MASTER OF COMPUTER APPLICATIONS (MCA)

MCA/ASSIGN/SEMESTER-I

ASSIGNMENTS

(July - 2020 & January - 2021)

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

MCSL-016, MCSL-017

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THE PEOPLE'S UNIVERSITY

SCHOOL OF COMPUTER AND INFORMATION SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110 068

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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/2020-21**
Maximum Marks	:	**100**
Weightage	:	**25%**
Last Date of Submission	:	**31st October, 2020 (For July, 2020 Session)**
	:	**15th April, 2021 (For January, 2021 Session)**

There are eight questions in this assignment, which carry 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. Insert comments in the code for better understanding.

Q1. **(10 Marks)**

Write an algorithm, draw a corresponding flowchart and write an interactive program to convert a decimal number to its hexadecimal equivalent.

Q2. **(10 Marks)**

Write an interactive C program to find the MINIMUM and MAXIMUM (value) array elements in a given 3X3 matrix.

Q3. **(2X 5 =10 Marks)**

Write the following functions that:

a) Calculate simple interest.
b) Calculate compound interest.

Write an interactive C (main) program to provide the above functions as options to the user using *switch* statement and performs the functions accordingly.

Q4. **(2 ½ X 4 =10 Marks)**

Write the following string functions that:

a) Replace a character in a given string with a character suggested by the user.
b) Convert the given string into uppercase.
c) Convert the alternate character into upper case.
d) Check each and every character in the string and display whether it is an alphabet, digit or special character.

Write an interactive C (main) program to provide the above string functions as options to the user using *switch* statement and perform the functions accordingly.

Q5. **(10 Marks)**

Write a program to search a given string among the available strings, using *Binary Search.*

Q6.   **(10 Marks)**

Using *structures* concept in C programming, write a program to calculate the daily wages for each worker (if 7 workers are employed in an iron and hardware shop) at an hourly basis of Rs.100/- (with a constraint that each worker may be allowed maximum upto 4 hours only per day). It should display the name of the worker, date and total wages for that day.

Q7.   **(10 Marks)**

Using *pointers*, find the sum of all the elements of a 3X3 matrix.

Q8.   **(2 X 5 =10 Marks)**

Using *file handling*, write a C program:

(a)   To generate 10 records for MCA 1st semester students and store them in *stu.dat* along with appropriate fields.

(b)   To read the data from the file stu.dat (created above) and compute the total marks and average marks and display the grade(assumptions can be made).

Course Code	:	MCS-012
Course Title	:	Computer Organisation and Assembly
		Language Programming
Assignment Number	:	MCA(1)/012/Assignment/2020-21
Maximum Marks	:	100
Weightage	:	25%
Last Dates for Submission	:	31st October, 2020 (For July, 2020 Session)
	:	15th April, 2021 (For January, 2021 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. Answer to each part of the question should be confined to about 300 words. Make suitable assumption, if any.

Q1 (Covers Block 1)

(a) Please refer to Figure 4 of Unit 1 of Block 1 on page 11 in respect of Instruction execution example. Assuming a similar machine is to be used for execution of the following three consecutive instructions: (you must read Block 2 and 3 also)

LOAD C ; Loads the content of Memory location C into the Accumulator Register.

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

STORE A ; Stores the content of Accumulator register AC in memory location A.

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 16 bits with 8 bits for operation code (opcode) and 8 bits for specifying one direct operand
- Main Memory has 256 words.
- The three consecutive instructions are placed starting from memory location $(2A)_h$; operand A is at location $(D1)_h$ and contains a value $(00AA)_h$, Operand B is at location $(D2)_h$ and contains a value $(BB3B)_h$ and operand C is at location $(D3)_h$ and contains a value $(2C2C)_h$.
- The AC, IR and MBR registers are of size 16 bits, whereas PC and MAR registers are of size 8 bits. The initial content of PC register is $(2A)_h$

Draw the diagrams showing the following information:

(i) 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 content of all the stated registers.   **(2 Marks)**

(ii) Draw three more diagrams, each showing the state of machine after execution of every instruction viz. LOAD, ADD and STORE. Show the changes in the values of Registers and memory location, if any, due to execution of instruction. Show all the addresses and values in hexadecimal notations. You must perform the necessary arithmetic using signed 2's complement notation and show the results indicating overflow, if any.   **(3 Marks)**

