

MASTER OF COMPUTER APPLICATIONS (MCA)

MCA/ASSIGN/SEMESTER-I

ASSIGNMENTS

(July - 2023 Onwards)

MCS-011, MCS-012, MCS-013, MCS-014, MCS-015,

MCSL-016, MCSL-017



**SCHOOL OF COMPUTER AND INFORMATION SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110068**

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Important Notes

1. Submit your assignments to the Coordinator of your Study Centre on or before the due date.
2. Assignment submission before due dates is compulsory to become eligible for appearing in corresponding Term End Examinations. For further details, please refer to MCA Programme Guide.
3. To become eligible for appearing the Term End Practical Examination for the lab courses, it is essential to fulfill the minimum attendance requirements as well as submission of assignments (on or before the due date). For further details, please refer to the MCA Programme Guide.
4. The viva voce is compulsory for the assignments. For any course, if a student submitted the assignment and not attended the viva-voce, then the assignment is treated as not successfully completed and would be marked as ZERO.

Course Code	:	MCS-011
Course Title	:	Problem Solving and Programming
Assignment Number	:	MCA(I)/011/Assignment
Maximum Marks	:	100
Weightage	:	25%
Last Date of Submission	:	15th October (For July Session) 15th April (For January Session)

There are seven questions in this assignment which carries 80 marks. Rest 20 marks are for viva-voce. Answer all the questions. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

Q1: Write an algorithm, draw corresponding flow chart and write an interactive program which prompts the user with the following options on the opening menu: **(15 Marks)**

- 1) To accept two integers and check whether they are equal or not
- 2) To check whether a given number is even or odd
- 3) To check whether a given number is a positive number or a negative number
- 4) To check whether the given year is a LEAP year or not.
- 5) Quit

Enter your choice:

Note: Use *SWITCH..CASE* statement.

Q2: Write the *functions* in C for the following: **(09 Marks)**

- (a) To find the square of any number.
- (b) To find the absolute difference between two integers.
- (c) To convert a decimal number to its equivalent binary number.
- (d) To find the largest element in a given array of *n* elements.

Q3: Write an interactive program using *recursion* for each of the following: **(12 Marks)**

- (a) To count the digits of a given number.
- (b) To reverse a string
- (c) To find the least-common-multiple of two numbers.

Q4: Write interactive C programs to perform the following on strings: **(12 Marks)**

- (a) To find the length of a given string without using the string library functions.
- (b) To compare two strings without using string library functions.
- (c) To count the total number of vowels and consonants in a string and display the counts separately.

Q5: Write an interactive C program to insert new elements in the unsorted array. **(10 Marks)**

Q6: Using Structures in C, write an interactive program to display the mark-sheet and grade card for 10 students for a MOOC course.

Note: Assumptions can be made wherever necessary and mention them. **(10 Marks)**

Q7: Using File Handling concept in C programming, write the C programs for the following:

- (a) To find the number of lines in a text file. **(12 Marks)**
- (b) To delete specific line from a text file.
- (c) To copy a file to another folder with a different file-name.

Course Code	:	MCS-012
Course Title	:	Computer Organisation and Assembly Language Programming
Assignment Number	:	MCA(I)/012/Assignment
Maximum Marks	:	100
Weightage	:	25%
Last Dates for Submission	:	15th October (For July Session) 15th April (For January Session)

There are four questions in this assignment, which carries 80 marks. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation. The answer to each part of the question should be confined to about 300 words. Make suitable assumption, if any.

Q1:

(a) Please refer to Figure 4 of Unit 1 of Block 1 on page 11 of Instruction execution example. Assuming a similar machine is to be used for execution of the following three consecutive instructions:

LOAD A ; Load the content of Memory location A into the Accumulator Register.

ADD B ; Add the content of memory location B from Accumulator Register.

STOR C ; Stores the content of the Accumulator register to memory location C.

