & dynamic semantics<br>2) TOP –DOWN & Bottom –Up parser<br>3) Static scoping & dynamic scoping<br>4) Compilers & interpreters | 4*2=8 |

Section B

- |     |   |       |
|-----|---|-------|
| Q.5 | Write short note on ( any 2)<br>1) Garbage collection<br>2) Arrays<br>3) Macros<br>4) Dangling references | 4*2=8 |
| Q.6 | a) What is binding? explain notions of binding time   | 08    |
|     | b) What are modules? Explain modules as abstraction in detail   | 08    |
| Q.7 | a) Explain recursion and tail –recursive function   | 08    |
|     | b) Describe type compatibility with reference to coercion   | 08    |
| Q.8 | a) What are strings? enlist operations that can be performed on strings                                   | 08    |
|     | b) What is plausible set of phases of compilation   | 08    |