(b) Perform the following conversion of numbers: **(2 Marks)**
   i) Decimal $(5467987690)_{10}$ to binary and hexadecimal
   ii) Hexadecimal $(345ABCDE)_h$ into Octal.
   iii) String "Format \n is an escape" into UTF 8
   iv) Octal $(7123456)_O$ into Decimal

(c) Simplify the following function using K-map: $F(A, B, C, D) = \Sigma (2, 4, 6, 7, 10, 14)$
   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 1010. You must list all the bit values including Cin and Cout and overflow condition. **(1 Mark)**

(e) Explain the functioning of a 2×4 Decoder. You should draw its truth table and explain its logic diagram with the help of an example input. **(2 Marks)**

(f) Assume that a source data value 1001 was received at a destination as 1101. Show how Hamming's Error-Correcting code bits will be appended to source data, so this error of one bit is identified and corrected at the destination. You may assume that error while transmission occurs only in the source data and not the code. **(2 Marks)**

(g) Explain functioning of J-K 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 master-slave flip-flop and Synchronous counter with the help of a diagram of each. **(2 Marks)**

(i) Represent $(-57.125)_{10}$ and $(0.00000025)_{10}$ in IEEE 754 single precision and double precision formats. **(2 Marks)**

Q2 (covers Block 2)

(a) Refer to the Figure 2(b) on page 8 in Unit 1 of Block 2. Draw the Internal organisation of a 128×8 RAM. Explain all the Input and Output of the organisation. Also answer the following:
   (i) How many data input and data output lines does this RAM needs? Explain your answer.
   (ii)How many address lines are needed for this RAM? Give reason in support of your answer.
   (2 Marks)

(b) A computer has 4 GB RAM with each memory word of 64 bits. It has cache memory having 1024 blocks having a size of 128 bits (2 memory words). Show how the main memory address $(C1AAF0AB)_h$ will be mapped to 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 tag, index, main memory block address and offset in your answer. **(3 Marks)**

(c) What is Memory mapped I/O? How is it different to Isolated I/O? Also explain the steps of the process of interrupt processing. **(3 Marks)**

(d) What is Programmed I/O? Explain with the help of a flowchart. Differentiate between the working of Programmed I/O with DMA. **(2 Marks)**

(e) Assume that a disk has 256 tracks, with each track having 64 sectors and each sector is of size 4M. The cluster size in this system can be assumed to be 4 sectors. A file having the name *MCS012.txt* is of size 128 M. Assume that disk has 16 free - continuous clusters of 8 sectors each. How can this file be allotted space on the 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.
(Word limit for answer of each part is 50 words ONLY**)** **(6 Marks)**
(i) SCSI Controllers
(ii) Removable Disks
(iii)Colour Depth in the context of video cards
(iv)Input/ Output Processor
(v) Latency time and average data transfer rate
(vi)Address space and memory space in Virtual memory

Q3 (Covers Block 3)

(a) A computer has a single processor of one core. It has 16 general purpose registers. The machine has 64 KB RAM. The size of each register and memory word is 32 bits. The computer uses fixed length instructions of size 32 bits each. An instruction of the machine can have two operands – the first operand is a memory operand and the second operand is a register operand (register operand can be a general purpose register). Memory operand uses direct addressing, however, register operand use either register direct or register indirect addressing. (Please note that if register operand uses register indirect addressing, then the stated register contains the address of the operand in the memory.) An instruction of a machine consists of bits for operation code, one bit for addressing mode, bits for one memory operand and bits for one register operand. The machine has about 200 different operation codes. The addressing mode bits specifies addressing mode as:

Addressing mode bit	Register Operand	Memory Operand
0	Indirect	Direct
1	Direct	Direct

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 of 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 accumulator register. In order 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 instruction format. **(3 Marks)**

(ii) List at least two valid instructions, and put some valid data values in registers and memory locations, and demonstrate examples of different addressing modes for this machine. **(2 Marks)**

(iii) Assuming that the instructions are first fetched to Instruction Register (IR), memory operand is brought to DR register, and 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 instruction, which performs addition of two operands having addressing mode bits as 1. Please note that one of the operand is direct memory operand and second is an Register Operand. 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 as given in Figure 10 on page 62 of Block 3. Consider that R1 and R2 both are 8 bit registers and contains 01010101 and 10011010 respectively. What will be the values of select inputs, carry-in input and result of 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) Increment R1
(ii) Subtract R2 from R1 with borrow
(iii) Exclusive OR of R1 and R2
(iv) Shift left R1

(c) Explain the Instruction pipelining. Also explain the problems of instruction pipelining. **(3 Marks)**

