

**MBA/MCA (SEMESTER : I) ODD SEMESTER  
MAJOR EXAMINATION 2019-2020  
COMMUNICATION FOR BUSINESS & MANAGEMENT**

Time- 03:00 Hrs

Maximum Marks- 50

**Note: Attempt all questions. Each question carries equal marks.**

**Q.1. Attempt any five parts of the following.**

(5 x 2 = 10)

- a) What do you understand by *General Communication* and how is it different from *Business Communication*?
- b) Discuss an Interactive Model of communication summarizing its pivotal features.
- c) Mention the precautions a professional must take while communicating in Business scenario.
- d) How pivotal body language is in Public Speaking?
- e) Suggest strategies to avoid cultural biases while communicating in professional scenario.
- f) Narrate the phrase "inferential reading".
- g) Elucidate the advantages of two way process of communication.

**Q.2. Attempt any two parts of the following.**

(2 x 5 = 10)

- (2 1/2) a) Trace out the origin and development of letters with various examples.
- b) Discuss various layouts of Business Letters with special focus on *Indented Layout*.
- (3) c) You are applying for the post of Assistant Manager, HR /Assistant Software Developer in Wipro. Draft a covering letter highlighting the positive traits of your candidature.

**Q.3. Attempt any two parts of the following.**

(2 x 5 = 10)

- (3) a) You are working as AGM, LIC. Enumerate the structure of Annual Progress Report to be submitted to the authorities concerned.
- (1 1/2) b) Formulate a solicited proposal that you are asked to submit for the establishment of a new branch of corporate bank.
- c) How agenda is different from minute? Draft samples of both adopting suitable and functional formats.

**Q.4. Attempt any two parts of the following.**

(2 x 5 = 10)

- a) What is stage-phobia? Bring-out a complete physical- mental preparation plan to overcome the fear of public speaking.
- 5 1/2 + 1/2 b) How Emotional Intelligence affects the career growth of a professional? Provide a detail scientific analysis.
- c) Explain the given terms of non-verbal communication in detail:  
Para-language, Kinesics, Proxemics, Chronemics and Haptics

**Q.5 Attempt any two parts of the following.**

(2 x 5 = 10)

- a) Explain Lateral Thinking. How does lateral thinking help professionals in problem solving?
- b) What are strategies and steps for making a presentation successful?
- c) Define personality and illustrate Psycho-Analytical Theory of Personality highlighting its key aspects.

MBA/MCA

1<sup>st</sup> Year / Semester: I (ODD)

Major Examination: 2019-20

### Accounting and Financial Analysis

Time: 3 hours

Max. Marks: 50

Note: Attempt All Questions. Each question carries equal marks.

Q. No.1- Attempt any five of the following questions. (2x5=10)

(a): Discuss the important issues involved in the matching of the international Accounting Standards and the Indian Accounting Standards

(b): Journalize the following transactions in the book of M/S Atul. For the year 2016:

- (i) Started business with Rs. 5000
- (ii) Purchased goods on credit Rs. 2000
- (iii) Received Interest Rs. 3000
- (iv) Withdrawn Rs. 1000 for private use
- (v) Sold goods on credit Rs 800 (cost price Rs 500)

$5 \frac{1}{2}$

~~1½~~ (c): Explain the Profit & Loss Account with a suitable example.

~~1~~ (d): What is final account? What purpose do they serve?

~~1½~~ (e): Explain trading account with suitable example.

~~1½~~ (f): Differentiate between revenue realization and matching concept.

~~1½~~ (g): Differentiate between:

- (i) Fixed asset and Current asset.
- (ii) Fixed liability and Current liability.

Q. No.2- Attempt any two of the following questions. (5x2=10)

~~2½~~ a) What is Ratio Analysis? Discuss the relevance and significance of various kinds of Ratios used to measure financial health of the business concern statement?

b) Current Ratio of a company is 2:1, working capital is Rs 120,000. Calculate the amount of current assets and current liabilities.

~~2~~ c) How would you analyze the financial position of a company from the point of view of an investor, a creditors and a financial executive of the company?

$4 \frac{1}{2}$

Q. No.3- Attempt any two of the following questions. (5x2=10)

~~3~~ a) Differentiate between fund flow and cash flow. Explain that out of these two which one is best and why?

~~2~~ b) 'Financial Accounting is concerned with accounting information which is useful to all users' Explain.

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c) A factory requires 1,500 units of an item per month. The cost of each unit is 27. The cost per order is 150 and material carrying charge works out to 20% of the average material. Find

out the economic order quantity (EOQ) and ascertain the number of orders to be placed per year.

**Q. No.4- Attempt any two of the following questions. (5x2=10)**

- 3** a) Explain the need for financial analysis. How does the use of ratios help in financial analysis?  
b) Explain the meaning and characteristics of balance sheet. Differentiate between balance sheet and trial balance.  
**3½** c) What do you mean by valuation of Goodwill? Explain the super profit method for valuation of Goodwill.

**6½**

**Q. No.5- Attempt any two of the following questions. (5x2=10)**

**3½** (a): Differentiate between funds flow statement and balance sheet. What is the significance of Funds flow statement?

(b): The following are the details regarding purchases of a certain item during January:

|            |          |           |          |           |
|------------|----------|-----------|----------|-----------|
| January 01 | Purchase | 200 Units | @ Rs. 7  | Rs. 1400  |
| January 08 | Purchase | 200 Units | @ Rs. 8  | Rs. 1600  |
| January 25 | Purchase | 200 Units | @ Rs. 9  | Rs. 1800  |
| January 30 | Purchase | 200 Units | @ Rs. 10 | Rs. 2000  |
|            |          |           |          | Rs. 15300 |

**4½**  
5

A physical inventory of the item taken on January shows that there are 700 units in hand. You are required to calculate the value of the inventory according to FIFO method.

**1½** (i) Distinguish the following:

- Traditional costing and activity based costing.
- Capital Expenditure and Revenue Expenditure.

MCA 103

Roll No.

2019104049

MCA  
 ODD SEMESTER  
 Minor Examination 2019 – 2020  
**Computer Organization & Architecture**

Time: 02 Hrs

Max. Marks: 30

Note: Attempt ALL questions. Each question carries equal Marks.

