M (Printed Pages 4)

(21214) Roll No. .....

MCA-I Sem.

MCA-30

MCA Examination, Dec. 2014

Professional Communication

MCA-111(N)

Time : Three Hours] *[Maximum Marks : 100*

Note : Attempt **all** the sections as per instructions.

Section - A

1. Attempt **all** the questions. $1 \times 20 = 20$

   (A) Draw a diagram of communication circle

   (B) What is Inductive method of paragraph writing?

   (C) What is Intonation?

   (D) What is the role of pitch in presentation?

   (E) What is full meaning of D.O. letter?

   (F) What is the meaning of Topic Sentence?

   (G) What is the meaning of decoding in communication?

   (H) How many kinds of Reports?

   (I) Who is the writer of Chapter "Man and Nature"?

P.T.O.

(J) What is the meaning of kinesics?

(K) Who is the mother of Philosophy?

(L) How many C's are involved in communication?

(M) What is Inter-personal barrier of communication?

(N) What is the Noun of Verb 'Tell'?

True and False :

(O) Question letter is related to pricelist ( )

(P) Horizontal cones flows at the different level ( )

(Q) T.V. Is a visual aids only ( )

(R) Grapevine is associated with Informal way ( )

(S) Downward comm. is from junior to senior ( )

(T) Technical communication saids for laymen. ( )

Section - B

2. Attempt any **three** questions : $3 \times 10 = 30$

(A) The managing Director of a fast moving consumes goods industry is worried that realisation from the dealers is getting delayed of late, due to billing delays in office and asks you, as the office manager to investigate and submit a report with your recommendation. Draft such a report.

(B) Explain the following terms :

(a) Kinesics

(b) Proxemics

(c) Chronemics

(d) Paralanguage

(C) Give your own resume to satisfy an employee who has given an advertisement in a daily for the post of a marketing engineer?

(D) What is the role of Inter department comm. in day to day functioning of the government?

(E) Analyse the statement that "The Aims of science and Humanities" fulfill not only the human need but also creates a problem in synthesis of human emotion?

Section - C

3. Attempt any **five** questions. $5 \times 10 = 50$

(A) What are the similarities and differences between science and humanities?

(B) Explain the Phrase, "Self assurance and uniqueness of man. What was self evident in the later half of the 20th century regarding man's relationship with nature?

(C) Write a D.O. letter to G.M. of the organization for improving standards of productivity in the organization in the capacity of chief personal manager, BHEL Banglore Invent details.

(D) What are the paralinguistic features of presentation strategies? How could articulation be improved by voice-modulation?

(E) Write show notes on following :
  (1) Report and its significance
  (2) Technical paper; features and methods

(F) Write short notes on following :
  (1) Topic sentence and paragraph writing
  (2) Levels of communication

(G) Do you agree with the view of Bertrand Russell-"Nature does what it does, not what we should wish nor yet". What we should fear? Discuss

(H) What are the important barrier of communication? How can we overcome them?

(I) Discuss the flow of communication in details.

M (Printed Pages 4)

(21214) Roll No. .....

MCA. Ist Sem.

MCA-1(A)

MCA Examination, Dec. 2014

Problem Solving and Computer Programming with 'C'

MCA-111(o)

Time : Three Hours] *[Maximum Marks : 100*

Note: Attempt **all** the sections as per instructions.

Section-A

Attempt **all** questions

1. Define the following terms 4
   (i) Compiler
   (ii) Interpreter
2. What do you mean by software? Differentiate system software and application software. 4

P.T.O.