However, this machine is different from the example of Figure 4 in the following ways:

- Each memory word of this new machine is of 16 bits in length.
- Each instruction is of length 32 bits with 16 bits for operation code (opcode) and 16 bits for specifying one direct operand.
- The Main Memory of the machine would be of size 2^{16} words.
- The three consecutive instructions are placed starting from memory location $(11FE)_h$; operand A is at location $(1FFF)_h$ and contains a value $(4321)_h$, Operand B is at location $(2000)_h$ and contains a value $(1FFE)_h$ and operand C is at location $(2001)_h$ and contains a value $(0000)_h$.
- The AC, PC, MAR and MBR registers are of size 16 bits, whereas IR register is of size 32 bits. The initial content of PC register is $(11FE)_h$

Draw the diagrams showing the following information:

- Initial State of the machine with the addresses and content of memory locations in hexadecimal. Show only those address locations of the memory that store the instruction and data. Also, show the content of all the stated registers. **(2 Marks)**
- Draw three more diagrams, each showing the state of the machine after execution of every instruction viz. LOAD, ADD and STOR. Show the changes in the values of Registers and memory locations, if any, due to the execution of the instruction. Show all the addresses and values in hexadecimal notations. **(3 Marks)**

(b) Perform the following conversion of numbers: **(2 Marks)**

- Decimal $(345654398)_{10}$ to binary and hexadecimal
- Hexadecimal $(FFEEDDCBA)_h$ into Octal.
- String "Computer Organisation" into UTF 8
- Octal $(6754632)_o$ into Decimal

(c) Simplify the following function using K-map: $F(A, B, C, D) = \Sigma (1, 3, 4, 7, 11, 13)$
Draw the circuit for the function using NAND gates. **(2 Marks)**

- (d) Consider the Adder-Subtractor circuit as shown in Figure 3.15 page 76 of Block 1. Explain how this circuit will perform subtraction (A-B), if the value of A is 1011 and B is 0011. You must list all the bit values including Cin and Cout and overflow, if any. **(1 Mark)**
- (e) Explain the functioning of a 3×8 decoder with the help of a logic diagram and example input. **(2 Marks)**
- (f) Assume that a source data value 1011 was received at a destination as 1010. Show how Hamming's Error-Correcting code bits will be appended to source data to identify and correct the error of one bit at the destination. You may assume that transmission error occurs only in the source data and not the source parity bits. **(2 Marks)**
- (g) Explain the functioning of the D flip-flop and the T flip-flop with the help of a logic diagram and characteristic table. Also, explain the excitation table of this flip-flop. **(2 Marks)**
- (h) Explain the functioning of the edge-triggered flip-flop with the help of a diagram. **(2 Marks)**
- (i) Represent $(-121.25)_{10}$ and $(0.0625)_{10}$ in IEEE 754 single-precision and double-precision formats. **(2 Marks)**

Q2:

- (a) Refer to the Figure 2(b) on page 8 in Unit 1 of Block 2. Draw the Internal organisation of an 8×8 RAM. Explain all the Input and Output of this organisation. Also, answer the following:
 (i) How many data input and data output lines does this RAM need? Explain your answer.
 (ii) How many address lines are needed for this RAM? Give reasons in support of your answer. **(2 Marks)**
- (b) A computer has 64 K Word RAM with each memory word of 16 bits. It has cache memory having 32 blocks having a size of 32 bits (2 memory words). Show how the main memory address $(1AFC)_h$ will be mapped to the cache address, if
 (i) Direct cache mapping is used
 (ii) Associative cache mapping is used
 (iii) Two-way set associative cache mapping is used.
 You should show the size of the tag, index, main memory block address and offset in your answer. **(3 Marks)**
- (c) What is an Interrupt? Why are interrupts used in a computer? Explain different kinds of interrupts. Also, explain the process of interrupt processing. **(3 Marks)**
- (d) What is an I/O processor? Explain the selector channel structure in the context of the I/O processor. How is an I/O processor different from DMA? **(2 Marks)**
- (e) Assume that a disk has 32 tracks, with each track having 16 sectors and each sector is of size 512 Kilobytes. The cluster size in this system can be assumed to be 2 sectors. A file having the name *mcs012.txt* is of size 16 MB. Assume that it is a new disk, and the first 8 clusters are occupied by the Operating System. Rest all the clusters are free. How can this file be allotted space on this disk? Also, show the content of FAT after the space allocation to this file. You may make suitable assumptions. **(4 Marks)**
- (f) Explain the following, giving their uses and advantages/disadvantages, if needed. (Word limit for the answer of each part is 50 words ONLY) **(6 Marks)**
 (i) Rotational Latency in disks
 (ii) Programmed I/O

