

(Please write your Enrollment Number)

Enrollment No. 47

END TERM EXAMINATION
End-Semester, December 2015

Subject Code: MCA 101	Subject: Fundamental of IT
Time : 3 Hours	Maximum Marks : 60
Note: Attempt Five questions in all. Question No. 1 is compulsory. Attempt one question from each of the Units I, II, III & IV.	

Q1. Answer the following:

(2x10=20)

- ☒ (a) What do you understand by Microcomputer?
- ☒ (b) Differentiate between system software and application software.
- ☒ (c) How does internet differ from intranet?
- ☒ (d) What are signed and unsigned numbers?
- ☒ (e) Write a note on World Wide Web.
- ☒ (f) What is CMOS memory? What is its use?
- ☒ (g) How do you differentiate between plotters and printers?
- ☒ (h) Differentiate between syntax error and logic error.
- ☒ (i) What do you understand by the term firmware?
- ☒ (j) Briefly explain different network types.

UNIT - I

Q2.

(6,4)

- ☒ (a) What is the purpose of binary coding system? Briefly explain the terms BCD, ASCII and EBCDIC.
- (b) Discuss the applications of IT in education?

Q3.

- (a) What is information technology? Describe its essential components.

(4)

- (b) Perform the following operations:

(3x2=6)

- (i) Convert $(103)_{10}$ to hexadecimal, octal and binary number
- (ii) Add 143 and 23 in binary
- (iii) Show how 48.63 would be represented. *in octal*

UNIT - II

Q4.

(4,3,3)

- ☒ (a) What are optical input devices? Where are they used and for what purpose?
- (b) Briefly discuss the importance of cache memory.
- (c) Differentiate between static RAM and dynamic RAM.

Q5.

(3,3,4)

- (a) Explain in detail how a touch screen works.
- (b) Can a program written in a high-level language be executed without a linker? Explain.
- (c) What are language processors? Explain briefly.

PTO

UNIT - III

- Q6. (5,5)
- ✓ (a) In what way are virtual memory and paging used in memory management of multi-programmed operating system?
 - (b) What is a process? Discuss its various states.

- Q7. (4,4,2)
- (a) Why is a time sharing operating system used?
 - (b) What do you understand by DBMS?
 - (c) What does the boot sector in a DOS disk contain?

UNIT - IV

- Q8. (4,6)
- (a) Can extranet be implemented using leased private lines? If yes, what are the problems of doing so?
 - (b) What are the layers in the TCP/IP protocol? Explain the function of each layer.

- Q9. Write notes on the following: (5x2=10)
- ✓ (a) Firewall
 - (b) Inter-networking devices

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Enrollment No. 02404092014

END TERM EXAMINATION
MCA End-Semester, December-2014

Subject Code: MCA-107	Subject: Computer Organization	Maximum Marks : 60
Time : 3 Hours		
Note: Attempt Five questions in all. Question No. 1 is compulsory.		

(2x10=20)

Q1

- (a) What is the data transfer rate of PCI bus?
- (b) Distinguish between microinstruction and nano instruction.
- (c) What is the difference between real memory and virtual memory?
- (d) What do you understand by internal interrupt?
- (e) What is the difference between Combinational Logic and Sequential Logic?
- (f) Why does increasing the capacity of cache tend to increase its hit rate?
- (g) In direct-mapped cache with a capacity of 16KB and a line length of 32 bytes, how many bits are used to determine the byte that a memory operation references within a cache line, and how many bits are used to select the line in the cache that may contain the data?.
- (h) What is Auxiliary Memory?
- (i) Differentiate between RISC and CISC.
- (j) Define the terms: Seek time, Rotational Delay, Access time?

(5,5)

Q2

- (a) Verify whether the expression given below is valid using algebraic method only.
 $ab' + bc' + ca' = a'b + b'c + c'a$
- (b) Design a two bit comparator that compares two 2-bit values in whole, rather than one bit at a time. The circuit has inputs $X_1 X_0$ and $Y_1 Y_0$, and outputs $X > Y$, $X = Y$, and $X < Y$?

(5,5)

Q3

- (a) Show the hardware including logic gates for the control function that implements the RTL statement $xy^1 T_0 + T_1 + x^1 y T_2 : A \leftarrow A + 1$.
- (b) Write and explain types of parallel processor systems?

(5,5)

Q4

- (a) Describe the mechanism of an instruction fetching, decoding and execution using flow chart?
- (b) What are the functions performed by an I/O interface? Explain with an example.

(5,5)

Q5

- (a) Compare and contrast isolated I/O and memory mapped I/O.
- (b) Why does I/O interrupt make more efficient use of the CPU?