3. Write a program for swapping two nos. 4

4. List out the differences between machine level language and high level language. 4

5. Define the term macro with examples. 4

Section-B

Attempt any **two** questions

6. What do you understand by recursion, and write a recursive program to find the factorial of number. 10

7. Write a program for menu driven calculator using switch case and also draw the flow chart. 10

8. (a) Differentiate between global variable and local variable with an example. 5

   (b) Discuss the idea of Top Down program development. 5

Section-C

Attempt **three** questions

9. (a) Write a program to find the largest number from a given array using function. 10

   (b) Write short notes on LINUX OS and also give basic OS command with syntax. 10

10. (a) Explain any five function of file handling in c, with examples. 10

    (b) Write short notes on linker and loader. 5

    (c) Explain about the lifetime and scope of a variable with suitable example? 5

11. (a) Write a program to define a structure called student having member like Student ID, student Name and branch of student, and allow user to add new record. 10

(b) Write a program to find largest number between two numbers by using pointer as function argument. 10

12. (a) What is the importance of operator precedence and associatively. 5

(b) Show the use of left shift and right shift operator with example. 5

(c) Write a program to short an elements using bubble short. 10

M (Printed Pages 4)

(21214) Roll No. .....

MCA-I Scm.

MCA-2(B)

M.C.A. Examination, Dec - 2014

Mathematical Foundation of Computer Science

[MCA-112(O)]

Time : Three Hours] *[Maximum Marks : 100*

Note: Attempt **all** the sections as per instructions.

Section-A

Note: Attempt **all** questions. Each question carries 4 marks. 4×5=20

1. State Cayley-hamilton theorem.
2. Define distributive lattice.
3. Given an example of a semigroup which is not a group.

P.T.O.

4. Define the following :

   (i) DFA

   (ii) NFA

5. Define incidence matrix.

Section-B

Note: Attempt any **two** questions. Each questions carries 10 marks. 10×2=20

6. Show that every cycle can be written as a product of transpositions in infinitely many ways.

7. State and prove De-Morgans Laws on set theory.

8. Show that a given connected graph G is an Euler graph if and only if all vertices of G are of even degree.

Section-C

Note: Attempt any **three** questions. Each question carries 20 marks. 20×3=60

9. What do you understand by NFA and DFA? Explain how do you convert NFA in DFA.

10. (a) Let R be a relation on the set of all ordered pairs of natural numbers defined by (x.y) R (u,v) iff xy = yu. Show that R is an equivalence relation.

    (b) Consider the functions f, g : R → R. Defined by $f(x) = x^2 + 3x + 1$, $g(x) = 2x - 3$, find the composition functions of :

    (i) fof

    (ii) fog

    (iii) gof

    (iv) gog

11. Prove that the minimum possible height of an n vertex binary tree is [log (n+1)−1].

12. Explain Pushdown Automation with examples.

13. (a) Prove that the following statement is contradiction :

$p = [(p \vee q) \wedge (p \vee \sim q) \wedge (\sim p \vee q) \wedge (\sim p \vee \sim q)]$

(b) Simply the following

$\sim(p \vee q) \vee (\sim p \wedge q)$

M (Printed Pages 4)

(21214) Roll No. .....

MCA-I Sem.

MCA-31

MCA Examination, Dec. 2014

Accounting & Financial Management

[MCA-112(N)]

Time : Three Hours] *[Maximum Marks : 100*

Note : Attempt **all** Sections as Per Instructions.

Section-A

Attempt any **five** question. Each question carries 4 marks. 20 (4×5)

1. Define accounting.
2. What is trial balance?
3. What are the three decisions of finance function?
4. What is floatation cost?
5. What are fixed assets?

P.T.O.

6. What is working capital?

7. What is meant by Capital Structure?

8. Explain the principles of Double Entry System?

Section-B

Attempt any **two** questions. Each question carries 10 marks. 2×10=20

9. How does cost of equity affect the capital structure of the company? Explain with example.

10. "Working capital is the cycle of current Assets". Discuss.