- (iii) Resolution of Display and Printer
- (iv) Zip Drive
- (v) Power Supply
- (vi) Keyboard and Mouse

Q3:

- (a) A single-core uniprocessor system has 8 General purpose registers. The machine has RAM of size 64K memory words. The size of every general-purpose register and memory word is 16 bits. The computer uses fixed-length instructions of size 32 bits each. An instruction of the machine can have two operands. One of these operands is a direct memory operand and the other is a register operand. An instruction of a machine consists of bits for operation code, bits for memory operand and bits of register operand. The machine has about 128 different operation codes. The special purpose registers, which are other than general purpose registers, are - Program Counter (PC), Memory Address Register (MAR), Data Register (DR) and Flag registers (FR). The first register among the general-purpose registers can be used as Accumulator Register. The size of Integer operands on the machine may be assumed to be equal to the size of the accumulator register. To execute instructions, the machine has another special register called Instruction Register (IR) of size 32 bits, as each instruction is of this size. Perform the following tasks for the machine. (Make and state suitable assumptions, if any.)
- (i) Design suitable instruction formats for the machine. Specify the size of different fields that are needed in the instruction format. Also, indicate how many bits of the instructions are unused for this machine. Explain your design of the instruction format. Also, indicate the size of each register. **(3 Marks)**
 - (ii) Demonstrate two valid instructions of the machine; put some valid data values in registers and memory locations and show these two instructions. **(2 Marks)**
 - (iii) Assuming that the instructions are first fetched to the Instruction Register (IR), the memory operand is brought to the DR register and the result of an operation is stored in the Accumulator register; write and explain the sequence of micro-operations that are required to fetch and execute an addition instruction that adds the contents of the memory and register operands of the instruction. The result is stored in the accumulator register. Make and state suitable assumptions, if any. **(5 Marks)**
- (b) Assume that you have a machine, as shown in section 3.2.2 of Block 3 having the micro-operations given in Figure 10 on page 62 of Block 3. Consider that R1 and R2 both are 8-bit registers and contain 11100111 and 00111100 respectively. What will be the values of select inputs, carry-in input, and the result of the operation (including carry-out bit) if the following micro-operations are performed? (For each micro-operation you may assume the initial value of R1 and R2 as given above) **(2 Marks)**
- (i) Decrement R1
 - (ii) Add R1 and R2 with Carry
 - (iii) Exclusive OR of the registers R1 and R2
 - (iv) Shift right R1
- (c) Consider that an instruction pipeline has three stages namely instruction fetch and decode (FD), Operand Fetch (OF) and Instruction Execute and store results (ES). Draw an instruction pipeline diagram showing the execution of five sequential instructions using this pipeline. What are the problems with this instruction pipelining? **(3 Marks)**
- (d) Explain the functioning of the Wilkes Control Unit. Also, explain the format of the control memory with the help of a diagram. **(2 Marks)**

(e) Explain the characteristics of RISC? Also, explain the RISC pipelining. **(3 Marks)**

Q4:

(a) Write a program using 8086 assembly Language (with proper comments) that accepts three different digits as input from the keyboard. Each digit is first converted to a binary equivalent. The binary values of these three digits are compared and the middle value is put in the AL register. This AL register is multiplied with each value of a byte array of size 6, which is stored in the memory. The result of the multiplication is stored in the same memory location. You may assume the byte array has the values 02h, 06h, 08h, 03h, 01h, 05h. Make suitable assumptions, if any. **(7 Marks)**

(b) Write a NEAR subroutine using 8086 assembly Language (with proper comments) that returns the average value of the values stored in a byte array of length 3. All three values of the byte array are passed to the subroutine in the stack. You should write both the calling program and subroutine. **(7 Marks)**

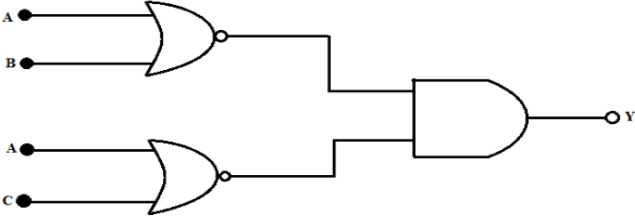
(c) Explain the following in the context of 8086 Microprocessor with the help of an example or a diagram: **(6 Marks)**