(d) Explain the organisation of control memory with the help of a diagram. Also differentiate between Horizontal and vertical micro-instructions. **(2 Marks)**

(e) What are the advantages of Large Register file in RISC? Explain with the help of a diagram. Also explain the concept of RISC pipelining. **(3 Marks)**

Q4 (Covers Block 4)

(a) Write a program using 8086 assembly Language (with proper comments) that accepts a single character input from the keyboard, if this character is '+' then the program adds two six byte arrays stored in the memory into a third array in the memory, otherwise program simply terminates. Make suitable assumptions, if any. (The effect of addition should be similar to the array operation like:

for i=1 to 6 {C[i]=A[i]+B[i];}) **(7 Marks)**

(b) Write a program using 8086 assembly Language (with proper comments) that finds the top two values in an array of positive numbers stored in an array of size 10. **(7 Marks)**

(c) Explain the following in the context of 8086 Microprocessor : **(6 Marks)**
    (i)   Physical address calculation using CS:IP and SS:SP pairs
    (ii) Processing of software Interrupts in 8086 microprocessor
    (iii)Indirect Addressing modes of 8086 microprocessor

Course Code	:	MCS-013
Course Title	:	Discrete Mathematics
Assignment Number	:	MCA(I)/013/Assignment/2020-21
Maximum Marks	:	100
Weightage	:	25%
Last Dates for Submission	:	31st October, 2020 (For July, 2020 Session)
	:	15th April, 2021 (For January, 2021 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) State and explain De Morgan's law for Boolean algebra. **(2 Marks)**
(b) Make truth table for followings. **(4 Marks)**

     i) $p \rightarrow (q \lor \sim r) \land (p \land \sim r)$

     ii) $p \rightarrow (\sim r \lor q) \land (\sim p \land r)$

(c) Give geometric representation for followings: **(4 Marks)**
     i) R x { 2, -4}
     ii) {5, 5) x (-2, -2)

Q2.
(a) Draw a Venn diagram to represent followings: **(3 Marks)**
     i) $(A \cap B \cup C) \cap (A \cap B \cap C)$
     ii) $(A \cap B \cap C) \cap (A \cup B \cap C)$

(b) Write down suitable mathematical statement that can be represented by the following symbolic properties. **(2 Marks)**
     i) $(\exists x)(\exists y)(\forall z) Q$
     ii) $\forall (z)(\exists y)(\exists z) P$

(c) Show whether √2 is rational or irrational. **(3 Marks)**

(d) Explain circular permutation with the help of an example. **(2 Marks)**

Q3.
(a) Explain inclusion-exclusion principle with example. **(2 Marks)**

(b) Make logic circuit for the following Boolean expressions: **(4 Marks)**
     i)   (x'yz) + (x'y'z) +(x+y+z)
     ii)   (x'yz) (xyz') (x'y'z)

(c) What is a tautology? If P and Q are statements, show whether the statement
$(P \rightarrow Q) \land (Q \rightarrow P)$ is a tautology or not. **(4 Marks)**

Q4.

(a) How many words can be formed using letter of UNIVERSITY using each letter at most once?

    i) If each letter must be used,

    ii) If some or all the letters may be omitted. **(3 Marks)**

(b) Show whether $P \rightarrow Q$ and $(\sim P \vee Q)$ are equivalent or not **(3 Marks)**

(c) Prove that $1^2 + 2^2 + 3^2 + \ldots + n^2 = n(n+1)(2n+1)/6 \; ; \forall \; n \in N$ **(4 Marks)**

Q5.

(a) How many different professionals committees of 12 people can be formed, each containing at least 4 Doctor, at least 3 Public Servant and 2 ICT Experts from list of 10 Doctors, 8 Public Servant and 10 ICT Experts? **(3 Marks)**

(b) A and B are mutually exclusive events such that $P(A) = 0.4$ and $P(B) = 0.5$. What is the probability that either A or B does not occur. **(2 Marks)**

(c) Explain whether $(p \vee q) \rightarrow (q \rightarrow r)$ is a tautology or not. **(3 Marks)**

(d) Prove that the inverse of one-one onto mapping is unique. **(2 Marks)**

Q6.

(a) How many ways are there to distribute 11 district objects into 6 distinct boxes with:

    i) At least two empty box.

    ii) No empty box. **(2 Marks)**

(b) Explain proof by contradiction, with the help of an example. **(2 Marks)**

(c) Set A,B and C are: **(4 Marks)**

    A = {1, 2, 3,4, 5,7,8,9,12,15,17}, B = { 1,2, 3 ,4, 5,6,7, 9,10 } and

    C ={ 2, 5,7,9,10,11, 13,14}.

