Code: CBSE12 Roll No.....

MCA (SEM-1) Examinations, 2018

Problem Solving and Programming in C

Time: 2 Hours Max Marks: 75

- *Write your Roll No. on the top immediately on receipt of the question paper.*
- *Attempt ALL questions by selecting any TWO parts. All questions carry equal marks.*

1. (a) Discuss the generalized methodology involved in problem solving. Write the algorithm to generate Fibonnaci series upto N terms. (viz; 1 1 2 3 5 8 13 ...)

(b) What is the range of various data types? Discuss all the primary data types available in C in detail.

(c) Write a program that interchange and prints the value of two integers stored in variables A and B without using any extra variable.

2. (a) What will be the *output* for the following piece of codes:

(i) `main() { int m=1,n=2; for(j=1; j<=2; j=j+1){ m=m+1; n=n*j; printf("%d \t%d\t",m,n); } }`

(ii) `main() { int i = -1, j = -1, k = 0, l =2, m; m = i++ && j++ && k++ || l++; printf("%d %d %d %d %d",i,j,k,l,m); }`

(b) The *strlength* function takes a valid C string as an argument, and returns the length of the string up to and not including the first null character. An (erroneous) implementation is given below:

```
int strlength(const char *s)
{ int i; while (s[i] >= 0) i++; return i; }
```

(i) Find two errors in this function.

(ii) Give a correct implementation of this function.

(c) Explain the role of *break* statement in switch and looping statements through suitable examples.

(a) Explain the situations when you will be using, Call-by-value and Call-by-reference, through suitable examples. Can a function in C return multiple values of different types? Explain.

(b) What is storage class? What are the different storage classes in C? Explain each with suitable examples.

(c) Write a Program in C using functions to carry out the following string manipulation tasks using pointers:

i. To find a substring in a given string.

ii. To concatenate two given strings.

Do not use any inbuilt function to carry out the above tasks.

3. (a) Differentiate between a constant pointer and pointer to a constant? Are the expressions *(*ptr)++* and *++(*ptr)* same? Justify your answer.

(b) Distinguish between Static and Dynamic Memory allocations. Explain the usage of *malloc()* and *calloc()* functions with suitable examples.

(c) Write a function with the prototype *void rotate(int size, int *array, int k)* which rotates its input k elements to the right. E.g., if the input array is the array [0, 1, 2, 3, 4, 5], then the call *rotate(6, array, 2)* should result in array being modified to [4, 5, 0, 1, 2, 3]. Assume the array size is passed in the size argument and $0 \le k <$ size.

5. (a) Define a structure data type *Distance* containing members (fields) as Feet and Inches. Write a program that would assign values to the individual members (fields) and display the distance in terms of Meter and Centimeter.

(b) Distinguish between Structure and Union through a suitable example. Consider the Structure *Student* containing rollno, name, marks of 5 papers as fields. Write a program to accept 10 records of Students and print the records of students in the order of total marks obtained.

(c) Distinguish between Text and Binary Files? What are the different modes of a file? Write a program to combine (join) the contents of two existing files into one.

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ode: CSCC13

Roll No. 18MCA054

MCA (SEM-I) EXAMINATIONS - 2018
Digital Logic and Computer Design

Time: 2 Hours

Max Marks: 75

- *Write your Roll No. on the top immediately on receipt of the question paper.*
- *Attempt all questions. Choices are given in each question set. Marks are indicated against each question.*

1. Attempt any TWO of the following questions. 2x7.5=15

(a) Represent the following in 16 bit floating point representation.
(i)) 2.3 (ii) -12.20
(ii) Convert $(120)_5$ to base 7, base 10, and base 11.

