

Reg. No. : .....

Name : .....

**III Semester B.C.A. Degree (CCSS – Reg./Supple./Imp.)**  
**Examination, November 2014**  
**(BCA – Core Course)**  
**3B07 BCA : COMPUTER ORGANIZATION**

Time: 3 Hours

Max. Marks: 21

**SECTION – A**

Answer **all** questions. Weightage for a bunch of **four** questions is **1** :

1. Which of the following is a method of data transfer ?
  - a) Hand shaking
  - b) Strobing
  - c) Both
  - d) None of the above
2. \_\_\_\_\_ is positioned logically between CPU registers and main memory.
3. To make faster processing of information the speed of \_\_\_\_\_ must be faster.
  - a) RAM
  - b) ROM
  - c) System clock
  - d) None of these
4. The time required to process data and instructions for a microcomputer is calculated in \_\_\_\_\_.
5. When two numbers of  $n$ ' digits each are added and the sum occupies  $n + 1$  digits we say that an \_\_\_\_\_ occurs.
6. The octal equivalent of the binary real number 1011.1011 is \_\_\_\_\_.
7. A register that holds the instruction or data to be fetched from memory is called \_\_\_\_\_.
8. In a \_\_\_\_\_ two addresses one specified for the two operands and one address for the result. (2×1=2)

M 7520



SECTION – B

Answer **any 5** questions. Weightage **1 each** :

9. What is auxiliary memory ?
10. What is a priority interrupt ?
11. What is bus transfer ?
12. Explain reverse polish notation.
13. What are peripheral devices ?
14. What is asynchronous data transfer ?
15. What is a control word ?
16. What is an accumulator ?

(5×1=5)

SECTION – C

Answer **any five** questions. Weightage **2 each** :

17. Explain the fetch cycle.
18. Compare direct and indirect addressing mode.
19. Compare synchronous and asynchronous data transfer.
20. Explain the various cache schemes.
21. What is associative mapping ?
22. Distinguish between MAR and MBR.
23. Explain memory transfer.
24. Explain floating point representation of numbers.

(5×2=10)

SECTION – D

Answer **one** question. Weightage **4** :

25. Explain the various addressing modes.
26. Describe the hierarchy of memory.

(1×4=4)



M 7519

Reg. No. : .....

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**III Semester B.C.A. Degree (CCSS – Reg./Supple./Imp.)**

**Examination, November 2014**

**BCA – CORE COURSE**

**3B06 BCA : Database Management Systems**

Time : 3 Hours

Max. Weightage : 21

**SECTION – A**

Answer **all** questions. Weightage for a bunch of 4 questions is 1 :

1. \_\_\_\_\_ is a graphical expression of the logical structure of a database.
2. Relationship sets among closely related entity sets are expressed by \_\_\_\_\_
3. Relational algebra is a \_\_\_\_\_ language.
4. \_\_\_\_\_ is a predicate expressing a condition that a database always has to satisfy.
5. The collection of information stored in the database at a particular moment in time is called \_\_\_\_\_
6. An association among several entities is called \_\_\_\_\_
7. The highest level of abstraction is described by the \_\_\_\_\_
8. A set of attributes which collectively identify an entity uniquely is called \_\_\_\_\_ (2×1=2)

**SECTION – B**

Answer **any 5** questions :

**(Weightage : 1 each)**

9. Define transitive dependency.
10. What are keys ?

P.T.O.



11. When can you say a table is in 3NF ? Explain.
12. What is lossy decomposition ?
13. What is entity integrity ?
14. List the basic steps in query processing.
15. Differentiate between a weak and strong entity set.
16. What is a relational database ?

(5×1=5)

## SECTION – C

Answer **any 5** questions : (Weightage : 2 each)

17. Explain the term normalization.
18. Discuss the conventions used in an E-R schema.
19. Explain the term data independence.
20. Explain domain relational calculus.
21. Define the steps in creating views in SQL.
22. What are the different categories of database users ?
23. Discuss the various join operations.
24. Describe the various domain types in SQL.