11. What is posting? Explain with suitable example.

12. Describe cash flow statement its use.

13. Explain the inventory systems-Discuss. The Inventory Systems with its two types.

Section-C

Attempt any **three** questions. Each question carries 20 marks. 3×20=60

14. What do you mean by analysis of financial statements. Explain its significance to various interested parties.

15. Explain the role of Financial Planning.

16. Define 'Trial Balance'. What are its objectives? Explain the significance of Trial Balance.

17. Explain the inventory System. Discuss the various costs associated with Inventory Management.

18. Write short notes on the followings :

    (a) Capital Expenditure & Revenue Expenditure

    (b) Fixed budget and flexible budget

M

(Printed Pages 4)

(21214)

Roll No. .....

MCA-I Sem.

MCA-3(C)

MCA Examination, Dec. 2014

Principles of Management

[MCA-113(O)]

Time : Three Hours] *[Maximum Marks : 100*

Note : Attempt **all** the Sections as per instructions.

Section-A

(Very Short Answer Questions)

Attempt all **five** questions. Each question carries 4 marks. Very short answer is required not exceeding 75 words. 5×4=20

1. Define 'Span of Control'.
2. What is rumour?

P.T.O.

3. What do you mean by Management By Objectives (MBO)?

4. Distinguish between policies and procedures.

5. What do you mean by strategies?

Section-B

(Short Answer Questions)

Attempt any **two** questions out of the following three questions. Each question carries 10 marks. Short answer is required not exceeding 200 words. 10×2=20

6. "Leadership is situational". Comment.

7. "Organisation is the backbone of management". Comment.

8. Discuss the relevance of Maslow's need hierarchy.

Section-C

(Detailed Answer Questions)

Attempt any **three** questions out of the following five questions. Each question carries 20 marks. Answer is required in detail.

20×3=60

9. 'Management is what Management does'. In the light of this statement carefully discuss the essential steps involved in management.

10. What are the essential elements of forcasting process? Distinguish between bottom up and top-down methods of forcasting.

11. Distinguish between 'delegation of authority' and 'decentralisation'. What should be done to ensure effective delegation of authority in a business enterprise?

12. "Planning is meaningless without control and control is almless without planning." Examine critically.

13. (a) Contribution of Henry Fayol to management.

(b) Write short notes on any **two** :

(i) Employment Tests

(ii) Global theory of management

(iii) Role of electronic media in Communication.

(iv) Role of Globalisation and Liberalisation

M (Printed Pages 4)

(21214) Roll No. .....

MCA. I Sem.

MCA-32

MCA Examination, Dec. 2014

Computer Concepts and Programming in C

MCA-113(N)

Time : Three Hours] *[Maximum Marks : 100*

Note: Attempt **all** sections as per instructions.

Section-A

(Very short answer questions)

Attempt **all** questions each question carries 4 marks $4 \times 5 = 20$

1. (a) Convert $(1AC)_{16}$ to base 2.

   (b) Convert $(1675)_8$ to base 16.

2. What do you mean by flowchart.

3. Write a program in C to swap two numbers.

4. Explain DOS wits its purpose.

P.T.O.

5. Differentiate between compiler and interpreter.

Section-B

(Short answer questions)

Attempt any **two** questions. Each question carries 10 marks. 10×2=20

6. (a) Write a program to check either the given number is armstrong or not.

   (b) Write a program to print the following output using for loop:

   1

   2 3

   4 5 6

   7 8 9 10

7. Explain following terms with example:

   (a) switch statement

   (b) If-else

   (c) While and Do-While

   (d) break

   (e) array

8. Differentiate between call by value and call by reference with C program.

Section-C

(Detailed answer questions)

Attempt any **three** questions. Each question carries 20 marks. 20×3=60

9. What is computer? Discuss its generations.

10. Explain the various characteristics of object oriented programming.

11. Explain pointer. Write a program to find minimum and maximum values in an one dimensional array of ten numbers.

12. Write a structure definition having elements: name, roll no, class, gender, height, weight for 10 students. Also compute how much memory bytes it will acquire for execution.

13. Explain any **two** terms with their purpose:

    (a) Windows

    (b) Linux

    (c) Android

M

(Printed Pages 7)

(21214)

Roll No. .....