- (i) Use of code segment and stack segment registers for computing the respective 20-bit addresses.
- (ii) Any 4 flags of the flag register of 8086 micro-processor
- (iii) Any four shift instructions of 8086 micro-processor

Course Code	:	MCS-013
Course Title	:	Discrete Mathematics
Number	:	MCA (I)/013/Assignment
Maximum Marks	:	100
Last Date of Submission	:	15th October (For July Session) 15th April (For January Session)

There are eight questions in this assignment, which carries 80 marks. Rest 20 marks are for viva-voce. Answer all the questions. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

- Q1:** (a) What is Set? Explain use of Set with examples **(3 Marks)**
- (b) Make truth table for followings. **(4 Marks)**
- i) $p \rightarrow (\sim r \wedge q) \wedge (\sim p \vee r)$
- ii) $p \rightarrow (\sim r \vee \sim q) \vee (p \wedge \sim r)$
- (c) Give geometric representation for followings: **(3 Marks)**
- i) $\{5, -3\} \times \{-2, -2\}$
- ii) $\{-1, 3\} \times \{-2, 3\}$
- Q2:** (a) Draw Venn diagram to represent followings: **(3 Marks)**
- i) $(A \cap B \cap C) \cap (A \cap B \cap C)$
- ii) $(A \cap B \cap C) \cup (B \cup C)$
- iii) $(A \cap B \cup C)$
- (b) Write down suitable mathematical statement that can be represented by the following symbolic properties. **(4 Marks)**
- i) $(\exists x) (\exists y) (\exists z)P$
- ii) $\exists (z) (\exists y) (\forall z)Q$
- (c) Show whether $\sqrt{7}$ is rational or irrational. **(3 Marks)**
- Q3:** (a) Explain use of inclusion-exclusion principle with example. **(2 Marks)**
- (b) Make logic circuit for the following Boolean expressions: **(4 Marks)**
- i) $(xyz) + (xyz)' + (xz'y)$
- ii) $(x'yz)(xyz')(xy'z)$
- (c) What is a tautology? If P and Q are statements, show whether the statement **(4 Marks)**
- $(P \rightarrow Q) \vee (\rightarrow \sim P)$ is a tautology or not.
- Q4:** (a) How many words can be formed using letter of “EXCELLENT” using each letter at most once? **(2 Marks)**
- i) If each letter must be used,
- ii) If some or all the letters may be omitted.
- (b) What is a relation? What are different types of relation? Explain equivalence relation with the help of example. **(3 Marks)**

- (c) Prove that $1^2 + 2^2 + 3^2 + \dots + n^2 = n(n+1)(2n+1)/6$; $\forall n \in \mathbb{N}$ (3 Marks)
- (d) What is counterexample? Explain its use with the help of an example. (2 Marks)
- Q5:** (a) How many different professionals committees of 8 people can be formed, each containing at least 2 Doctors, at least 2 Public Servants and 1 IT Expert from list of 7 Doctors, 6 Public Servants and 6 IT Experts? (4 Marks)
- (b) A and B are mutually exclusive events such that $P(A) = 1/2$ and $P(B) = 1/3$ and $P(A \cup B) = 1/4$. What is the probability of $P(A \cap B)$? (2 Marks)
- (c) Find how many 3 digit numbers are odd? (2 Marks)
- (d) Explain whether the function $f(x) = x + 1$ is one-one or not. (2 Marks)
- Q6:** (a) How many ways are there to distribute 21 distinct items into 6 distinct boxes with: (3 Marks)
- i) At least two empty box.
- ii) No empty box.
- (b) Explain principle of multiplication with an example. (3 Marks)
- (c) Three Sets A, B and C are: $A = \{1, 2, 3, 4, 5, 8, 9, 12, 15, 17\}$, $B = \{1, 2, 3, 4, 8, 9, 10\}$ and $C = \{1, 2, 7, 9, 10, 11, 13\}$. Find $A \cup B \cap C$; $A \cap \sim B \cup C$; $A \cap B \cup C$ and $(A \cap \sim C)$. (4 Marks)
- Q7:** (a) Explain addition theorem in probability. (3 Marks)
- (b) Make Pascal's triangle up to $n = 6$. (2 Marks)
- (c) What is a function? Explain different types of functions with example. (3 Marks)
- (d) Write the following statements in symbolic form: (2 Marks)
- (i) Mr. X is poor but happy.
- (ii) Either eat healthy food or be ready for poor health.
- Q8:** (a) Find inverse of the following functions (3 Marks)
- $$f(x) = \frac{x^3 + 2}{x - 3} \quad x \neq 3$$
- (b) Find dual of Boolean Expression for the output (Y) of the following logic circuit. (3 Marks)
- 
- (c) What is a proper subset? Write the number of proper subsets of the Set $\{a, b, c, d, e, f\}$. (2 Marks)
- (d) "If it rains, then you will play". Write inverse and contrapositive for this sentence. (2 Marks)