    Find $A \cup B \cup C$, $A \cup B \cap C$, $A \cap B \cap C$ and $(A \sim C)$.

(d) what is power set ? Find power set of set A ={a,e,i,o,u). **(2 Marks)**

Q7.

(a) Find how many 3 digit numbers are odd? **(2 Marks)**

(b) A coin is tossed n times. What is the probability of getting exactly r heads? **(2 Marks)**

(c) What is relation? Explain difference between relation and function with the help of example. Also explain transitive relation with the help of example. **(4 Marks)**

(d) Write the following statements in symbolic form: **(2 Marks)**

    i) If you work hard you get success

    ii) Either do physical exercise or be ready for poor health

Q8.

(a) Find inverse of the following function: **(3 Marks)**

$$f(x) = \frac{x^2 + 5}{x - 3} \quad x \neq 3$$

(b) Explain under what conditions on sets A and B is $A \times B = B \times A$?. **(2 Marks)**

(c) Find dual of Boolean Expression for the output of the following logic circuit.   **(3 Marks)**
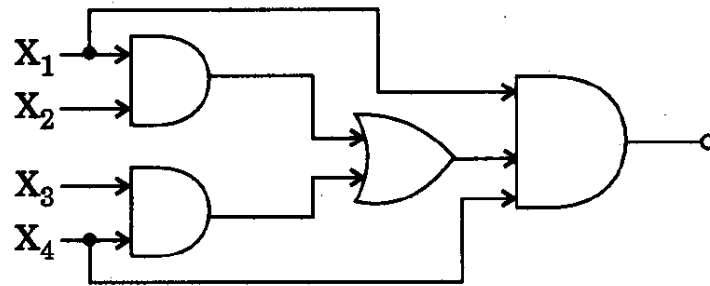
(d) Make Pascal's triangle up to n = 6.   **(2 Marks)**

Course Code	:	**MCS-014**
Course Title	:	**Systems Analysis and Design**
Assignment Number	:	**MCA(I)/014/Assignment/20-21**
Maximum Marks	:	**100**
Weightage	:	**25%**
Last Dates for Submission	:	**31ˢᵗ October, 2020 (For July, 2020 Session)**
	:	**15ᵗʰ April, 2021 (For January, 2021 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 theformat of presentation.

Q1. Develop SRS for an **Online Examination Management** **(30 Marks)**
Systemfor a University**.** SRS should be as per IEEE standard SRS
template. Make necessary assumptions.

Q2. Draw the DFDs upto 3ʳᵈ level for **Online Examination** **(30 Marks)**
Management System for a University.

Q3. Draw ERD for an**Online Examination Management System**for a **(20 Marks)**
University.Make necessary assumptions.

Course Code	:	MCS-015
Course Title	:	Communication Skills
Assignment Number	:	MCA(I)/015/Assignment/2020
Maximum Marks	:	100
Weightage	:	25%
Last Dates for Submission	:	31st October, 2020 (For July, 2020 Session)
	:	15th April, 2021 (For January, 2021 Session)

This assignment has seven questions. Answer all questions. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

Q1:

Read the passage below and answer the questions that follow:

Whatever the type of job interview — a walk-in, a telephone interview or a regular in-person job interview, preparation is the key. It is important that you keep yourself in a state of high motivation and readiness, making optimum use of your time to equip yourself to excel. Here are a few things you'd like to do for sure, by way of preparation.

You are certain to be asked specific questions about your potential employer, so make sure you've done your homework on company information like company history, recent performance, their last year's profits and latest product launches. Nothing is as disappointing as when a candidate shows enthusiasm and then doesn't even know the most basic facts and figures about the company. So, where can you find all this information? The most likely place is the Internet. A visit to the company website could help you get all the vital statistics, including products and services as well as a feel of the company culture. You must also check out the annual report and look for a press or company news page. Put their name into a search engine to see if they've had any recent interesting stories written about them. It is also advisable to tap industry sources, trade journals, newspapers and other business publications to give you good background knowledge of the industry as well as the company.

Talk to people who work in the company or in similar companies / areas to gather as much information as you can about the nature of work, responsibilities, work culture and work requirements.