MCA-I Sem.

MCA-33

MCA Examination, Dec - 2014

Discrete Mathematics

MCA-114 (N)

Time : Three Hours] *[Maximum Marks : 100*

Note: Attempt **all** the sections as per given directions.

Section-A

Note: Attempt **all** questions. Each question is of 4 marks.

1. Consider the following statements :

   p : it is raining today

   q : it is cloudy today

   r : it is windy today

   Write the following statements in symbolic

P.T.O.

form :

(i) It is either raining or cloudy today

(ii) Neither it is raining nor it is windy today

(iii) It is false that it is raining today but not windy

(iv) It is cloudy or windy today but not raining

2. Let p and q be the following propositions :

p : swimming at Marine drive in Chennai is allowed

q : Sharks have been spotted near the shore

Express each of the following proposition in English :

(i) $\neg q$

(ii) $p \wedge q$

(iii) $\neg p \vee q$

(iv) $p \Rightarrow \neg q$

3. Which of the following statement is the negation of the statement,

"2 is even and –3 is negative"?

(i) 2 is even and –3 is not negative.

(ii) 2 is odd and –3 is not negative.

(iii) 2 is even or –3 is not negative.

(iv) 2 is odd or –3 is not negative.

4. If B is a Boolean Algebra, then which of the following is true:

(i) B is a finite but not complemented lattice.

(ii) B is a finite, complemented and distributive lattice.

(iii) B is a finite, distributive but not complemented lattice.

(iv) B is not distributive lattice.

5. Put a √ on the correct statement : A simple graph

(i) can have self loops and parallel edges

(ii) can have self loops but no parallel edges

(iii) can have only parallel edges

(iv) can have neither self loops nor parallel edges

Section-B

Note: Attempt any **two** questions. Each question carries 10 marks.

6. Consider the Boolean algebra $(D_{110}, +, ., ', 1, 110)$ where $a + b = 1cm\ \{a, b\}$, $a . b = g c d\ \{a, b\}$ and $a' = \frac{110}{a}$ for all $a, b \in B$. Then

(i) List all the elements of the algebra and draw its diagramme.

(ii) Find all the sub algebras of $(D_{110}, +, ., ', 1, 110)$

(iii) Find the set of atoms of $(D_{110}, +, ., ', 1, 110)$.

7. Without using truth table, show that :

(i) $(p \Rightarrow q) \wedge (r \Rightarrow q) = (p \vee q) \Rightarrow q$

(ii) $(\neg p \Rightarrow (\neg p \Rightarrow (\neg p \wedge q))) = p \vee q$

(iii) $\neg((\neg p \wedge q) \vee (\neg p \wedge \neg q) \vee (p \wedge q) = p$

8. Using the generating function technique, solve the following recurrence relation :

$a_{n+2} - 2a_{n+1} + a_n = 2^n$; $a_0 = 2$ and $a_1 = 1$

Section-C

Note: Attempt any **three** questions. Each question carries 20 marks.

9. Let G be a graph with n - 1 edges. Prove that the following are equivalent :

(i) G is connected

(ii) G is cyclic

(iii) G is a tree.

10. (a) Let L be a distributive lattice. Show that if there exists an $a \in L$ with $a \wedge x = a \wedge y$ and $a \vee x = a \vee y$, then $x = y$.

(b) Let L be a bounded distributive lattice and let $a \in L$. Show that if complement of a exists, then it is unique.

11. (a) Let $R = \{(x, y) : x - y \text{ is an integer}\}$ be an equivalence relation defined on the set of real numbers. Find the equivalence classes of 1, and $\frac{1}{2}$.

(b) Prove that if n is an integer and $n^3 + 5$ is odd, then n is even by using :

(i) An indirect proof

(ii) A proof by contradiction.