(5×2=10)

## SECTION – D

Answer **any 1** question.

**Weightage : 4**

25. Construct an E-R diagram for a car insurance company whose customers own one or more cars. Each car has associated with zero or more accidents.
26. Explain the various normal forms.

(1×4=4)



M 7549

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III Semester B.Sc./B.C.A. Degree (CCSS – Reg./Supple./Imp.)  
Examination, November 2014

GENERAL COURSE IN COMPUTER SCIENCE /COMPUTER APPLICATION  
3A II CSC/BCA : Entrepreneurship

Time: 3 Hours

Max. Weightage : 21

PART – A

Answer **all** questions. Weightage for a bunch of **four** questions in **one**.

- I. 1) Detailed project control answers the questions.
  - a) When and how much ?
  - b) Who and why ?
  - c) When and where ?
  - d) Who and when ?
- 2) Basic sub systems of MIS are \_\_\_\_\_
  - a) Transaction processing system
  - b) Decision support system
  - c) Office automation system
  - d) All of the above
- 3) Which is not a characteristics of structured decisions ?
  - a) Structured decisions are well defined
  - b) Predetermined decision rules are used
  - c) Decisions can not be delegated to lower level employees
  - d) Decisions can be made with the help of computer

P.T.O.



- 4) Which is not a benefit of MIS ?
- a) Manage resources
  - b) Maintain record needed for quality control
  - c) Lack of flexibility
  - d) Record and track outcomes
- 5) Information used by the middle management for the effective utilisation of resources of an organisation is \_\_\_\_\_
- a) Strategic information
  - b) Tactical information
  - c) Operational information
  - d) Environmental information
- 6) \_\_\_\_\_ is an orderly arrangement of inter dependent ideas or constructs
- a) Abstract system
  - b) Transportation system
  - c) Educational system
  - d) Computer system
- 7) Physical components of MIS structure does not include \_\_\_\_\_
- a) Hardware
  - b) Software
  - c) Procedures
  - d) Process inquiries
- 8) A greater proportion of time spent in directing on the
- a) Top management level
  - b) Middle management level
  - c) Lower management level
  - d) All of the above **(2x1=2)**

**PART – B**

Answer **any 5** questions. **Weightage 1 each.**

9. What is formal MIS ?
10. What are the physical components of MIS ?
11. What are the elements of system ?



- 12. What is transaction processing ?
- 13. What are the components of DSS ?
- 14. What is system analysis ?
- 15. What is system conversion ?
- 16. What is meant by operational feasibility ?

(5×1=5)

PART – C

Answer **any five** questions. **Weightage 2** each.

- 17. Differentiate between data and information.
- 18. Explain the features of information.
- 19. What are the differences between planning and control information ?
- 20. What is functional subsystem ?
- 21. What are the goal of project management ?
- 22. What do you mean by system maintenance ? What are its classification ?
- 23. Explain the steps involved in the development and implementation of MIS.
- 24. What are the methods used for conversion ?

(5×2=10)

PART – D

Answer **any one** question. **Weightage 4**.

- 25. Briefly describe the structural approaches of MIS based on decision making.
- 26. What is project management ? Explain the functions of project management.

(1×4=4)



M 7550

Reg. No. : .....