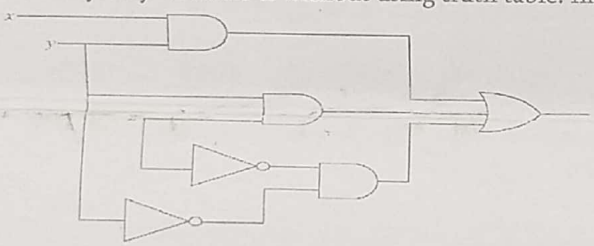
(b) Perform the subtraction with the following binary numbers using (1) 7's complement and (2) 8's complement. Check the answer by straight subtraction.
(i) $(B30)_{16}-(14)_8$ (ii) 25+ (-13)

(c) What is Parity? A message 1011 is transmitted from source to destination. Find the number of parity bits as well as its value using even parity method.

2. Attempt any TWO of the following questions. 2x7.5=15

(a) What is Boolean function? Draw truth table and logical circuit of the Boolean function
$f(x, y, z) = \sum(2, 3, 4)$

(b) Prove x+x'y=x+y and x.x=x without using truth table. Implement the following logic circuit using NOR gates.



(c) Simplify the following Boolean functions to a minimum numbers of literals.
(i) xy+xy'+x'y'+xyz+x'yz
(ii) (x+y)(x+y')(x'+y')(x+y+z)

3. Attempt any TWO of the following questions. 2x7.5=15

(a) Simplify the following Boolean function using K-map:
$F(A, B, C, D, E)=\sum(1,3,4,7,8,9,12,14)+\sum^d(10,11,15)$

(b) Simplify the following Boolean function using K-map:
$F(X,Y, Z, W)=\prod(2,5,7,8,10,11)+\prod^d(1,4,12)$

(c) Simplify the following Boolean function using K-Map
(i) $F(a,b,c)=x'yz+xyz+xy'z'+y'z$
(ii) $F(x, y,z)=(y+z')(x'+y+z)(x+z')$

4. Attempt any TWO of the following questions 2x7.5=15

(a) What is full adder? Implement the following Boolean function with 8 x 1 multiplexer
$f(a, b, c, d)=\sum(2,4,5,7,8,12)$

(b) What is encoder? Design decimal decoder.

(c) What is the procedure to design a combinational circuit? Design a combinational circuit to find the odd parity bit..

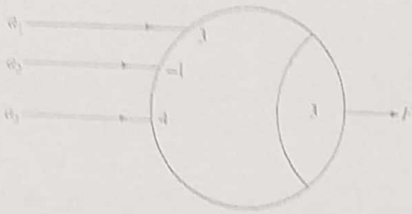
5. Attempt any TWO of the following questions 2x7.5

(a) What is a clocked RS flip flop? Design a sequential circuit with the following state table. Use RS flip flop.

Present State	Next State
AB	AB
00	10
01	11
10	01
11	00

(b) What are various applications of counter? Design synchronous BCD counter using T type flip flop.

(c) What is T gate? Find the Boolean function from the following T gate.



Code: CSCC 14

Roll No. 18MCA054

MCA (SEM-I) EXAMINATIONS - 2018

Mathematical Foundations of Computer Science, Matlab, and Mathematica

Time: 2 Hours **Max Marks: 75**

- *Write your Roll No. on the top immediately on receipt of the question paper.*
- *Attempt ALL questions by selecting any TWO parts. All questions carry equal marks.*

1. Attempt any TWO of the following questions.

(a) Attempt any two of the following:

i) Sets, sequences, and multi-sets.
ii) Venn diagrams for union, intersection, complement, set difference.
iii) Are "a collection of prime ministers of India" and "a collection of presidents of India" set? Justify your answer.

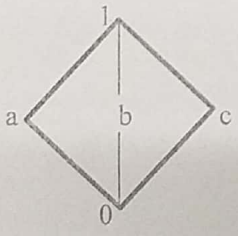
(b) Let A = {a: a is male actor of Bollywood}, B = {b: b is a female actor of Bollywood}, C = {c: c is a male actor of elsewhere in the world}, and D = {d: d is a female actor of elsewhere in the world}. Determine $A \cap B \cap C \cap D$ and $A \cup B$, $B \cup C$, $C \cup D$, $A \cup B \cup C \cup D$.