Course Code	:	MCS-014
Course Title	:	Systems Analysis and Design
Assignment Number	:	MCA(I)/014/Assignment
Maximum Marks	:	100
Weightage	:	25%
Last Dates for Submission	:	15th October (For July Session) 15th April (For January Session)

This assignment has three questions of 80 marks. Rest 20 marks are for viva voce. Answer all questions. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

- Q1:** Develop SRS for **Student Admission System** . SRS should be as per IEEE standard SRS template. Make necessary assumptions. **(30 Marks)**
- Q2:** Draw the DFDs upto 3rd level for **Student Admission System**. **(30 Marks)**
- Q3:** Draw ERD for **Student Admission System**. Make necessary assumptions. **(20 Marks)**

Course Code	:	MCS-015
Course Title	:	Communication Skills
Assignment Number	:	MCA(I)/015/Assignment
Maximum Marks	:	100
Weightage	:	25%
Last Date of Submission	:	15th October (For July Session) 15th April (For January Session)

This assignment has seven questions. Answer all questions. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

Q1: Read the following passage and answers the questions below:

Nobody actually wants to cause offence but, as business becomes ever more international, it is increasingly easy to get it wrong. There may be a single European market but it does not mean that managers behave the same in Greece as they do in Denmark.

In many European countries handshaking is an automatic gesture. In France good manners require that on arrival at a business meeting a manager shakes hands with everyone present. This can be a demanding task and, in a crowded room, may require gymnastic ability if the farthest hand is to be reached.

Handshaking is almost as popular in other countries—including Germany, Belgium and Italy. But Northern Europeans, such as the British and Scandinavians, are not quite so fond of physical demonstrations of friendliness.

In Europe the most common challenge is not the content of the food, but the way you behave as you eat. Some things are just not done. In France it is not good manners to raise tricky questions of business over the main course. Business has its place after the cheese course. Unless you are prepared to eat in silence you have to talk about something—something, that is, other than the business deal which you are continually chewing over in your head.

Italians give similar importance to the whole process of business entertaining. In fact, in Italy the biggest fear, as course after course appears, is that you entirely forget you are there on business. If you have the energy, you can always do the polite thing when the meal finally ends, and offer to pay. Then, after a lively discussions, you must remember the next polite thing to do—let your host pick up the bill.

In Germany, as you walk sadly back to your hotel room, you may wonder why your apparently friendly hosts have not invited you out for the evening. Don't worry, it is probably nothing personal. Germans do not entertain business people with quite the same enthusiasm as some of their European counterparts.

The Germans are also notable for the amount of formality they bring to business. As an outsider, it is often difficult to know whether colleagues have been working together for 30 years or have just met in the lift. If you are used to calling people by their first names this can be a little strange. To the Germans, titles are important. Forgetting that someone should be called *Herr Doktor* or *Frau Direktorin* might cause serious offence. It is equally offensive to call them by a title they do not possess.

In Italy the question of title is further confused by the fact that everyone with a university degree can be called *Dottore*—and engineers, lawyers and architects may also expect to be called by their professional titles.

These cultural challenges exist side by side with the problems of doing business in a foreign language. Language, of course, is full of difficulties—disaster may be only a syllable away. But the more you know of the culture of the country you are dealing with, the less likely you are to get into difficulties. It is worth the effort. It might be rather hard to explain that the reason you lost the contract was not the product or the price, but the fact that you offended your hosts in a light-hearted comment over an aperitif. Good manners are admired: they can also make or break the deal.