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**III Semester B.Sc./B.C.A. Degree (CCSS – Reg./Supple./Imp.)**  
**Examination, November 2014**  
**GENERAL COURSE IN COMPUTER SCIENCE/COMPUTER**  
**APPLICATION**  
**3A14CSC/BCA : Methodology of Computer Science**

Time : 3 Hours

Max. Weightage : 21

**SECTION – A**

Answer **all** questions. Weightage for a bunch of **four** questions is **one** :

1. Which of the traversal techniques list the nodes of a binary search tree in ascending order ?

- a) Pre-order
- b) In order
- c) Post order
- d) None of the above

2. Write down the reverse-polish notation for

$$A * (B * C - (D / E ^ F) * G) * H$$

- a)  $ABC * DEF ^ / G * - H * +$
- b)  $AB + CD / - * EF ^ G * H *$
- c)  $ABC * + DEF ^ / G * - H *$
- d)  $ABC * DEF ^ / - G * + H *$

3. The number of swapping needed to sort the numbers :

8, 22, 7, 9, 31, 19, 5, 13 in ascending order using bubble sort.

- a) 10
- b) 12
- c) 13
- d) 14

4. Sparse matrix have

- a) Many non-zero entries
- b) Many zero entries
- c) Lesser zero entries
- d) None of these

5. What is the time complexity of selection sort in average case ?

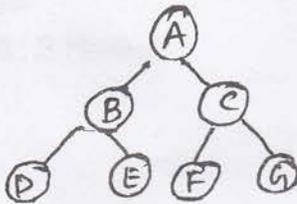
- a)  $O(n)$
- b)  $O(n \log n)$
- c)  $O(\log n)$
- d)  $O(n^2)$

P.T.O.





- 19. Perform the worst case analysis of quick sort.
- 20. Write a procedure to reverse a singly linked list.
- 21. Describe the binary search technique. What is the maximum number of key comparisons in binary search.
- 22. Write a procedure for pre order traversal of a binary tree and execute it on the following tree.



- 23. Write an algorithm to insert a node between any two nodes in a linked list.
- 24. Write an algorithm to delete a given node from a doubly linked list. (5x2=10)

SECTION – D

Answer **any one** question. Weightage 4 :

- 25. Write an algorithm to find the solution for Tower's of Hanoi problem. Explain the working of your algorithm with 4 disks.
- 26. Write algorithms for the following on a queue implemented using array :
  - a) Insert an element
  - b) Delete an element.(1x4=4)



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**GENERAL COURSE IN COMPUTER SCIENCE/COMPUTER**  
**APPLICATION**  
**3A14CSC/BCA : Methodology of Computer Science**

Time : 3 Hours

Max. Weightage : 21

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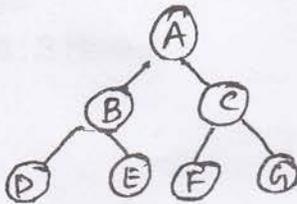
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P.T.O.





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SECTION – D

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M 7574

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**III Semester B.C.A. Degree (CCSS – Reg./Supple./Imp.)**  
**Examination, November 2014**  
**COMPLEMENTARY COURSE IN MATHEMATICS FOR B.C.A.**  
**3C03 MAT : Probability Distributions and Statistical Inference**

Time : 3 Hours

Max. Weightage : 30

Answer **all** questions. Weightage for a bunch of **four** questions is 1.

1. Fill in the blanks.

a) The set of all mutually exclusive and exhaustive events of a sample space form a \_\_\_\_\_ of the sample space.

b) For a continuous r.v.  $X$ ,  $\frac{dF(x)}{dx}$  gives the \_\_\_\_\_ of the r.v.

c)  $P(\text{Rejecting } H_0/H_1 \text{ is true})$  is the \_\_\_\_\_ of the test.

d) The statistic for testing goodness of fit test is \_\_\_\_\_

e) For a Normal distribution the coefficient of skewness is \_\_\_\_\_

f) The m.g.f. of a  $B(n, p)$  is \_\_\_\_\_

g) If  $\lambda = 2.4$  the mode of the Poisson distribution is \_\_\_\_\_

h) If the correlation coefficient is + 1, there is \_\_\_\_\_ relation between the variables. (2×1=2)

Answer **any 6** questions. Weightage **1 each**.