(c) What do you mean functions and relations? Describe their types and operations. For the set A = {1, 2, 3}, R= {(1, 2), (1, 3), (2, 2), (2, 3)}, determine the complement of R (i.e. $\bar{R}$).

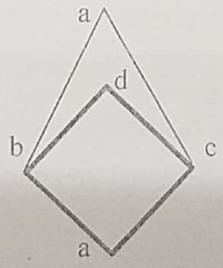
2. Attempt any TWO of the following questions.

(a) How equivalence relations and equivalence classes are related? For the given partition {{1,3,5},{2,4},{6}} on set A={1,2,3,4,5,6}, determine its equivalence relation R.

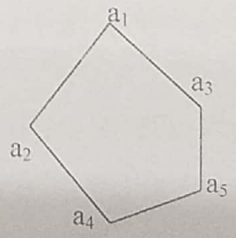
(b) What is Hasse diagram and how it is drawn? Identify the following images with justification of each:



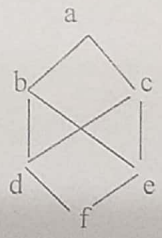
Figure(1)



Figure(2)



Figure(3)



Figure(4)

(c) What do you mean by the closure of a relation? Explain how a particular closure is determined by taking some example.

3. Attempt any TWO of the following questions.

(a) Write the following statements in symbolic form:

i) Mark is poor but happy
ii) Mark is rich or unhappy
iii) Mark is neither poor nor happy
iv) Mark is poor or he is rich and unhappy

(b) What do you mean by normal forms? Describe them with at least one example of each.

(c) Consider the following statements:

- All men are selfish
- All kings are men

Prove by the inference theory of logic that all kings are selfish.

4. Attempt any TWO of the following questions.

(a) Find the minimum number of students needed to guarantee that five of them belong to the same class (Freshman, Sophomore, Junior, Senior, Martin).

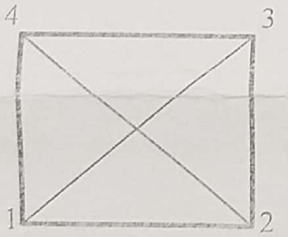
(b) What you mean by the generation of permutations and combinations in lexicographic order? Write their steps. And for the set X = {1, 2, 3, 4, 5, 6} find the next larger 4-permutation than **1456** and next large 4-combination of **2356** in lexicographic order.

(c) Attempt any two the following:

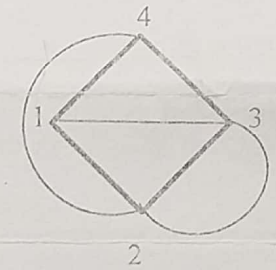
i) In how many ways, the teams of equal sized students can be formed from 25 students?
ii) What do you mean by the distribution objects? Describe them with some example.
iii) In how many ways 6 distinguishable employees can be placed into 4 indistinguishable offices, where each office can contain any number of employees.

5. Attempt any TWO of the following questions.

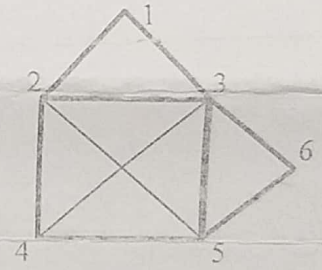
(a) What do you mean by the planar, regular, and bipartite graphs? Identify the following images with proper justification of each:



Figure(1)