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

a Find the value of x in the following:

- (i)  $(746003.25)_8 = (x)_{10}$  (ii)  $x = 10^{\text{th}}$  complement of  $(972)_{11}$   
 (iii)  $(345)_6 \times (523)_6 = (x)_6$  (iv)  $x = (11010)_2 - (101)_2$  subtract using 2's complement.

b Minimize the following Boolean function using K-map and implement the simplified function using NAND gates only.

$$F(A,B,C,D) = \sum m(0,1,5,9,13,14,15) + d(3,4,7,10,11) \quad (3)$$

c Simplify the following expressions to (I) sum-of-products and (II) products-or-sums: (3)

$$(i) (A + C' + D')(A' + B' + D')(A' + B + D')(A' + B + C')$$

(ii) Convert the expression  $Y = (A+B)(A+C)(B+C')$  into standard POS form.

d Assume that even parity hamming code in 101101101 is transmitted and that 101100101 is received. The receiver does not know what was transmitted. Determine bit location where error has occurred using received code. (3)

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

a Design a 4 bit carry look ahead generator with suitable diagram. (4)

b Design a BCD to decimal decoder using the unused combinations of the BCD code as don't care conditions. (3)

c Design a combinational circuit that converts a four-bit reflected code (gray code) number to a four bit binary number. Implement the circuit with exclusive-OR gates. (3)

d A combinational circuit is defined by the following three functions: (3)

$$F_1 = x'y' + xyz'$$

$$F_2 = x' + y$$

$$F_3 = xy + x'y$$

Design the circuit with a decoder and external gates.

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

a A majority function is generated in a combinational circuit when the output is equal to 1 if the input variables have more 1's than 0's. the output is 0 otherwise. Design a three input majority function. (4)

b Implement the following function using 16:1 MUX, 8:1 MUX and 4:1 MUX.

$$F(A,B,C,D) = \sum(0,1,2,3,4,5,7,10,14,15) \quad (3)$$

c Implement full-subtractor circuit with multiplexer. (3)

d Design a 5-to-32-line decoder using a 3-to-8-line decoder, a 2-to-4-line decoder. Use a block diagram only. (3)

$$P_2 = A_1 \oplus B_1$$

S:

**M.C.A.**  
**ODD SEMESTER**  
**SPECIAL MAJOR EXAMINATION 2019-2020**

**Computer Organization & Architecture**

Time: 03 Hrs

Max. Marks: 50

Note: Attempt ALL questions. Each question carries equal Marks.

**Q.1 Attempt any five parts of the following:**

(5x2 = 10)

a. Find the value of x in the following:

- (i)  $(3412)_6 = (x)_{10}$
- (ii)  $x = 5^{\text{th}}$  complement of  $(4534)_6$
- (iii)  $(674)_8 \times (465)_8 = (x)_8$
- (iv)  $x = (11010)_2 - (1101)_2$  subtract using 2's complement.
- (v)  $(8.3)_9 = (x)_{10}$

b. Simplify the following expressions F together with the don't care conditions d in (I) sum-of-products form and (II) products-or-sums forms:

$$F(w,x,y,z) = \sum(3, 8, 15)$$

$$d(w,x,y,z) = \sum(0, 1, 2, 4, 5, 7, 9, 10)$$

c. Implement the following function with (i) 16:1 (ii) 8:1 and (iii) 4:1 multiplexer:

$$F(A,B,C,D) = \sum(1,3,4,11,12,13,14,15)$$

d. Design a 4-line to 2-line priority encoder. Include an output E to indicate that at least one input is a one.

e. Design a BCD to decimal decoder using the unused combinations of the BCD code as don't care conditions.

f. Convert SR to J-K Flip flop.

g. Represent the decimal number  $\pm 754$  into IEEE floating point format.

**Q.2 Attempt any two parts of the following:**

(2x5 = 10)

② a. Design a synchronous counter which steers through the following states: S0-S1-S3-S5-S6 using J-K Flip flop.

b. Design 4 bit carry look ahead generator.

c. Design Arithmetic Logic Shift unit that will perform different arithmetic, logic and shift operation

**Q.3 Attempt any two parts of the following:**

(2x 5 = 10)

a. What do you understand by hardwired control unit? Give various methods to design hardwired control unit. Describe one of the design methods for hardwired control unit with suitable diagram.

b. Write a program to evaluate the arithmetic statement:-

$$X = : X = A + B * C / D - E$$

Using Three, Two, One and Zero address Machines.

- c. (i) The outputs of four register R<sub>0</sub>, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> are connected through 4-1 multiplexers to the inputs of the fifth register, A. Each register is 4 bits long. The required transfer are dictated by four timing variables T<sub>0</sub> through T<sub>3</sub> as follows:

T<sub>0</sub>: A ← R<sub>0</sub>

(12) T<sub>1</sub>: A ← R<sub>1</sub>

T<sub>2</sub>: A ← R<sub>2</sub>

T<sub>3</sub>: A ← R<sub>3</sub>

Draw a block diagram showing the hardware implementation of register transfers.

- (ii) Draw a diagram of bus system for four registers of 4-bits each. The bus is to be constructed with multiplexers.

**Q.4 Attempt any two parts of the following: (2x5 = 10)**

- a. 32K x 16 RAM chips are used to construct 128K x 32 Memory. How many chips will be required? Draw a connection diagram.

- b. Show the basic organization of a CPU in terms of registers and other units for a single bus data path CPU. In such a CPU, show the complete action of the CPU in fetching and executing the Instruction.

(12) c. Discuss the concept and implementation of virtual memory. Also describe a suitable scheme for translation from logical address to physical address.

**Q.5 Attempt any two parts of the following: (2x5 = 10)**

- a. Explain the mapping procedures used in cache memory.

A block set associative cache consists of a total of 256 blocks divided into eight block sets. The main memory containing 8192 blocks each consisting of 64 words.

- (i) How many bits are there in the main memory address?  
(ii) How many bits are there in each of TAG, SET and WORD field?

- b. Describe DMA with suitable block diagram. Why does DMA have priority over the CPU when both request a memory transfer? Explain.

- c. The access time of a cache memory is 100 ns and that of main memory 1000 ns. It is estimated that 80 percent of the memory requests are for read and the remaining 20 percent for write. The hit ratio for read accesses only is 0.9.

- (i) What is the average access time of the system considering only memory read cycles?  
(ii) What is the average access time of the system for both read and write requests?  
(iii) What is the hit ratio taking into consideration the write cycles?

(SEM I) ODD SEMESTER

MAJOR EXAMINATION 2019-20

## DISCRETE MATHEMATICS

Time = 3 Hours

Max. Marks = 50

Note: Attempt all questions. Each question carries equal marks.