2. Derive mean of Poisson distribution.

3. Define null and alternative hypothesis.

4. Define p.d.f. and its properties.

5. What is rank correlation ?

P.T.O.



6. Find the mode of the distribution  $P(x) = \left(\frac{1}{2}\right)^x; x = 1, 2, \dots$

7. Describe Markovian queues.

8. Write any four properties of Normal distribution.

9. Write the test statistic for testing the single mean for a small sample test.

10. Distinguish between correlation and regression.

(6×1=6)

Answer **any seven** questions. Weightage **2 each** :

11. Derive Poisson as a limiting form of Binomial.

12. Find the mgf of Normal distribution.

13. In a distribution exactly normal, 7% of the items are under 35 and 89% are under 63. What are the mean and s.d. of the distribution ?

14. By the method of least squares fit the equation  $y = ae^{bx}$ .

15. Explain the characteristics of a queueing model.

16. State Neyman-Pearson Lemma.

17. Describe  $\chi^2$ -test for independence of attributes.

18. Derive angle between two regression lines.

19. X is a Poisson variate such that

$$P(x = 2) = 9P(x = 4) + 90P(x = 6)$$

Find the mean of x.

20. S.T.  $-1 \leq r_{xy} \leq 1$ .

21. What is Poisson Process ?

(7×2=14)



Answer any 2. Weightage 4 each :

22. Obtain correlation coefficient for the following data :

x : 65 66 67 67 68 69 70 72  
 y : 67 68 65 68 72 72 69 71

23. In a certain experiment to compare two types of pig foods A and B, the following results of increase in weights were observed in pigs.

Increase in Wt. in lb	<b>Food A</b>	49	53	51	52	47	50	52	53
	<b>Food B</b>	52	55	52	53	50	54	54	53

- i) Assuming that the two samples of pigs are independent, can we conclude that food B is better than food A.
- ii) Also examine the case when the same set of eight pigs were used in both the foods.

24. Fit a Poisson distribution to the following data and test the goodness of fit.

x : 0 1 2 3 4 5 6  
 f : 275 72 30 7 5 2 1 (2×4=8)

Answer any 5 questions. Weightage 1 each.

- 1. Derive mean of Poisson distribution.
- 2. Define null and alternative hypothesis.
- 3. Define p.d.f. and its properties.
- 4. What is rank correlation ?



K15U 0324

Reg. No. : .....

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**III Semester B.C.A. Degree (CCSS-2014 Admn. – Regular)**

**Examination, November 2015**

**CORE COURSE**

**3B06BCA : Computer Organization**

Time: 3 Hours

Max. Marks : 40

SECTION – A

1. One word answer :

(8×0.5=4)

- a) The situation when two instructions require the use of a given hardware resource at the same time is called \_\_\_\_\_
- b) \_\_\_\_\_ provides control signals in accordance with some timings which in turn controls the execution process.
- c) \_\_\_\_\_ are fast stand-alone storage locations that hold data temporarily.
- d) \_\_\_\_\_ hold the instructions that is currently being executed.
- e) \_\_\_\_\_ points to the next instruction that is to be fetched from memory.
- f) \_\_\_\_\_ is a request from I/O device for service by processor.
- g) The CPU and memory are normally connected by three groups of connections, each called \_\_\_\_\_
- h) If the word is 8 bits, it is referred to as a \_\_\_\_\_

SECTION – B

Write short notes on **any seven** of the following questions :

(7×2=14)

2. What is memory access time ?
3. What is arithmetic overflow ?
4. Explain straight-line sequencing of instruction execution.

P.T.O.



5. Explain Three-state bus buffers.
6. Explain different instruction code formats.
7. What is interrupt vector ?
8. What is control memory ?
9. What is programmed I/O ?
10. What is hit ratio ?
11. What is an effective address ?