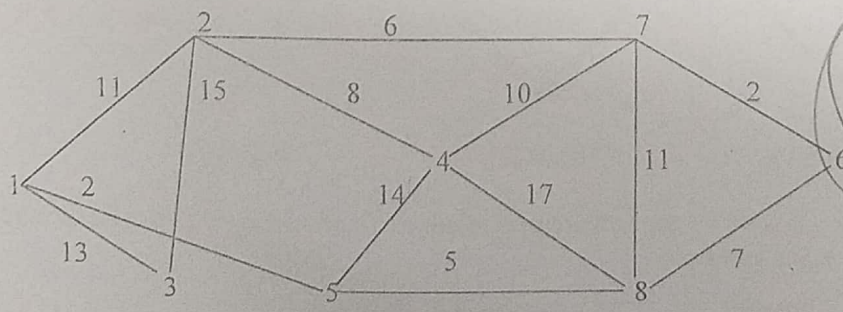


Figure(2)



Figure(3)

(b) Define the nullity and rank of a graph? For a graph of n vertices write the total number of spanning trees. Obtain the minimum spanning tree of the following graph:



(c) Write short notes on any two of the following:

i) Operations which can be performed on the graphs.
ii) Trees and height of a tree.
iii) Euler and Hamiltonian paths

05-12-18

Code: CSCC15

Roll No. 18MCA0034

MCA I SEMESTER EXAMINATIONS - 2018
Professional & Business Communications

Time: 2 Hours

Max Marks: 75

- *Write your Roll No. on the top immediately on receipt of the question paper.*
- *Attempt ALL questions by selecting any TWO parts. All questions carry equal marks.*

1. (a) What are the importance Oral Communications? In organizations policy related matters are communicated in written forms although it may be discussed orally, Why?

   (b) Discuss the various forms of communication which are categorized on the basis of channel of communication and Directions or flow of information.

   (c) What are the different barriers to effective communication process? Discuss some common barriers with examples.

2. (a) You are purchase manager in Suvana Energy Systems (P) Ltd (Address of Suvana Energy Systems Pvt Ltd : G-75B, A.B Enclave-8, New Delhi 25), your company is in the business of Engineering measuring devices business, you meet Mr.Mahbub Khan (Sales Manager) , of SDBPL Corporation (Xeta House,D 232, Thane, Maharashtra) in a trade show held at Pragati Maidan , New Delhi , (17-24 September 2018). SDBPL are the distributors of world-class Flow measuring equipment.

   Write a letter to Mr. Khan to order their following flow-meters, (reference e-brochure) . Request him to give you 50% cash and 50% 45 days credit terms. You also request him to give you 10-15% discount on the rates given on the e-brochure.

Item	Model No.	No. of units
Electromagnetic Flowmeters, size 1 inch line size for water	SMAG 300	10
Oval gear Diesel Flowmeter (2 inch line size)	SDOGM-	3

   (b) You are Project Sales Manager in Doctrov Soft (P) Ltd, which is a software development company specialized in the Hospital/ Nursing Homes and Pharmacy softwares. The company is basically Hyderabad based, this year they started its operations in Delhi/NCR by opening its office in 'Signature Tower, 7th Floor, Gurgaon, Haryana. You as a strategy send a letter to all Medical Officers of Delhi NCR Govt & Private Hospital/Nursing home. You just introduce about your company. And invite them on dinner at The Taj, on Sunday i.e. 31-11-18, at 7 PM. Write a sample letter to Dr. Rohit Bennerjee, Chief Medical Officer, XYZ Hospital, Faridabad.

   (c) You are Regional Head –Sales in Techotronics, the performance of entire North region was very poor in terms of sales for the last quarter (July-September 2018). You want to call a meeting of all sales Managers/ unit Head on November 30, 2018. To discuss the following issues:

   i. Reasons for low sales
   ii. Do we need to give training to our sales people?
   iii. Firing of responsible people.
   iv. Any other issue.

   The meeting is scheduled to be at Regional Office of Technotroics Inc, XYZ Buildiding, Tollstroy Marg, Connaught Place, New Delhi 110001.Time: 10:30AM. You draft a Notice for the above meeting the agenda for the meeting. Assume the meeting is over, now you draft a possible minutes of the meeting.