1. Attempt any five parts of the following:

 $(5 \times 2 = 10)$ 

- a) If  $A, B$  and  $C$  are the sets, then prove that:  $A \times (B \cup C) = (A \times B) \cup (A \times C)$ .
- b) If  $A, B$  and  $C$  are the sets, then prove that:  $A - (B \cap C) = (A - B) \cup (A - C)$ .
- c) Show that the mapping  $f: R \rightarrow R$  defined by  $f(x) = 8x + 9$  is one-one and onto,  $R$  being set of real numbers.
- d) Find the range of function  $f(x) = \frac{1}{2-\cos 3x}$ . If  $f: R \rightarrow R$  defined by  $f(x) = x^2 + 4$ , then find the value of  $f^{-1}(13, 53)$ .
- e) Show that the set of cube roots of unity is an abelian group with respect to multiplication.
- f) Let  $H$  be a subgroup of  $G$  and  $K$  is defined by  $K = \{x \in G : xH = Hx\}$ , then prove that  $K$  is subgroup of  $G$ .
- g) Prove that a finite integral domain is a field.

2. Attempt any two parts of the following:

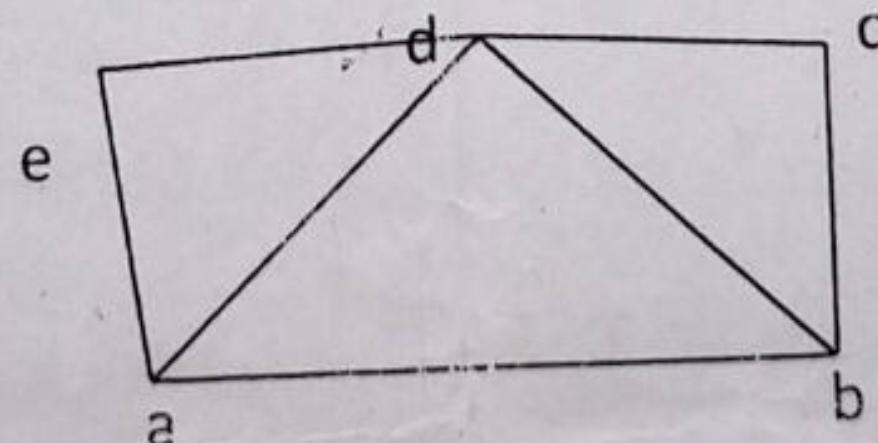
 $(2 \times 5 = 10)$ 

- a) Define a planar graph. For a connected planar graph with  $m$  edges,  $v$  vertices and  $r$  regions, prove that  $3r \leq 2m$  and  $3v - m \geq 6$ .
- b) Prove that a graph  $G$  with  $v$  vertices and  $e$  edges has a Hamiltonian circuit if  $2e \geq v^2 - 3v + 6$ .
- c) Define binary tree. Prove that minimum height of a full binary tree is given by  $h_{min} = \lceil \log_2(n+1) - 1 \rceil$  and maximum height  $h_{max} = \frac{n-1}{2}$ .

3. Attempt any two parts of the following:

 $(2 \times 5 = 10)$ 

- a) Define Chromatic number and Chromatic polynomial. Find Chromatic polynomial for the following graph:

b) Prove that a full binary tree of height  $n$  has  $2^n$  leaves and  $2^{n+1} - 1$  vertices.

c) Write short notes on following:

i) Simple graph and Multi graphs.

ii) Planar graph and non-planar graph.

4. Attempt any two parts of the following: (2 × 5 = 10)
- a) Define discrete numeric function and generating function. Find generating function for discrete numeric function,  $a = (1, 5, 25, 125, \dots)$  and find discrete numeric function for generating function,  $A(z) = \frac{1}{z^2 - 9z + 20}$ .
- b) Solve the recurrence relation  $u_n - 7u_{n-1} + 10u_{n-2} = 0, n \geq 2$ , given that  $u_0 = 10, u_1 = 41$ .
- c) Using the method of generating function, solve the following recurrence relation:  $a_r - 2a_{r-1} + a_{r-2} = 2^r, r \geq 2$ , given that  $a_0 = 2, a_1 = 1$ .
5. Attempt any two parts of the following: (2 × 5 = 10)
- a) State and prove the Pigeonhole principle. If 6 colours are used to paint 49 cars then find at least how many cars will have the same colours.
- b) Solve the recurrence relation:  $a_r - 6a_{r-1} + 9a_{r-2} = (r+1)3^r$ , given that  $a_0 = 2, a_1 = -6$ .
- c) Solve the recurrence relation:  $u_r - 2u_{r-1} + u_{r-2} = 6$ , given that  $u_0 = 2, u_1 = 8$ .

**MCA**  
**ODD SEMESTER**  
**MAJOR EXAMINATION 2019- 2020**

**Computer Programming with C**

Time: 3 Hrs.

Max. Marks: 50

Note: Attempt all questions. Each question carries equal marks.

**1. Attempt any five parts of the following: (5× 2 = 10)**

- (a) What do you understand by algorithm? Write an algorithm for finding whether string is palindrome or not.
- (b) Explain the different types of operators in detail. What do you mean by associativity and precedence of an operator?
- (c) Write a program in C that takes prints all three-digit Armstrong numbers.
- (d) Write a recursive function to calculate the product of two integers.
- (e) Explain the global, Local, auto and static variables with suitable example.
- (f) Write a program in C to display frequency count of each character present in the input string.
- (g) Illustrate the use of break and continue statement in C by making suitable program.

**2. Attempt any two parts of the following: (2× 5 = 10)**

- (a) Why array is called a static data structure? Write a program in C to multiply two matrices whose dimensions (rows/columns) and all data elements are to be given by user.
- (b) Declare a structure "student" which has std\_id, name, age and gender as fields. Now write a program in C which takes 10 records as input and print the complete information of male and female students separately with their final count.
- (c) Write a program in C to create a single dimensional array of **n** integers. Print only those integers from the array which are **prime** numbers.

**3. Attempt any two parts of the following: (2× 5 = 10)**

- (a) Write a recursive function pow(a,b) in C to calculate  $a^b$  where a and b are two integers.
- (b) Write a program in C to input a paragraph which is then re-displayed as output after converting all lowercase alphabets to uppercase and vice-versa.
- (c) Explain the differences between macro and functions with suitable examples.

**4. Attempt any two parts of the following: (2× 5 = 10)**

- (a) How dynamic memory allocation is done in C? Explain with suitable example.
- (b) Differentiate between structure and union by writing a suitable program.

- (c) Write a program in C to sort the given list of integers using selection sort.  $(2 \times 5 = 10)$
5. Attempt any two parts of the following:
- (a) Write a program in C that calculates size of a text file xyz.txt.
  - (b) What are command line arguments? Write a C program that takes a file name as a command line parameter and displays its contents.
  - (c) Write short notes on
    - (i) Pointer arithmetic
    - (ii) Preprocessor directives

**M.C.A.**  
**ODD SEMESTER**  
**MAJOR EXAMINATION 2019-2020**  
**Subject Name: Applied Probability and Statistics**

Time: 3 hrs.

