MCA-105

Roll No	2	0	1	8	0	2	4	0	5		

MCA, 2nd Sem
Minor Test 2018-19
Object Oriented Programming with C++

Time: 2hrs *Marks: 20*

Note: Attempt all questions.

Q1. Attempt any 3 parts of the following. Q1(a) is compulsory

(a) In how many ways a member can be taken in a class? Can we access private members through objects? If your answer is yes then write down the suitable code and if it is no then write down the other ways for accessing private members using appropriate examples? 4

(b) Define inline functions. Why do we need inline functions? Write down a code in C++ to show the use of inline function. 2

(c) How friend functions are written in C++? Write down a C++ code to explain the use of friend functions. 2

(d) Define copy constructors and write down the code to print the values of the two public data members (one is of integer type and other is of float type) using copy constructors. 2

Q2. Attempt any 2 parts of the following. Q2(a) is compulsory

(a) Write down the various characteristics of object oriented programming? How are they implemented in C++? Write in short on all of them by giving appropriate example for each. 4

(b) What are various object oriented programming languages? Differentiate between any two object oriented programming languages. 2

(c) What is the use of scope resolution operator? Write down a C++ program to add any two private data members of integer type using member function and scope resolution operator. 2

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Q3. Attempt any 2 parts of the following. Q3(a) is compulsory

(a) Define constructors and destructors. How they are invoked? What is the order of invocation? How constructors and destructors are different from a normal member functions? Can we have more than one constructor in a class? Define constructor overloading? 4

(b) What is the use of parameterized constructors? Write down the code to print values of three private data members using parameterized constructors by implicit and explicit call both? 2

(c) Why do we need to write a destructor? How are they written? Can we have more than one destructor in a class? Define default constructors and default destructors using suitable examples? 2

MCA-102

Roll No.	2	0	1	8	0	2	4	0	5	1	

MCA (II Sem)

EVEN SEMESTER

Minor Examination 2018-2019

Data Structures & Applications

Time: 02 Hrs Max. Marks: 20

Note: Attempt all questions. Be precise in your answer

1) Attempt any **Three parts** of the following Q. 1(a) is compulsory.

(a) What do you understand by the term algorithm? Explain in detail. Write an algorithm for finding second largest element from a list of integers containing n elements. 4

(b) Define Abstract Data Type in detail. 2

(c) Devise a formula for calculating address of any arbitrary location in two-dimensional array stored in row major order and column major order. Make suitable assumptions as required. 2

(d) Write an algorithm for evaluating a postfix expression. Trace your algorithm for the following expression. 2

6 2 3 + - 3 8 2 / + * 2 $ 3 +

2) Attempt any **Two parts** of the following Q. 2(a) is compulsory.

(a) Write an algorithm for converting infix notation into post fix notation. Show the steps of your algorithm for the following expression. 4
((A-(B+C)) * D) $(E+F)

(b) Why circular queues are better than simple queue? Write an algorithm to insert and delete an item from the circular queue. 2

(c) Let p be a pointer to the first node in a singly linked list and x be an arbitrary node in this list. Write an algorithm do delete the node x from the list. If x=p then p should be reset to point to the new first node in the list. 2

3) Attempt any **Three parts** of the following Q. 3(a) is compulsory.

(a) Write a complete program in C to perform push and pop operation on stack implemented through linked list. 4

(b) Devise insertion and deletion function for doubly linked list. 2

(c) Implement queue data structure using array. 2

2018024045

MINOR TEST 2018-19 MCA I, Sem - II

BAS-24 - Applied COMPUTATIONAL Method. MM-20

Attempt All Questions . Part a of every question is compulsory . Attempt any two parts from b,c,d .

Q.1 (a) Use Newton raphson method to find one root between 1.9 and 2.1 of following equation :

$$x^3 - 2x - 5 = 0$$

(4)

(b) Use Regula-falsi method to find a root between 0 and 1 of given equation:

$$x^3 - 6x + 4 = 0$$

(2)

c) Find a positive root of equation below by bisection method:

$$x^4 - x - 13 = 0$$

(2)

d) Find cube root of 51.