For the interview, you need to know your CV inside out. Go through your CV carefully and make notes on how you will elaborate or illustrate what you have stated. You need to be ready with examples from your experience to be able to substantiate all the claims you have made. Try to relate specific areas of your CV back to the job description. It will make it clear to the interviewer why they should hire you. Also go through the copy of your application carefully before the interview. The interview panel is likely to ask specific questions about it.

Going for a job interview is no different from going for an exam. It is important that you go well prepared and confident so that you can field any question that is put to you.

Before the Interview

Apart from finding out about the company and being thorough with your CV, it would be helpful to follow these tips:

- Make a rational assessment of yourself before you go for the interview. Know your strengths and weaknesses.
- Review your skills and abilities.
- Have a mock interview with a friend based on the common interview questions you're likely to face.
- If you are asked to bring certificates, references, etc, get them ready well in advance to avoid having to chase around them on the morning of the big day.
- If you have filled up a statement of purpose as part of the application, be ready for some probing questions based on this.
- Be sure you know the time, date and location of the interview.
- Decide how you will get there and when you need to set off to arrive in good time, anticipating any delays. Visit the place once beforehand if possible.
- If you look good, you tend to feel good too. Avoid any last minute panic by preparing what you're going to wear the night before.
- Don't go into the interview with lots of baggage - psychological or physical. Take the bare minimum with you so you can concentrate on the interview, and nothing else.
- Prepare at least 5 questions that you would like to ask the panel about the company or your job. You don't have to ask them all. See for yourself what is most appropriate to ask during the interview.

(a) What should be your state of mind when getting ready for a job interview?   **(2 Marks)**

(b) Why do you need to do adequate homework about the company where you have been called for an interview?   **(2 Marks)**

(c) What sort of information can you get about the company from the internet?   **(2 Marks)**

(d) Going for an interview is just like going for an exam? Discuss.   **(2 Marks)**

(e) Regarding the tips given in the passage which is the most useful for you and why.   **(2 Marks)**

Q2:

Find words from the passage that mean the same as the following: **(10 Marks)**

(a)   The state of being prepared for something
(b)   To the maximum
(c)   To stand out
(d)   Possible in the future
(e)   Eagerness
(f)   Most important
(g)   Give details
(h)   Objective and reasonable
(i)   Searching
(j)   Being aware of

Q3:

Identify the part of the sentence which is grammatically incorrect: **(5 Marks)**

(1) Even in thick fog, (2) the tower of the Taj (3) can be seen clearly (4) and so do those of the Agra fort.

(1) The ship had sank (2) in the Pacific (3) before the distress signal (4) was sent.

(1) Rajiv drove (2) as fastly as he could (3) but failed to (4) overtake the train.

(1) I don't wish (2) to buy a new camera (3) as my old one (4) works perfect.

(1) The meanings of certain (2) difficult terms and phrases (3) are given (4) in the bottom of the page.

Q4:

Rewrite these sentences beginning with the words given below.   **(5 Marks)**

(a) The crop have been destroyed due to heavy rainfall.
    Heavy rainfall………………..
(b) We will hold the meeting on 9th of this month.
    The meeting………………..
(c) The farm is being sold.
    They are ………………..
(d) You are requested to maintain silence.
    Please ………………..
(e) The college has organized an inter-school debate competition.
    An inter-school………………..

Q5:

Fill in the blanks with a/an, the or no article Ǿ. **(10 Marks)**

The   larger …….. meeting, the more difficult it becomes to reach at ……..
decision. …….. ideal size of …….. meeting depends on…….. purpose of
…….. meeting. If…….. meeting has been called to give…….. information
to the members, the   number of participants do not matter. But if ……..
meeting has been called to take…….. decision on any matter, it is advisable
to call just…….. few individuals for it.

All…….. meetings have something in…….. common. …….. most
important feature is …….. agenda. The next is the role of ……..
Chairperson. …….. efficient chairperson will adhere to …….. agenda and
time and focus only on…….. purpose, and …….. reaching desired
objectives of the meeting.

Q6:

Write short notes on the following: **(10 Marks)**

(a)   An effective job interview

(b)   How to overcome panic while presenting?

Q7:

Write an essay in 250 to 300 words on **any one** of the following: **(20 Marks)**

- The impact of social media on citizens
- Importance of body language in presentations
- An effective way of taking minutes for any meeting

Q8:

Mark the stress in the following words: **(10 Marks)**

examine	examination
academic	academician
favourite	favoritism
exhibit	exhibition
govern	government

Q9:

Write a conversation between you and your grandparents. Discuss how people **(10 Marks)** have, over the years, changed the way they spend their leisure time.