**Max. Marks: 50****Note: Attempt all questions. Each question carry equal marks.****Q.1 Attempt any five parts of the following.****5x2=10**

- (a) A bag contains 17 counters marked with numbers 1 to 17. A counter is drawn and replaced; a second drawing is then made. What is the probability that:

I. The first number drawn is even and the second odd?

II. The first number is odd and the second even?

- (b) The first four moments ( $\mu_1, \mu_2, \mu_3, \mu_4$ ) about the value 4 are -1.5, 17, -30 and 108. Find the first four moments about mean,  $\beta_1$  and  $\beta_2$ .

(c) Show that for discrete distribution  $\beta_2 > 1$ .

(d) Using the method of least square, Fit a straight line to the data

|   |   |   |   |   |   |   |   |   |    |
|---|---|---|---|---|---|---|---|---|----|
| x | 6 | 7 | 7 | 8 | 8 | 8 | 9 | 9 | 10 |
| y | 5 | 5 | 4 | 5 | 4 | 3 | 4 | 3 | 3  |

- (e) In a binomial distribution consisting of 5 independent trials, probabilities of 1 and 2 successes are 0.4096 and 0.2048 respectively. Find the parameter  $p$  (probability of success) of the distribution.

- (f) The random variable X is normally distributed with mean equal to 9 and standard deviation 3. Find the probabilities, (i)  $X \geq 15$ , (ii)  $0 \leq X \leq 9$ . (The value of Z at 2 and 3 in normal table are 0.4772 and 0.4987).

(g) Obtain mean and variance of Poisson distribution.

**Q.2 Attempt any two parts of the following.****2x5=10**

- (a) In two set of variables X and Y with 50 observations each, the following data were observed:  $\bar{X} = 10, \bar{Y} = 6, \sigma_X = 3, \sigma_Y = 2$  and  $r(X, Y) = 0.3$ . But on subsequent verification it was found that one value of X (=10) and the corresponding value of Y (=6) were in-accurate and hence weeded out. With the remaining 49 pair of values, how is the original value of  $r(X, Y)$  affected?

(b) Obtain the rank correlations coefficient for the following data:

|   |    |    |    |    |    |    |    |    |    |    |
|---|----|----|----|----|----|----|----|----|----|----|
| x | 68 | 64 | 75 | 50 | 64 | 80 | 75 | 40 | 55 | 64 |
| y | 62 | 58 | 68 | 45 | 81 | 60 | 68 | 48 | 50 | 70 |

- (c) Show that the co-efficient of correlation  $r$  is independent of change of scale and origin of the variables. State the limit between which  $r$  lies and gives its proof.

**Q.3 Attempt any two parts of the following.****2x5=10**

- (a) Find out the regression coefficients of regression line Y on X and X on Y from the following data:

$\sum X = 50, \sum Y = 60, \sum XY = 350, \text{Mean of } X = 5, \text{Mean of } Y = 6,$

$\text{Variance of } X = 4 \text{ and Variance of } Y = 9$ .

(b) Twenty five pairs of value of variates X and Y led to the following results:  
 $N = 25, \sum X = 127, \sum Y = 100, \sum X^2 = 760, \sum Y^2 = 449$  and  $\sum XY = 500$ .  
A subsequent scrutiny showed that two pairs of values were copied down as

| X | Y  |
|---|----|
| 8 | 14 |
| 8 | 6  |

Instead of

| X | Y  |
|---|----|
| 8 | 12 |
| 6 | 8  |

- i. Obtain the correct value of the correlation coefficient.
  - II. Hence or otherwise, find the correct equations of two lines of regression.
  - III. Find the angle between the regression lines.
- (c) Obtain the equation of the line of regression of Y on X. Derive angle between the two lines of regression and interpret the cases when correlation coefficient,  $r = 0$  and  $r = \pm 1$ .

**Q.4 Attempt any two parts of the following.**

2x5=10

- (a) An insurance agent has claimed that the average age of policy-holders who insure through him is less than the average for all agents, which is 30.5 years. A random sample of 100 policy holders who had insured through him gave the following age distributions:

| Age           | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 |
|---------------|-------|-------|-------|-------|-------|
| No. of person | 12    | 22    | 20    | 30    | 16    |

Calculate the arithmetic mean and standard deviation of this distribution and use these values to test his claim at the 5 % level of significance.

- (b) It is believed that the precision (as measured by the variance) of an instrument is no more than 0.16. Write down the null and alternative hypothesis for testing this belief. Carry out the test at 1% level given 11 measurement of the same subject on the instrument: 2.5, 2.3, 2.4, 2.3, 2.5, 2.7, 2.5, 2.6, 2.6, 2.7, 2.5. (Tabulated value of chi square is 23.2 at 1% level of significance with d.f. 10.)
- (c) Explain the terms level of significance, one tail and two tail test, critical region, type I and II error and null and alternative hypothesis with suitable example.

**Q.5 Attempt any two parts of the following.**

2x5=10

- (a) Below are given the gain in weights of dog fed on two diets A and B.  
Diet A: 25, 32, 30, 34, 24, 14, 32, 24, 30, 31, 35, 25.  
Diet B: 44, 34, 22, 10, 10, 47, 31, 40, 30, 32, 35, 18, 21, 35, 29, 22.  
Test, if the two diets differ significantly as regards their effect on increase in weight.
- (b) Explain what you understand by time series. Why is time series considered to be an effective tool of forecasting. Also explain R, p and np control chart.
- (c) Describe the chi-square test and t-test for testing a hypothesis with suitable example.

**MBA/ MCA  
(SEM III / I) ODD SEMESTER  
MAJOR EXAMINATION 2019-2020**

**BEHAVIORAL PSYCHOLOGY****Max. Marks: 50****Time: 3 Hrs.****Note: Attempt all questions. Each question carry equal marks.****1. Attempt any five parts of the following:****(5 x 2 = 10)**

- (a) How would Henry Mintzberg describe a typical executive's workday?
- (b) What is a skill? What, according to Katz, are the essential managerial skills?
- (c) What are the properties of a group? Also explain, why do human beings form groups?
- (d) Explain the Train and Behavioral theories of leadership.
- (e) Provide a definition of motivation and explain the major elements of this definition. Also, explain the major ways in which studies/ researches on motivation have been summarized.
- (f) What is organizational culture? What are the primary characteristics that capture the essence of organizational culture?
- (g) What are the various individual and organizational strategies to manage stress?

**2. Attempt any two parts of the following:****(2 x 5= 10)**

- (a) Why do industrial workers need healthy work environment? What are the factors that influence work environment?
- (b) Explain how Engineering Psychology evolved as a distinct discipline over the years?
- (c) What are the major work-related factors that cause industrial accidents?