12. (a) Obtain PDNF of them following :

$(p \wedge q) \vee (\neg p \wedge r) \vee (q \wedge r)$

(b) Prove that the statements $p \Rightarrow q$ and $\neg q \Rightarrow \neg p$ are logically equivalent using truth table.

13. (a) Use Karnaugh map to simplify the following Boolean expression

wxy'z'+wx'yz+wx'yz'+wx'y'z'+w'xy'z'+w'x'yz'+w'x'y'z'

(b) A graph G has 21 Edges, 3 vertices of degree 4 and other vertices are of degree 3. Find the number of vertices in G.

M-1 (Printed Pages 4)

(20512) Roll No. .....

MCA-II Sem.

MCA-5(E)

M.C.A. Examination, Dec. 2014

Energy Environment and Ecology

[MCA-115]

Time : Three Hours] *[Maximum Marks : 100*

Note: Attempt any **five** questions. out of ten. Each question carries 20 marks.

1. (a) What is meant by environment? Enumerate and discuss its various components. 10

   (b) What is Eco-system? With the help of the suitable models explain the energy flow in the Eco-system. 10

2. Write the short notes on the following: 5×4

   (i) Ecological Pyramids

   (ii) Ecological Succession

P.T.O.

(iii) Food Chain

(iv) Food Web

3. (a) Define water pollution? Discuss its major sources and effects. 10

(b) What do you mean by the NGOs? Define the Role of NGOs. 10

4. (a) Write a short note on the case study of Bhopal Gas Tragedy. 10

(b) What are the alternate sources of energy? Describe any two of them. 10

5. Write short note on the following: 5×4=20

(1) Ozone layer depletion

(2) Human Rights

(3) Rain water harvesting

(4) Disaster Management.

6. (a) What are the major sources of thermal pollution? How can it be controlled? 10

(b) Write a short note on Biodiversity and Bio-geographical classification of India. 10

7. How Industrial domestic, agricultural and other wastes effect the fertility of the soil? Discuss the measures to check and control it? 20

8. What do you mean by population explosion? What are the major reasons of population explosion? What are its effects on environment and other human aspects? 20

9. Write short note on the following: 5×4

(a) Global warming

(b) Biogas energy

(c) Nitrogen cycle

(d) London smog

10. (a) Explain the consumptive, productive ethical and social value of biodiversity? 10

(b) Write a short notes on solid waste management practices? 10

M

(Printed Pages 6)

(21214)

Roll No. .....

MCA-I Sem.

MCA-34

MCA Examination, Dec - 2014

Digital Logic Design

MCA-115 (N)

Time : Three Hours] *[Maximum Marks : 100*

Note: Attempt **all** the sections as per given instructions.

Section-A

Note: Attempt **all** questions. Each question carries 4 marks.

1. (a) Convert the following numbers : 2

   (i) $(BABA)_{16} = (?)_{10}$

   (ii) $(128)_{12} = (?)_{10}$

   (iii) $(5137)_{10} = (?)_{BCD}$

   (iv) $(5121)_{10} = (?)_{\text{excess 3 code}}$

P.T.O.

(b) Express the following function as sum of min terms: 2

$F(A,B,C,D) = B'D + A'D + BD$

2. (a) Convert the following to the other canonical form 2

$F(x,y,z) = g(1,3,5)$

(b) Show that a positive logic NAND gate is a negative logic NOR gate and vice versa. 2

3. Design a combinational circuit with three input and one output. The output is 1 when the binray value of the inputs is less than 3. The output is O otherwise. 4

4. (a) Consider a (7,4) cyclic code. The generator polynomial for this code is given as $g(x) = 1 + x + x^3$. Find all the code words of this code. 3

(b) Explain the difference between latch & flipflop. 1

5. Explain the following : 4

(a) PAL

(b) Code-Convertors

Section-B

Note: Attempt any **2** questions. Each question carries 10 marks.