Grandfather: We would usually spend our leisure time reading a book or chatting with friends.

You:

(Take about ten turns).

Q10:

Write a letter to a friend about your new job in an IT corporate company. Talk **(10 Marks)** about the type of work that you do and the satisfaction that you derive from it. Also talk about your colleagues. Write in about 150 words.

Course Code   :   MCSL-016
Course Title   :   **Internet Concepts and Web Design (Lab Course)**
Assignment Number   :   **MCA(1)/016/Assign/2020**
Maximum Marks   :   **100 (including Lab Record Marks)**
Weightage   :   **25%**
Last Dates for Submission : **31ˢᵗ October, 2020 (For July, 2020 Session)**
                        :   **15ᵗʰ April, 2021 (For January, 2021 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)**
A University offers its programmes online. It allows students to take admission though an online form. The dates of online admissions are announced on the University website along with the details of the programmes on offer. Design and create four web pages for the website of the University namely, *Home*, *Programme List*, *Registration* Form and *Important Dates,* having the following features:

For consistency, every web page of the website should consists of three basic divisions –

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

Options -   This division should be same in every web page and should be towards the left in every web page. It should contain links to all the web pages viz. *Home*, *Programme List*, *Registration* and *Important Dates*.

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

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

- *Home* page should include Welcome message, the aims and objectives of the University and strengths of the University

- *Programme List* page should display information about the programmes of the University in a tabular form. The table should contain Programme Code, Programme name, duration, Medium of instruction, eligibility criteria and total fee of the Programme.

- *Registration* page should contain a form which should have fields - name of the student, email id, phone, qualification of student, programme being registered, and a Submit button. You should also write the JavaScript code to verify that all the fields are filled by the person registering for the University.

- *Important Dates* page should display the start date of admission, the last date of admission and start date of commencement of programme, using an unordered list.

Q2:   **(5 Marks)**
What is the need of CSS? What are its important features of CSS? What is Angular JS? How is Angular JS similar or different to JavaScirpt?

Course Code	:	MCSL-017
Course Title	:	C and Assembly Language Programming
Assignment Number	:	MCA(I)/L017/Assignment/2020
Maximum Marks	:	100
Weightage	:	25%
Last Dates for Submission	:	31st October, 2020 (For July, 2020 Session)
		15th April, 2021 (For January, 2021 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)**

Write an interactive C program for "MCA Student Semester-End Results" which prompts the user with the following menu options on the opening menu and performs the corresponding functionalities:

1) Registration Status (Registration details like enrolment no, current semester, fee-details, study centre, regional centre etc)
2) Courses in the Current Semester
3) Assignment Submission Schedules
4) Assignment Marks (semester-wise, course-wise till current semester)
5) Term End Exam Marks(semester-wise, course-wise till current semester)
6) Quit
Enter your choice:

Note: You must execute the program and submit the program logic, complete C code for the assignment question, sample input and output, screenshots along with the necessary documentation for this practical question.

Section 2: Assembly Language Programming Lab

Q1.

a) Design a two bit down counter circuit that counts from 3 to 0. It should have states 11, 10, 01, and 00. The initial state of the counter may be assumed to be 11. The counter will be in following successive states: 11, 10, 01, 00, 11, 10, 01, 00, 11,... Use J-K flip flop to design the circuit. You must design the circuit using state transition diagram and Karnaugh's maps.   **(5 Marks)**

b) Write and run a 8086 Assembly language program that converts a three digit ASCII number stored in three consecutive byte locations in the memory, into a binary number. The output should be stored in DX register. For example, if three consecutive byte locations contain '345' (please note they are three ASCII digits), then the DX should get binary equivalent of decimal number 543, which is $(0000\ 0010\ 0001\ 1111)_2$. This binary value will be stored in DX register. **(5 Marks)**

c) Write and run (using appropriate calling program) a near procedure in 8086 assembly language, which is passed a single parameter by the calling program. The procedure checks if the input parameter has a value zero or not. If the value of input parameter is zero then procedure/program is terminated, otherwise a value of 1 is returned to the calling program, which then continue to execute the remaining program. Make and state suitable assumptions, if any. **(5 Marks)**

d) Write and run a 8086 assembly language program that finds the sum of first N natural numbers. The value of N is input to the assembly program. The sum is stored in DX register. Assume the value of N between 1 and 10 only. **(5 Marks)**