**3. Attempt any two parts of the following:****(2 x 5= 10)**

- (a) Define Job Analysis. How it is helpful to the organization in their HR activities?
- (b) What are the various physical factors that influence work environment?
- (c) What are the various factors that influence the process of Recruitment?

**4. Attempt any two parts of the following:****(2 x 5= 10)**

- (a) Critically evaluate the comparative methods of performance appraisal.
- (b) What is performance appraisal and what are its objectives? Typically, who conducts performance appraisal and what is the latest development in this area?
- (c) Which methods of performance appraisal specify precise measurement standards? Explain.

**5. Attempt any two parts of the following:****(2 x 5= 10)**

- (a) Define development and explain its objectives. How training and development differ?
- (b) How to ensure the effectiveness of a Training programme?
- (c) Explain the process of training and various methods of conducting it.

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MCA  
ODD SEMESTER  
Minor Examination 2019-2020  
DISCRETE MATHEMATICS

Time: 2 Hrs.

Max. Marks: 30

Note: Answer all questions.

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

- (a) If  $f : R \rightarrow R$  be one-one onto function, show that  $f^{-1} : R \rightarrow R$  is also one-one and onto function. 4
- (b) Out of 100 students in a class, 60 play football, 53 play hockey, and 35 both the games. How many students do not play these games and play only hockey but not football. 3
- (c) Show that  $\{1, -1, i, -i\}$  is an abelian group. Find the order of every element. 3
- (d) Prove that every cyclic group is an abelian group. Find all generators of the cyclic group G of order 8. 3

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

- (a) Let  $R = \{(1, 2), (2, 3), (3, 1)\}$  and  $A = \{1, 2, 3\}$ , find the reflexive, symmetric and transitive closure of  $R$ , using composition of relation R. 4
- (b) Consider two functions  $f : R \rightarrow R$  and  $g : R \rightarrow R$  such that  $f(x) = 2x+3$ ,  $g(x) = \frac{1}{x^2+1}$ . Find  $f^{-1}$  and  $(fog)(x)$ . 3
- (c) Show that the relation R defined on the set of positive integers  $(x, y) \in R$  if  $x-y$  is divisible by 6 is an equivalence relation. 3
- (d) Let  $A, B, C$  be arbitrary sets. Show that  $(A \cap B)' = A' \cup B'$ ,  $A - (B \cap C) = (A - B) \cup (A - C)$ . 3

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

- (a) Show that the set  $\{1, 2, 3, 4, 5\}$  is not a group under addition and multiplication modulo 6. 4
- (b) Define Cyclic group and ring with examples. 3
- (c) For any two subgroup  $H$  and  $K$  of a group  $G$ , show that if  $H$  is normal in  $G$  then  $H \cap K$  is normal in  $K$ . 3
- (d) Find the inverse and product of the permutations  $\begin{pmatrix} 1 & 2 & 3 & 4 \\ 3 & 1 & 4 & 2 \end{pmatrix}$  and  $\begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 1 & 4 & 3 \end{pmatrix}$ . 3

MAS-  
105

Roll  
No. 2019104049

MCA I Semester (Odd Semester)

Minor Examination-2019-2020

Subject Name: Applied Probability and Statistics

Max. Marks :30

Time : 2 hrs.

Note: Attempt all questions.

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

(a) What is the probability that a leap year selected at random, will contain 53 Sundays? (4)

✓(b) The probability that machine A will be performing a useful function in 5 years times is  $\frac{1}{4}$ , while the probability that machine B will still be operating usefully at the end of the same period, is  $\frac{1}{3}$ . Find the probability in the following cases that in 5 years time (3)

(i) Both machine will be performing a useful function.

(ii) Neither will be operating. (iii) Only machine B will be operating.

✓(c) For a distribution, the mean is 10, variance is 9,  $\gamma_1$  is 4 and  $\gamma_2$  is 1. Find the first three (3) moments about the origin.

X(d) Find the coefficient of skewness for the data given below

| Class     | 0-10 | 10-20 | 20-30 | 30-40 |
|-----------|------|-------|-------|-------|
| Frequency | 1    | 4     | 6     | 3     |

(3)

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

✓(a) Establish the recurrence relation for Binomial distribution and Poisson distribution. (4)

(b) A can hit a target 3 times in 5 shots, B 2 times in 5 shots and C three times in 4 shots. All of them fire one shot each simultaneously at the target. What is the probability that

(i) 2 shots hit? (ii) At least two shots hit? (3)

✓(c) A problem of statistics is given to three students A, B and C whose chance of solving it are  $\frac{1}{2}$ ,  $\frac{3}{4}$  and  $\frac{1}{4}$  respectively. Calculate the probability that the (3)

(i) Problem will be solved? (ii) Problem will not be solved?

(d) If mean and Variance of a binomial distribution are 2 and 1 respectively, find the probability of (i) exactly 2 success (ii) less than 2 successes (iii) at least 2 success. (3)

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

✓(a) Define the term 'skewness' and 'kurtosis' with various types. Also give the measurement (4) of 'skewness' and 'kurtosis' based on moment.

(b) Find the moment generating function of the exponential distribution  
 $f(x) = me^{-mx}; x, m > 0$  (3)

✓(c) By the method of least square fit a curve  $y = a + bx^2$  for the following data (3)

|   |    |   |   |   |
|---|----|---|---|---|
| x | -1 | 0 | 1 | 2 |
| y | 2  | 5 | 3 | 0 |

✓(d) The first four moments of a distribution about the value 2 is 1, 2, 5 and 6. Calculate the (3) first four moments about the mean. Also find  $\beta_1$  and  $\beta_2$ .

Printed Pages: 1

MAS-108

Roll No. 2019104049

**MCA/ MBA  
(SEM I/III) ODD SEMESTER  
MINOR TEST (EXAMINATION) 2019-20**

**Behavioral Psychology**

Time: 2 Hrs.