3. (a) With help of some examples explain the importance of Non-verbal communication. Explain the roles of Kinesics, Proxemics, Paralanguage and Heptics especially in oral communication context.

   (b) You are called for an interview in TCS for the post of Engineers (trainees), how will you prepare yourself for the interview. If the interviewer questions you "tell us something about yourself". What will be your response to the question?

   (c) What should be the strategy to outperform in the interview? Write some important techniques and skills which are needed to be developed to do better in the interviews.

4. (a) What is integrated Marketing Communication? Discuss the various modes of IMC.

(b) What is corporate communication? Discuss the role and importance of Corporate communication in today's dynamic business scenario.

(c) Discuss the role of media in the success of the organization in today's scenario.

5. (a) Do differences in cultures play a role in communication? Discuss with some examples.

(b) What is Business Negotiation Skills? Discuss its importance.

(c) Write a note on the Ethical dilemmas in the corporate communication.

12-12-18

Code: CSCC16

Roll No 18MCA054

MCA First Semester Examinations-2018

Paper Title: Principle of Project Management & Organizational behavior

Time: 2 Hours **Max Marks: 75**

- *Write your Roll No. on the top immediately on receipt of the question paper.*
- *Attempt all questions. Choices are given in each question set. Marks are indicated against each question.*

1. (a) Discuss the meaning and functions of management.

   (b) What are the principles of Administrative Management Theory proposed by Henry Fayol?

   (c) Write a note on different forms of Business ownerships found in India?

2. (a) What is benchmarking? What are 3Rs of Benchmarking? Discuss.

   (b) Write a note on JiT approach.

   (c) How the concept of Time Management as discussed by Stephen Covey can be useful for technology students? Explain.

3. (a) What is organizational behavior? Why is it necessary to have knowledge about organizational behavior for a manager?

   (b) Write a comparative note on classical theory of learning and Operant theory of learning.

   (c) Discuss the concept of reinforcement and its importance.

4. (a) "Professionals are those who do not mix professionalism with emotions", justify and discuss. Also discuss role of emotion in workplace.

   (b) What is personality? Discus various type of personality traits.

   (c) What is motivation? Examine the Maslow's need hierarchy theory of motivation.

5. (a) What are the different types of business environment pertaining to IT company?

   (b) What is external business environment? How PEST analysis is useful in analyzing external environment?

   (c) What is Strategic planning? Briefly, discuss the levels of Corporate Strategic Planning.

Code: CBCS11

08-12-18

Roll No. 18MCA-54

CBCS *for PG Semesters-I Examinations-2018*

Computer Fundamentals

Time: 2 Hours

Max Marks: 75

- *Write your Roll No. on the top immediately on receipt of the question paper.*
- *Attempt ALL questions by selecting any TWO parts. All questions carry equal marks.*

1. (a) Draw Von Neumann Architecture of a Computer. Also, briefly explain the terms used.

   (b) Explain the following:-

   i) Fetch-Execute Cycle
   ii) Unicode

   (c) What is procedure for conversion of decimal numbers into binary, octal and hexadecimal number systems.

2. (a) Explain half adder with the help of logic diagram and truth table.

   (b) Explain all the basic gates with the help of truth table and examples.

   (c) Explain ROM, RAM, secondary and tertiary memories.

3. (a) What is functionality of Imperative Language? Explain with help of suitable examples.

   (b) Write a brief note on PLP

   (c) Explain the following terms:-
   i. Compiler and interpreter
   ii. Loader and linker.

4. (a) Define an operating system. What are the various functions of operating system?

   (b) What is batch processing? How is it different from multiprogramming?

   (c) Explain the different category of operating system with suitable examples.

5. (a) Discuss Network Topologies with their advantages and disadvantages, if any.

   (b) Discuss the following:-
   i. Switch
   ii. Bridge and
   iii. Router

   (c) Write a comparative note on XML and HTML.