(2)

Q.2 Attempt part a and any one from b,c:

(a) Find f(3.8) to the given data by using backward interpolation formula:

X	0	1	2	3	4
f(x)	1	1.5	2.2	3.1	4.6

(4)

b) Using Lagrange's formula find the polynomial f(x) for the following table:

X	14	17	31	35
f(x)	68.7	64	44	39

(2)

c) Using Newton's divided difference method find the polynomial f(x) for the following table:

X	3	7	9	10
f(x)	168	120	72	63

(2)

Q.3 (a) Use Crout's method to solve equations:

$3x + y - 3z = 5$, $x + y + z = 1$, $x - 2y - 5z = 10$. (4)

b) Use Gauss – Siedel method to solve equation:

$3x + 2y + 10z = 9$, $x + 8y + 2z = 6$, $6x + y + z = 7$. (2)

c) Using Simpson's one-third rule, find the value of : $\int_1^{3.4} \frac{x\,dx}{(3+x^3)}$; take h = 0.2 (2).

MCA-108

Roll No. 2 0 1 8 0 2 4 0 5 1

MCA, 2nd Sem
Minor Test 2018-19
Information Security & Cyber Laws

Time: 2hrs *Marks: 30*

Note: Attempt all questions.

Q1. Attempt any 3 parts of the following. Q1(a) is compulsory

(a) Define Information System and its components. Discuss the need of distributed information system. 4

(b) What is called vulnerability? Classify and explain the information system threats and attacks. 3

(c) What are the basic principles of information security? Discuss the role of biometrics in information security. 3

(d) How can an information system affect the personal life of anyone? Explain security threats to e-commerce. 3

Q2. Attempt any 2 parts of the following. Q2(a) is compulsory

(a) Briefly describe the TCP/IP protocol architecture? How is it different from OSI model? Write down the name of the protocols of each layer of TCP/IP model. 4

(b) What changes are done in IPV6 from IPV4? Why are these changes required? Explain IPV4 and IPV6 with their headers. 3

(c) Differentiate between following networking components : 3
i) Router and Gateway
ii) Hub and Switch

(d) What is the significance of mobile and wireless computing in current era of computing? Explain threats in mobile and wireless computing in short. 3

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Q3. Attempt any 2 parts of the following. Q3(a) is compulsory

(a) What do you understand by the term virtual organization? Discuss the types of virtual organization with their characteristics. 4

(b) How ISO 27001 helps to information security management? Explain this standard and its features. 3

(c) Differentiate between information security and privacy. Why are they needed in any information system? 3

(d) Define Access Control. Where is it needed and what are its characteristics? Also explain SEE-CMM in brief. 3

MCA-107

MCA

EVEN SEMESTER

Minor Examination 2018-2019

Introduction to Database Management System

2018024051

Time: 02 Hrs

Max. Marks: 20

Note: Attempt all questions. Be precise in your answer

1) Attempt any **Three parts** of the following Q. 1(a) is compulsory.

(a) Differentiate between Database system and File system. Draw the three-tier architecture of DBMS and explain its various components. 4

(b) Define Hierarchical, Network and Relational Data Model with a suitable example. How Hierarchical and Network data model differ from Relational data model? Explain with example. 2

(c) Describe any five Aggregate functions of SQL with a suitable example. 2

(d) Explain the term Referential Integrity with a suitable example. 2

2) Attempt any **Two parts** of the following Q. 2(a) is compulsory.

(a) Draw the overall structure of DBMS and explain its various components in brief. 4

(b) What is the significance of Data Independence in DBMS? Describe the various types of Data Independence in detail. 2

(c) Design a Generalization-Specialization hierarchy for a motor – vehicle sales. The company sells motorcycles, passenger cars, vans and buses. Justify the placement of attributes at each level of hierarchy. 2

3) Attempt any **Two parts** of the following Q. 3(a) is compulsory.

(a) Consider the following database: 4

Employee (Emp_no, Name, Skill, Pay_rate)
Position (Posting)no, Skill)
Duty_Allocation (Posting_no, Emp_no, Day, Shift)

Write the SQL queries for the following:

(i) Get the employee details whose skills are Computer Science.
(ii) Get the details of employee and posting_no whose name starts with character 'A'.
(iii) Get the emp_no, posting_no of employee who works on Monday, Thursday, Saturday.
(iv) Get the employee details whose skill has not been entered.
(v) Delete the employee details whose skills are Mechanical.
(vi) Get the table name EMP from Employee.
(vii) Change the skill of emp_no 12 as Mechanical.
(viii) Get one more column in the Employee table name as designation.