**Max. Marks: 30**

**Note: Answer all questions**

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

- (a) What were the major understandings gained by the Hawthorne Studies that led to the emergence of Human Relations School? 4
- (b) What were the fundamental principles of Taylorism? Explain how Taylor reorganized labor force at Bethlehem Steel using these principles. 3
- (c) What are the various elements at work which together constitute Job Satisfaction? How do we measure Job Satisfaction? 3
- (d) What symptoms occur when a person is under stress? What are the potential sources of stress in our lives? 3

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

- (a) How would Henry Mintzberg describe a typical executive's workday? 4
- (b) Write a note on Time Study highlighting the process of conducting it, its advantages and disadvantages. 3
- (c) What are the key characteristics of OB as a scientific discipline? 3
- (d) What is a skill? What, according to Katz, are the essential managerial skills? 3

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

- (a) How do Trait theories explain Leadership? Supplement your answer with insights from Big Five Factor model of Personality. 4
- (b) What do the Motivation Hygiene Theory and Acquired Needs Theory tell us about motivation at workplace? 3
- (c) What purpose does Organizational Culture serve and how to create and sustain it? 3
- (d) Explain, from the Social Identity perspective, why do people form groups? Also explain the properties of a group. 3

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[CBM]<sup>1</sup>  
No. of Printed Pages : Two

Subject Code

MAS-103

Roll. No.:

2019104049

**MBA/MCA (ODD SEMESTER) MINOR TEST [2019-2020]**  
**COMMUNICATION FOR BUSINESS & MANAGEMENT**

Time : 2 Hours

Maximum Marks: 20

Note: Answer all questions:-

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

- a) What are 7 C'S of communication? Enumerate in detail. 4
- b) What is the role and importance of Communication in Business? Discuss. 2
- c) Synchronize the process of communication and elucidate the effect of various barriers to communication. 2
- d) What is **Non-Verbal Communication**? Discuss its various types. 2

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

- a) Suggest the layouts for Memos and e-mails? Draft a press report on "**Removal of Article 370 & 35-A from Jammu & Kashmir**" to be published in New Delhi edition of English Daily newspaper **The Times of India**, New Delhi. 4
- b) Discuss the patterns of communication in business organizations in detail with specific example. 2
- c) What is cross-cultural communication? Discuss the importance of those specific skills in contemporary business world. 2

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

a) What do you mean by the skills of listening? Illustrate types of listening and also suggest strategy for developing listening. 4

b) Elucidate reading skill and the sub-skills of reading? 2

c) What does the phrase "**Reading between the Lines**" stands for? How will you infer the writer's point of view? 2

valuation  
of goodwill.

Some  
types  
of listening

Paper Code: - MBA-102

Roll No. 8019104049  
MBA/MCA

1<sup>st</sup> Year / Semester: First (Odd)

Minor Examination: 2019-20

Accounting and Financial Analysis

Time: 2 Hours

Max. Marks: 30

Note: Attempt All Questions

**Q. No.1- Attempt any three of the following question .Question no. (a) is compulsory.**

a) Journalize the following transactions in the book of M/S Arvind. For the month of January 2019:

- (i) 05 Jan. 2019 Started businesses by introducing Cash Rs. 30000 & furniture Rs. 15000.
- (ii) 10 Jan. 2019 Goods purchased: for cash Rs 40000, on credit from Suresh Rs 25000.
- (iii) 15 Jan. 2019 Goods sent as sample to M/S ABC for worth Rs. 4500.
- (iv) 30 Jan. 2019 Payment made by Cash to Suresh Rs. 22000 in full and final settlement.
- (v) 30 Jan. 2019 paid Rs. 9000 by Cash to ZYX Ltd.

(4) 1/2

b) Is accounting an Art or Science? Distinguish between management accounting and financial accounting.

(3) 1/3

c) Explain any two of the following accounting principles:

(3) 1/2

- (i) Accounting period
- (ii) Dual aspect
- (iii) Separate entity

d) What are objectives of Preparing Trial Balance? Explain any one method of preparing Trial Balance.

(3)

**Q. No.2- Attempt any three of the following question .Question no. (a) is compulsory.**

a) What is "GAAP"? Explain the meaning and significance of Convention of consistency and Conventions of Full disclosure.

(4) 1/3

b) What is Scope of Accounting Standards? What are differences between Indian accounting Standard and International Accounting Standard?

(3)

c) Draw the structural diagram of accounting process and explain in brief.

(3)

d) Discuss the objectives of accounting. Name the different parties interested in accounting information and explain why do they want it?

(3) 1/2

**Q. No.3- Attempt any three of the following question .Question no. (a) is compulsory.**

a) What do you mean by double entry system? Explain the rule for generalizing transactions in double entry system.

(4) 1/2

b) "Profit and Loss account is the indicator of a firm's profitability" Explain the statement and give the format of P & L account.

(3)

c) From traction given in Question No. 1(a) Find out the status of cash account for M/S Arvind on 31 Jan. 2019.

(3) 1/2

d) Explain the purpose for preparing Balance Sheet of a firm. Give the format of Balance Sheet.

(3)

**M.C.A  
ODD SEMESTER  
MINOR TEST 2019-20**

**Computer Programming with C**

**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). What are pre-processor directives? Why do we include header file (having extension .h) in the beginning of any C program? 4
- (b). Distinguish between 2
  - 1. break & exit
  - 2. if-then-else & switch
- (c). Write a C program to compute and print the sum of following series 2
 
$$2 + 4 + \dots + 100$$
- (d). Write a C program to print the following pattern 2
 

```
*  
***  
*****  
*****
```

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

- (a). Write a menu driven program in C to input 2 numbers and perform the following mathematical operations on the two variables as given below in the menu: 4
  - 1. Addition (+) 2. Subtraction (-) 3. Multiplication (x) 4. Modulus (%) 5. Exit
- (b). Write a program in C to input a number and print the sum of all the digits that are even. E.g. 456, output is 10 2
- (c). Discuss any two control statements with appropriate examples. 2

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

- (a) Differentiate between- 4
  - 1. Unary & binary operators
  - 2. Abc.obj & Abc.exe (generated during compilation/execution)
- (b) With the use of conditional operator (? : ), write a C program to find the largest of three input numbers. 2
- (c) Write a C program to input any number and check if it is a Perfect number or not. (Hint: 6 = 1 + 2 + 3, sum of factors excluding itself) 2

**MCA  
EVEN SEMESTER  
MINOR TEST 2019-2020**

**Information Security and Cyber Law**

**Time: 2 Hrs.**

**Max. Marks: 30**

**Note: Answer all questions.**

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

- (a). What do you mean by information? Explain. What are the critical characteristics of Information? Explain in brief. 4
- (b). Explain the spoofing used with respect to information security using suitable example. 3
- (c). What is policy? How does it differ from law? Explain with suitable example. 3
- (d). Categorize the firewalls with respect to processing modes. You are also required to explain packet filtering firewall with suitable block diagram. 3

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

- (a). What is NTISSC security model? Explain in detail with suitable diagram. 4
- (b). What is risk? Explain the process of assessing the value and risk of information system. You are also required to explain briefly how a risk control strategy can be selected? 3
- (c). What is Top-down approach to information security? Explain. How is the top-down- approach to information security superior to the bottom-up-approach? 3
- (d). What are the different categories of Threat to information security? Explain each with suitable example. 3

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

- (a). What are ISO 17799 and BS 7799 standard and what are their drawbacks? What are the objectives of ISO 17799? What is the alternate Security Models available other than ISO 17799/BS 7799? 4
- (b). Explain System specific Policies (SysSP) with suitable example. 3
- (c). What is defense in depth and security perimeter? Explain with diagram or example. 3
- (d). What is EDI? Explain. What are the different documents of EDI and steps of EDI system? You are further required to explain the advantages of EDI system. 3

BAS24

Roll No. 2019104049

MCA I year (2nd SEMESTER)

Minor exam

Subject Name : Applied Computational Methods

Time: 2 Hrs.