(2.5x4=10)

Q6 Write a short note on any four of the following:

- (a) Serial and parallel interface.
- (b) Parallel computing.
- (c) Gossbar switching.
- (d) Explain about the multiprocessor?
- (e) Addressing modes?

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Enrollment No. 01704092015

END TERM EXAMINATION
End-Semester, December 2015

Subject Code: MCA 103

Subject: Problem Solving using C

Time : 3 Hours

Maximum Marks : 60

Note: Attempt Five questions in all.

Question No. 1 is compulsory. Attempt one question from each of the Units I, II, III & IV.

Q1. Attempt any **five** (4×5=20)

- (a) Differentiate between high level and low level programming.
- (b) Who created the C programming language? List few features of C language.
- (c) How linked list differs from array?
- (d) Differentiate between while loop and do-while loop. Give an example also.
- (e) What is Flow Chart? What is maximum number of outputs that any algorithm can have?
- (f) What are storage classes in C? Give its types.

UNIT-I

- Q2. (a) Explain Linux operating system. Give some commonly used commands and also state usage of these commands. (5,5)
(b) Discuss vim editor.

- Q3. (a) Explain various data types available in C. (5,5)
(b) Write a programme in C to illustrate use of get() and put() functions.

UNIT-II

- Q4. (a) What are pointers? How are they useful? Explain with example. (5,5)
(b) Write a programme using pointers to compute sum of all elements stored in an array.

- Q5. (a) What is recursion? Write a programme in C to implement recursion. (5,5)
(b) Differentiate between 'call by value' and 'call by reference', in tabular form.

UNIT-III

- Q6. (a) What are files? Explain error handling during file I/O operation. (5,5)
(b) Explain two different dynamic memory allocation functions with example.

- Q7. (a) What is algorithm? What are its characteristics? (5,5)
(b) Write a flow chart for finding roots of a quadratic equation of the form $ax^2 + bx + c$.

UNIT-IV

- Q8. (a) Define structure and union. Explain with example. (5,5)
(b) What are C pre-processor directives? Explain in detail.

- Q9. (a) Explain calloc() and malloc() in detail. Give syntax also. (5,5)
(b) What is the difference between

```
int size;  
int *arr;  
scanf("%i",&size);  
arr = malloc (size * size of (*arr));
```

and

```
int size;  
scanf("%i", & size);  
int arr [size];
```

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END TERM EXAMINATION
End-Semester, December 2015

Subject Code: MCA 107

Subject: Computer Organization

Time : 3 Hours

Maximum Marks : 60

Note: Attempt five questions in all.

Question No. 1 is compulsory. Attempt one question from each of the Units I, II, III & IV.

Q.1

- (a) Explain Von Neumann architecture of Computer System.
- (b) Explain the difference between master slave and edge triggered flip flop.
- (c) Discuss the advantage of parallel processing.
- (d) Discuss memory hierarchy.

(5x4=20)

Unit – I

Q. 2

- (a) Design a 4:1 Mux using NAND gate.
- (b) Explain three-state bus buffers.

(5,5)

Q. 3 Explain 4-bit arithmetic circuit.

(10)

Unit- II

Q. 4

- (a) Discuss list of register for the basic computer systems.
- (b) Explain control unit of the basic computer systems.

(5,5)

Q. 5

- (a) What is the difference between a microprocessor and a microprogram? Is it possible to design a microprocessor without a microprogram? Are all microprogramed computers also microprocessor?
- (b) Define the following:
 - (i) Microoperation
 - (ii) Microinstruction
 - (iii) Microprogram
 - (iv) Microcode

(5,5)

Unit-III

Q. 6

- (a) Determine the number of clock cycles that it takes to process 200 tasks in a six-segment pipeline.
- (b) Explain DMA controller.

(5,5)

Q. 7

- (a) Explain four possible hardware schemes that can be used in an instruction pipeline in order to minimize the performance degradation caused by instruction branching.
- (b) Design a parallel priority interrupt hardware for a system with eight interrupt sources.

(5,5)

Unit-IV

Q. 8

- (a) How many 128x8 RAM chips are needed to provide a memory capacity of 2048 bytes?
- (b) How many line of the address bus must be used to access 2048 bytes of memory? How many of these lines will be common to all chips?
- (c) How many lines must be decoded for chip select? Specify the size of the decoders.

(3,3,4)

Q. 9

- (a) Describe in words and by means of a block diagram how multiple matched words can be read out from an associative memory.
- (b) Draw a diagram showing the structure of a four-dimensional hypercube network. List all the paths available from node 7 to node 9 that use the minimum number of intermediate nodes.

(5,5)