(b) What is the significance of Relational Algebra in Relational Database? Describe the various Relation oriented operations of Relational Algebra with a suitable example. 2

(c) What is View? Describe the View with a suitable example. List the various advantages of using View. 2

2018 - 2019

MBA-101

ROLL NUMBER | 2 | 0 | 1 | 8 | 0 | 2 | 4 | 0 | 5 | 1 |

MCA
(SEM II) EVEN SEMESTER
MINOR TEST (EXAMINATION) 2018-2019
FUNDAMENTALS OF MANAGEMENT

TIME: 2Hrs **Max. Marks: 30**
Note: Attempt all questions.

Q. 1 Attempt any three parts of the following. Q 1(a) is compulsory.

a). Which of Fayol's principle of Management do you observe that are in use in organization today? (4)

b). Explain the Importance of Hawthorne Experiment effect. How it is influence the managers in today's context. (3)

c) Discuss the term "Informal Organization Structure". How it is different from formal organization structure? (3)

d). How do managers make decisions? What are the steps involved in Formal Decision making process? (3)

Q. 2 Attempt any three parts of the following. Q 2(a) is compulsory.

a) The study of Management Theory is important for managers. Justify it with few suitable examples. (4)

b) An efficient manager knows the importance of role and various skills required in organization. Critically analyze. (3)

c) Explain how Taylor's and Fayol's contribution differs from each other. (3)

d) Discuss the contribution of Mary Follet in Management thoughts. How it is useful in present days? (3)

Q. 3 Attempt any three parts of the following. Q 3(a) is compulsory.

a) What are the premises to choose organizational structure? Explains the Functional and Divisional structure in brief. (4)

b) According to you, what are the circumstances, when Group decision process is taken over Individual Decision process in organization? (3)

c). Explain in which type of decision making process creativity and innovative thinking required and why? (3)

d). Write short notes on (3)

- Authority and Responsibility
- Span of Control

MCA-106

Roll No. 2 0 1 8 0 2 4 0 5 1

M.C.A.
EVEN SEMESTER
MINOR TEST 2018 - 2019

OPERATING SYSTEM CONCEPTS

Time: 2 Hrs. Max. Marks: 20

Note: Answer all questions.

Q.1 Attempt any Three parts of the following. Q. 1(a) is compulsory.

(a). List five services provided by an operating system. Explain how each provides convenience to the users. Explain also in which cases it would be impossible for user-level programs to provide these services. 4

(b). Given memory partitions of 100K, 500K, 200K, 300K, and 600K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 212K, 417K, 112K, and 426K (in order)? Which algorithm makes the most efficient use of memory? 2

(c). An extreme method of spooling, known as staging a tape, is to read the entire contents of a magnetic tape onto disk before using it. Discuss the main advantage and disadvantages of such a scheme. 2

(d) What are the events occur when the process allocated to the CPU and is executing? 2

Q.2 Attempt any Two parts of the following. Q. 2(a) is compulsory.

(a). Consider the following reference string: 4

1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2

Find the number of page faults for Least Recently Used (LRU) page replacement algorithm for 3 page frames. (Assume initially all page frames are empty).

(b). What is the cause of Thrashing? How does the system detect Thrashing? Explain. 2

(c). Consider a demand-paging system with the following time-measured utilizations: 2

CPU utilization 20%
Paging disk 97.7%
Other I/O devices 5%

Which (if any) of the following will (probably) improve CPU utilization? Explain your answer.

a. Install faster CPU.
b. Install a bigger paging disk.
c. Increase the degree of multiprogramming.
d. Decrease the degree of multiprogramming.
e. Install more main memory.

f. Install a faster hard disk, or multiple controllers with multiple hard disks.
g. Add prepaging to the page fetch algorithms.
h. Increase the page size.

Q.3 Attempt any Two parts of the following. Q. 3(a) is compulsory.

(a). Find the average waiting time (A.W.T) and average turnaround time (A.T.A.T) for executing the following process using (i) Preemptive short-job first (ii) Non-preemptive Short-job first? 4

Process	P1	P2	P3	P4	P5
Burst Time	5	13	8	4	10
Arrival Time	2	3	0	5	1

2

(b). Explain the differences in the degree to which the following scheduling algorithms discriminate in favour of short processes:
a. FCFS
b. RR
c. Multilevel feedback queues

(c). Consider a variant of the RR scheduling algorithm where the entries in the ready queue are pointers to the PCBs. 2

i). What would be the effect of putting two pointers to the same process in the ready queue?
ii). What would be the major advantages and disadvantages of this scheme?
iii). How would you modify the basic RR algorithm to achieve the same effect without the duplicate pointers?