Max. Marks: 30

Attempt all questions. Part (a) of each question is compulsory. Attempt any two parts out of remaining three parts in each question.

Q.1.a) using Newton Raphson method find a root of  $x^3 - 9x + 1 = 0$  between 2 and 3. (4)

b) Solve  $x^3 - x - 1 = 0$  by Bisection method to find a positive real root between 1 and 2. (3)

c) Find a real root of  $x^3 - x - 4 = 0$  between 1 and 2 by Regula Falsi method. (3)

d) Find cube root of 61 correct upto 4 decimal places. (3)

Q.2. a) Solve the following system of equations by Crout's method: (4)

$$3x + 2y + 5z = 22; 2x + 5y + 2z = 18; x + 2y + 3z = 14. \quad (3)$$

b) Solve the following system of equations by Gauss Siedel method:

$$x + y + z = 1; 2x + y - z = 0; 3x + 4y + 5z = 4 \quad (3)$$

c) Find polynomial  $f(x)$  using Newton Divided difference method from the following table.

|        |     |     |    |    |
|--------|-----|-----|----|----|
| $x$    | 3   | 7   | 9  | 10 |
| $f(x)$ | 168 | 120 | 72 | 63 |

d) Find polynomial  $f(x)$  using Lagrange's method from the table given below:

|        |   |   |    |    |    |
|--------|---|---|----|----|----|
| $x$    | 0 | 1 | 2  | 3  | 4  |
| $f(x)$ | 3 | 6 | 11 | 18 | 27 |

Q. 3. (a) Use Newton's method to find  $f(1)$  and  $f(7)$  from following table:

|        |   |   |    |     |     |
|--------|---|---|----|-----|-----|
| $x$    | 0 | 2 | 4  | 6   | 8   |
| $f(x)$ | 5 | 9 | 61 | 209 | 501 |

b) Use Trapezoidal rule to evaluate:  $\int_1^3 \frac{1}{1+x^2} dx$ .

c) Evaluate using Simpson's one third rule:  $\int_0^2 \frac{1}{1+2x^3} dx$ .

d) Evaluate using Simpson's three eight rule:  $\int_1^3 \frac{1}{1+x^3} dx$ .

|            |            |
|------------|------------|
| Roll<br>No | 2019104049 |
|------------|------------|

MCA-105

MCA, 2<sup>nd</sup> Sem  
Minor Test 2019-20

## Object Oriented Programming with C++

**Marks: 20**

**Time: 2hrs**

**Note: Attempt all questions.**

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

- (a) What are the roles of various access specifiers? Write down appropriate code to explain your answer. Suppose, there is a class in which only 3 statements are written: `int a; char b; float c;`. How can these identifiers be accessed in `main()`? Explain using suitable code. 4
- (b) Explain clearly friend function and inline function. Why do we require these functions? Write down the codes in C++ to explain these functions. 2
- (c) Define copy constructors and give its syntax. Write down a code to print the values of some identifiers using copy constructors. 2
- (d) Define default constructors and default destructors using suitable examples? 2

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

- (a) How C++ is different from C? Do you know any other object oriented programming languages? Discuss about any three such object oriented languages. What different features do they have? 4
- (b) How do we implement inheritance and polymorphism in C++? Write down appropriate examples. 2
- (c) Where do we require scope resolution operator? How is it denoted? Write down a code to add private data members using member function and scope resolution operator. 2

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

- (a) Define constructors and destructors. What do you understand by implicit and explicit call of parameterized constructors? Write down the code to print values of some private data members using parameterized constructors by implicit and explicit call both? 4
- (b) Can we say that constructors are a type of member function? How constructors and destructors are different from a normal member functions? Write down a code to explain order of invocation of constructors and destructors. 2
- (c) Can we have more than one constructor and destructor in a class? Give the reason of your answer. Write down code wherever necessary to explain your answer. 2

MCA-106

Roll No.

2 0 1 9 1 0 4 0 4 9

**MCA  
EVEN SEMESTER  
MINOR TEST 2019-2020**

**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). What do mean by layered architecture of operating system design? Explain with suitable diagrams and example. You are further required to explain working of each layer. 4
- (b). Distinguish between multiprogramming and multiprocessing. What were the key motivations for the development of each? 2
- (c). What is the difference between Local and global page replacement? You are further required to give their respective advantages and disadvantages. 2
- (d). What is double buffering? Explain in detail how a triple buffering scheme might operate. In what circumstances would triple buffering be effective? 2

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

(a) Consider the following reference string:

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 Optimal page replacement algorithm for 3 page frames.  
(Assume initially all page frames are empty)

- (b). Discuss the issue of how programming style affects performance in a paging system. Consider each of the following: 2
- Top Down approach
  - Recursion
- (c) Explain virtual address translation scheme with combined mapping in a paged segmentation system with suitable diagram. 2

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

4

- (a). Assume you have the following jobs to execute with one processor

| Process | Burst Time | Priority | Arrival Time |
|---------|------------|----------|--------------|
| P1      | 75         | 3        | 0            |
| P2      | 40         | 2        | 10           |
| P3      | 25         | 1        | 20           |
| P4      | 20         | 0        | 80           |
| P5      | 45         | 2        | 85           |

The system uses Pre-emptive scheduling algorithm:

*(Higher the number lower the priority)*

- Create a Gantt chart illustrating the execution of these processes.
- What is the Turnaround Time for Process P3?
- What is the average Turnaround Time?
- What is the average Waiting Time?

2

- (b). (i) Rewrite the following expression using Parbegin/Parend to achieve maximum parallelism:

$$3*a*b+4/(c+d)^*(e-f)$$

- (ii) Why might the following be unacceptable?

parbegin

$$a := b+c;$$

$$d := b*c-x;$$

$$e := a/6+n^{**2}$$

parend

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

2

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

Roll No.

2019104049

MCA-102 A

MCA

## EVEN SEMESTER

Minor Examination 2019-2020

# Data Structures & Applications

Max. Marks: 20

Time: 02 Hrs

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.

(5) Define Abstract Data Type. Explain in briefly.

2

(c) Each element of an array Data [20][50] requires 4 bytes of storage. Base address of data is 2000. Determine the address of data [10][10] when the array is stored as (i) Row-major (ii) Column major.