- i. Discuss the importance of culture in doing business in the light of the following statement from the text:

“----- as business becomes ever more international, it is increasingly easy to get it wrong.”(4 Marks)

- ii. How are the French different from the British, where ‘shaking hands’ is concerned? (2 Marks)
- iii. Suggest two ways in which the Italians differ from the Germans in their dealings with business colleagues. (2 Marks)
- iv. What title would you give the passage? (2 Marks)
- v. What would you tell a foreign visitor about “good manners” in our country? (4 Marks)
- vi. Find opposites of the following words from the text: (6 Marks)
 - i. challenge
 - ii. worry
 - iii. animosity
 - iv. friendliness
 - v. difficulty
 - vi. light-hearted

Q2: Use the phrasal verbs given in the box to complete the sentences given below: (10 Marks)

is over	call back	cut off	get through	give up
hang up	hold on	look up	pick up	put through

- i. The phone’s ringing. Why don’t you ----- the receiver?
- ii. I’m afraid she isn’t available at the moment. Can you ----- later?
- iii. Can you -----their number in the directory, please?
- iv. I’m afraid she’s with a client, shall I -----you ----- to her secretary?
- v. Hello? Are you still there? I think we were -----for a moment.
- vi. Mr. Green never seems to be in his office. I’ve been trying to -----to him all morning.
- vii. Could you ----- for a moment? I’ll just find out for you.
- viii. If the telephonist says ‘Thanks you so much for calling’ and plays me that awful electronic music again, I’ll -----.
- ix. If you get a wrong number, it’s polite to say ‘I’m sorry, I’ve dialed the wrong number’ before you ----

- x. If an American telephonist asks ‘Are you through?’, she wants to know if your call -----

Q3: Put the verbs in brackets into the passive form in the following sentences. (10 Marks)

- i. You’ll hardly recognize our office. It (redecorate) since your last visit.
- ii. Two players (send) off the field during last Saturday’s match.
- iii. The hotel, which (complete) only last year (equip) with a business center and a gym.
- iv. Application (invite) for the post of Senior Lecturer in the Department of Architecture. Preference (give) to applicants with teaching experience.
- v. As my car (repair) last Friday, I (give) a lift to work by a colleague.
- vi. As soon as your order (receive), it (process) and an acknowledgment sent.

Q4: Write down *what you would say* in each of these situations. (10 Marks)

- i. Your flight to Delhi is delayed. Find out the reason.

- ii. You’re booked on flight AI 879 on May 16. You want to postpone this to ZZ 857 on May 17.

- iii. Flight RA 372 doesn’t leave till 5pm but you’ve arrived at the check-in desk at 12 noon.

-
- iv. You don't understand how to get a boarding-pass from an automatic machine. Ask a passer-by for help.
-
- v. Someone asks you how to get to the Terminal-3(Delhi Airport) –tell him or her that it's two blocks down and then left.
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- vi. You have arrived late because your flights' delay. Apologize to your host or hostess.
-
- vii. You don't understand some of the dishes on the menu. Ask your companion for help.
-
- viii. You want to order a *plain dosa*, which is not on the menu.
-
- ix. Ask your companion to recommend a local dish.
-
- x. At the end of the meal you want to pay the bill, but the waiter has given it to your companion.
-

Q5:

- a. What are the four phases in a negotiation process? Discuss. **(5 Marks)**
- b. Every New Year XYZ multinational company gives its customers gifts ranging from diaries and calendars to silver items. The financial manager of that MNC says it's too expensive and wants to stop the practice. The sales manager disagrees. Write a dialogue between the two. **(10 Marks)**

Q6: You are the General Manager –HR of the company. You want to talk about the effective ways of making good presentations to the Sales staff. Use the following points to make your presentation. **(15 Marks)**

- How good presentations can benefit your company.
- How speakers should prepare before giving presentations
- The qualities of a good speaker
- How a speaker can keep the attention of the audience
- The effective use of visual aids in presentations

Q7: Imagine that your General Manager has asked you to find out the precautions and preparations needed to arrange for the disaster management provisions in your company. **(20 Marks)**

These are the notes you've made. Draft a report of about 300 words to your General Manager by expanding the notes into paragraphs.