6. Draw and explain the block diagram of asynchronous sequential circuit. Also write down the steps for analysis of asynchronous sequential circuit. 10

7. Design a 3-bit binary UP/DOWN counter with a direction control M using J-K flip flop. 10

8. (a) Explain the basic elements of the ASM chart. How does it different from conventional flow chart? 5

(b) Distinguish between SRAM & DRAM. Also draw static RAM Cell. 5

Section-C

Note: Attempt any **3** questions. Each question carries 20 marks.

9. (a) What is the difference between decoder and encoder? 5

(b) Encode the decimal number 46 to gray code. 5

(c) Design a four input encoder with inputs as given table. Here D_0 has the highest priority and D_3 the lowest priority : 10

Input				Output		
D_0	D_1	D_2	D_3	X	Y	Z
0	0	0	0	X	X	0
1	0	0	0	0	0	1
X	1	0	0	0	1	1
X	X	1	0	1	0	1
X	X	X	1	1	1	1

10. (a) Describe and discuss the operation of a D-type flip flop. 10

(b) Implement the function :

$F(A,B,C) = \bar{A}\bar{B}C + \bar{A}B\bar{C} + A\bar{B}\bar{C} + ABC$

using a 4:1 multiplexer. 10

11. (a) Obtain a 16×8 memory using 16×4 memory ICs and draw the converted IC circuit. 10

(b) Define static and dynamic hazards. A function is realized as- F(a,b,c) = ab + b'c. Redesign the circuit after removing the hazard. 10

12. (a) Explain linear selection addressing. 8

(b) Differentiate between Ring counter & Johnson counter. 8

(c) Explain how SR flipflop is converted into D flip flop? 4

13. (a) Explain the principle of Constructing Hamming error correcting code. Construct a seven-bit Hamming code for the 4-bit message 0100. 6

(b) Implement a full adder circuit with a 3×8 decoder and 2 OR gates. 6

(c) Explain the difference between the following : 8

(i) A truth table, a state table, a characteristic table and an excitation table

(ii) A boolean equation, a state equation, a characteristic equation and a flip flop input equation.

Section-B

Note: Attempt any **two** questions.

1. Describe the essential properties of the following types of operating systems: 10

   (a) Batch

   (b) Multiprogramming

   (c) Multitasking

   (d) Real time

2. What are threads and what is the benefit of multithreaded programming? What are the resources shared by threads and what is unique to each thread? Explain with reasons. 10

3. Explain the following scheduling algorithms: FCFS and SJF. 10

Section-C

Note: Attempt any **three** questions.

1. (a) What is the critical section problem? What are the requirements that must be satisfied by a solution to the critical section problem? 10

   (b) What is a semaphore? What is the difference between a binary semaphore and a counting semaphore? What is a spinlock? 10

2. (a) What is deadlock prevention? Explain how this may be achieved? Show how the circular wait condition can be prevented from occurring in deadlock prevention? 10

   (b) What is a safe state? Show how the resource allocation graph algorithm can be used to avoid deadlocks? What are its limitations? 10

3. (a) Explain the basic method of segmentation. Why are segmentation and paging sometimes combind into one scheme? 12

   (b) Consider the following segment table

Segment	base	length
0	219	600
1	2300	14
2	90	100
3	1327	580
4	1952	96

   What are the physical addresses for the following logical addresses: 0430, 110, 2500, 3400, 4112? 8

4. (a) Describe the indexed file space allocation scheme.

(b) Suppose the head of a moving head disk with 200 tracks numbered 0-199 is currently serving a request at track 143. It has just finished a request at track 125. If the queue of requests is kept in the FIFO order, 86, 147, 85, 177, 94, 150, 102, 175, 130. What is the total head movement to satisfy these requests for the following disk scheduling algorithms? 10+10

(a) First Come First Served

(b) Shortest Seek Time First

(c) SCAN

5. (a) What is a process control block? What is its importance in an operating system implementation? Describe the information stored in the process control block. 10

(b) Describe and then discuss the differences between short-term, medium-term, and long-term scheduling. 10