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

562+\*124/-

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 trace your algorithm for the following expression. 4

$$A(B^*C-(D/E^*)^*G)*H$$

(b) Write the algorithm for the insertion and deletion operations performed on the circular queue. 2

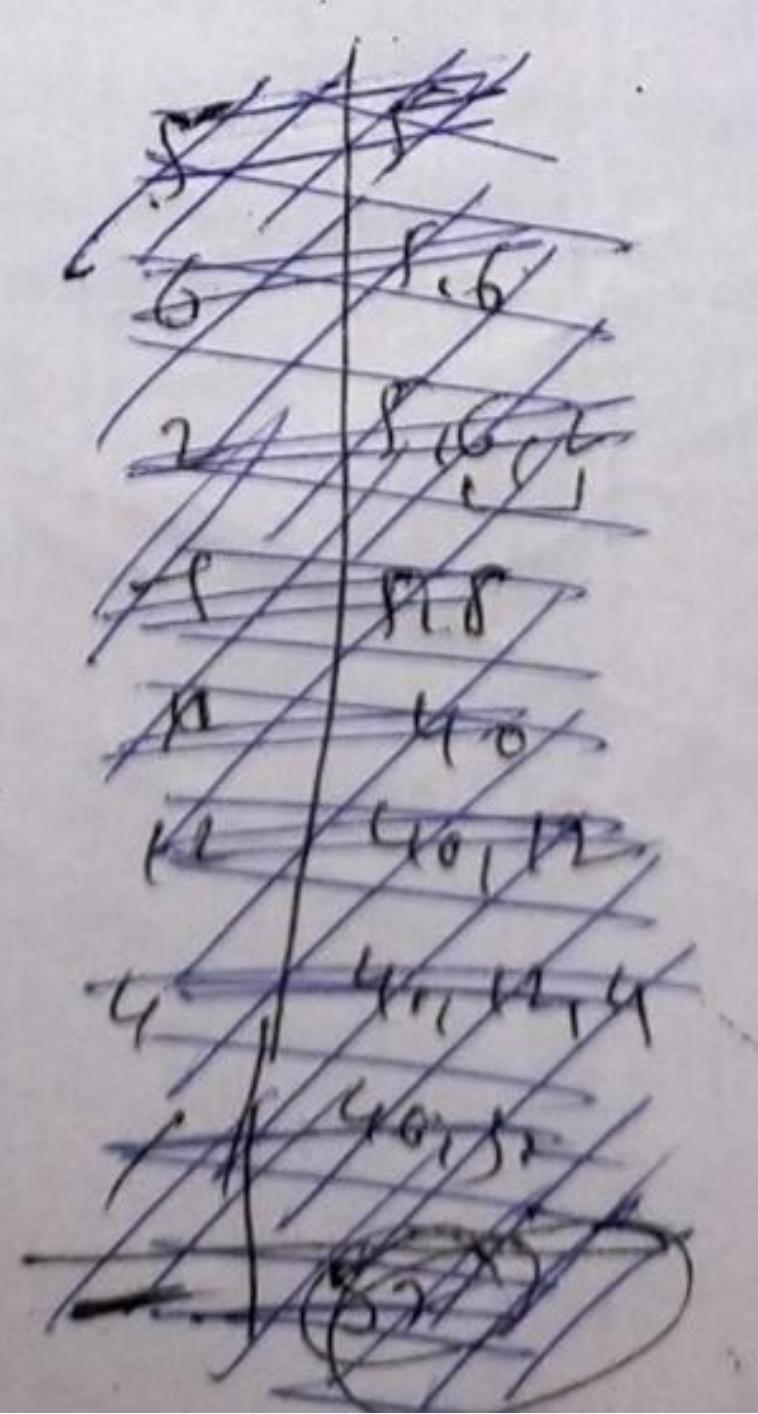
(c) What is a sparse matrix? How is it represented in the memory? 2

3) Attempt any Two 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

(a) Implement queue data structure using array.

(b) Implement queue data structure using circular linked list.  
1. Insertion and deletion function for circular linked list.



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40 - 3

- 37

MBA-101

ROLL NUMBER

2 | 0 | 1 | 9 | 1 | 0 | 4 | 0 | 4 | 9

**MCA  
(SEM II) EVEN SEMESTER  
MINOR TEST (EXAMINATION) 2019-2020  
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) Do you think F W Taylor scientific management theory is still relevant today? Comment. (4)
- b) How do managers make decisions? What are the steps involved in Formal Decision making process? (3)
- c) Explain the Importance of Elton mayo contribution in management. How it is influence the managers in today's context. (3)
- d) Discuss the term "Informal Organization Structure". How it is different from formal organization structure? (3)

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

- a) An efficient manager knows the importance of role and various skills required in organization. Critically analyze. (4)
- b) How the contributions of Mary Follet in Management thoughts are important is useful in present days? (3)
- c) The study of Management Theory is important for managers. Justify it with few suitable examples. (3)
- d) How Taylor's and Fayol's contribution differs from each other. Explain. (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) Categorize Types of planning according to its uses in organization. (3)
- c) Explain in which type of decision making process creativity and innovative thinking required and why? (3)
- d) What do you mean by Delegation of Authority? How it is differing or same from Decentralization of authority? (3)

**Introduction to Database Management System****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) Draw the overall structure of Database Management System (DBMS) and explain its various components in detail. 4
- (b) What is the significance of database languages in DBMS? Describe the various types of database language in brief. 2
- (c) Describe any four types of number functions of SQL with a suitable example. 2
- (d) Define and describe the Primary Key, Candidate Key, Composite Key and Super Key in context of DBMS. 2

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

- (a) Draw the E-R diagram for the Library Management system of MMMUT Gorakhpur by assuming the suitable entities, relationships and attributes of your own. 4
- (b) Bring six differences between file system and database system with proper justification. 2
- (c) Design a Generalization-Specialization hierarchy for the employees working in an organization. The organization may have full time employee, part time employee and employee working on hour basis. 2

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

- (a) Consider the following Employee database  
 Employee (Employee\_name, street, city)  
 Works (Employee\_name, company\_name, salary)  
 Company (Company\_name, city)  
 Manages (Employee\_name, manager\_name)

Create the tables for above employee database and write SQL queries for the following:

- (i) Find the names of all employees who work for First Bank Corporation.  
 (ii) Find the names of all employees who belongs to New Delhi.  
 (iii) Find the names of all the employees who work for Small Bank Corporation and company is situated at Chennai.  
 (iv) Give all employees of First Bank Corporation a 10% raise.  
 (v) Find the names of all employees who are managers of the company.  
 (vi) Delete all tuples in the works relation for employees of Small Bank Corporation.
- (b) Describe the various set-oriented and relation-oriented operations of relational algebra with a suitable example. 2
- (c) Illustrate the Relational Tuple Calculus with a suitable example. 2