Identified Dangers

- i. Fire— particularly in areas where a lot of paper is stored
- ii. Earthquake —cracks due to previous earthquake
- iii. Lightening —inadequate safety measures

Proposals

- i. Fire frightening equipment to be maintained regularly
- ii. Fire fighting training to the support staff
- iii. Display of safety regulations
- iv. Hooters to be installed —signal warning
- v. Exit outlets to be highlighted
- vi. Important telephone numbers —Hospital, Fire-Brigade, Doctors, senior officials of the company
- vii. Action committee to be formed

Course Code	:	MCSL-016
Course Title	:	Internet Concepts and Web Design (Lab Course)
Assignment Number	:	MCA(I)/016/Assignment
Maximum Marks	:	100 (including Lab Record Marks)
Weightage	:	25%
Last Dates for Submission	:	15th October (For July Session) 15th April (For January Session)

There are two questions in this assignment carrying a total of 40 marks. Your Lab Record will carry 40 Marks. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation. Submit the screenshots along with the coding and documentation.

Q1: (35 Marks)

An e-Commerce website maintains the list of its products and sellers. The website displays the list of the items, the seller who sells those items and the price of the items. In addition, it also displays a form for seller registration and a form for the customer for feedback about the website. Design and create four web pages for the e-Commerce company namely, *Home*, *Items*, *Seller_Registration* Form and *Feedback*, having the following features:

For consistency, every webpage of website should consist of three basic divisions –

Header – This division should be the same for all four web pages and should display the name and logo of the e-commerce company. This division should be in different background colour.

PageList - This division should be the same for every web page. It should contain links to all the web pages, viz. *Home*, *Items*, *Seller_Registration* Form and *Feedback* form.

Content - This division should display the basic information as given below. The web pages that you are designing should differ in this Division only.

The Content division of the different pages should be as under:

- The *Home* page should include a message from the e-commerce company, welcoming all the customers to the website.
- The *Item* page should display information about all the items being sold. It should include the item name, specification, item price etc. You should display this information by using a table.
- The *Seller_Registration* page should contain a form, which should have fields – Seller name, phone number, address and a Submit button. You should write JavaScript code to verify that all the fields are filled with some data. This code should be run when the Submit button is pressed.
- The *Feedback* page should display another form that has three input fields – The name of the customer, the reason for feedback and a text area for giving the feedback. In addition, this form should have a Submit button.

Q2: (5 Marks)

List one of the ways of using CSS along with an HTML file. List the features of Angular Framework.

Course Code : **MCSL-017**
Course Title : **C and Assembly Language Programming**
Assignment Number : **MCA(I)/L017/Assignment**
Maximum Marks : **100**
Weightage : **25%**
Last Dates for Submission : **15th October (For July Session)**
15th April (For January Session)

This assignment has two sections. Answer all questions in each section. Each Section is of 20 marks. Your Lab Records will carry 40 Marks. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the programme guide for the format of presentation.

Note: You must execute the program and submit the program logic, sample input and output along with the necessary documentation. Assumptions can be made wherever necessary.

Section 1: C Programming Lab

Q1: **(20 Marks)**

Design a flow chart and write an interactive program for the problem given below:

Assume that the United States of America uses the following income tax code formula for their annual income:

First US\$ 5000 of income: 0% tax
Next US\$ 10,000 of income: 10% tax
Next US\$ 20,000 of income: 15% tax
An amount above US\$ 35,000: 20% tax.

For example, somebody earning US\$ 38,000 annually would owe
 $US\$ 5000 \times 0.00 + 10,000 \times 0.10 + 20,000 \times 0.15 + 3,000 \times 0.20$, which comes to US\$ 4600.

Write a program that uses a loop to input the income and calculate and report the owed tax amount. Make sure that your calculation is mathematically accurate and that truncation errors are eliminated.

Note: Assumptions can be made wherever necessary and list them. You must execute the program and submit the program logic, sample input and output along with the necessary documentation for this question.

Section 2: Assembly Language Programming Lab

Q2: **(5 Marks)**

A multiplexer circuit accepts N inputs and outputs the value of one of those inputs. The selection of which input goes out on the output is determined by a set of M control inputs. A multiplexer with M control inputs can steer up to 2^M inputs to a single output. Design 2-to-1 multiplexer.

Q3:

(3×5 = 15 Marks)

Write and run following programs using 8086 assembly language.

- (a) Write and run an 8086 assembly language program to convert a 4 digit BCD number to its binary equivalent.
- (b) Write and run an 8086 Assembly language program to arrange the given list of N numbers in ascending order.
- (c) Write and run an 8086 assembly language which take a binary number (not more than eight 20 digits) and find 2's complement of it.