## SECTION – C

Answer **any four** of the following questions :

(4×3=12)

12. Explain instruction cycle.
13. Distinguish between memory mapped I/O and I/O mapped I/O.
14. Explain vector processing.
15. What is locality of reference ?
16. Distinguish between multiprocessor and multi computers.
17. Explain sign and magnitude number representation with an example.

## SECTION – D

Write an essay on **any two** of the following questions :

(2×5=10)

18. With the help of a block diagram functional units of a digital computer.
  19. Explain Microprogrammed Control Unit.
  20. Explain Flynn's classification of parallel processing.
  21. Give an account of Virtual Memory.
-



K15U 0096

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**III Semester B.C.A. Degree (CCSS – Supple./Improve.)**  
**Examination, November 2015**  
**B.C.A. – Core Course**  
**3B07 BCA : COMPUTER ORGANIZATION**  
**(2013 and Earlier Admissions)**

Time : 3 Hours

Max. Weightage : 21

**SECTION – A**

Answer **all** questions. Weightage for a bunch of **four** questions is **1**.

1. Interrupts initiated by an instruction is called \_\_\_\_\_
2. \_\_\_\_\_ represents a signed fixed point number.
3. Simultaneous transfer of all bits from the source register to the destination register is called \_\_\_\_\_
4. MBR stands for \_\_\_\_\_ **(W = 1)**
5. In the \_\_\_\_\_ mode the operand is specified in the instruction itself.
6. A common bus attached to all peripheral interfaces is \_\_\_\_\_
7. The recording surface of memory devices is divided into
  - a) Pages
  - b) Blocks
  - c) Sectors
  - d) None of these
8. PSW stands for \_\_\_\_\_ **(W = 1)**

P.T.O.



SECTION – B

Answer **any 5** questions. Weightage - **1 each**.

9. What is EPROM ?
10. What is an instruction code ?
11. What is a Register Transfer Language ?
12. What is an external interrupt ?
13. What is associative memory ?
14. Explain DMA.
15. What is RISC ?
16. What is a multiprocessor computer ? (5×1=5)

SECTION – C

Answer **any 5** questions. Weightage **2 each**.

17. What is a fetch cycle ?
18. Explain the various cache memory schemes.
19. Compare Register Addressing and Register Indirect Addressing.
20. Explain instruction pipelining
21. What is virtual memory ?
22. What is the use of PSW ?
23. What are maskable and non-maskable interrupts ?
24. Explain floating point representation of numbers. (5×2=10)

SECTION – D

Answer **any one** question. Weightage : **4**.

25. Explain the instruction cycle.
  26. Explain about the various types of computers. (1×4=4)
-



K15U 0322

Reg. No. : .....

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Third Semester B.C.A. Degree (CCSS – 2014 Admn. – Regular)  
Examination, November 2015  
General Course  
3A12BCA : DATA STRUCTURE

Time : 3 Hours

Max. Marks : 40

SECTION – A

1. **One** word answer :

- a) The Big-O notation provides asymptotic \_\_\_\_\_ bound for a given function.
- b) The number of elements of an array A [1 : n] is determined by \_\_\_\_\_
- c) Data elements should be sorted before performing \_\_\_\_\_ search.
- d) The complexity of Merge sort algorithm is \_\_\_\_\_
- e) The postfix expression for  $*+ab - cd$  is \_\_\_\_\_
- f) The data structure where elements can be added or removed at either end but not in the middle is called \_\_\_\_\_
- g) A linked list is considered as an example of \_\_\_\_\_ type memory allocation.
- h) In a binary expression tree \_\_\_\_\_ tree traversal produces the postfix expression. (8x $\frac{1}{2}$ =4)

SECTION – B

Write short notes on **any seven** of the following questions :

2. Define data structure.
3. Define the term 'Complexity' of an algorithm.
4. How do you represent a stack in computer's memory using a one dimensional array ?
5. What is a sparse matrix ?
6. Transform the expression  $-/*A + BCDE$  into infix form.
7. What is dequeue ?

P.T.O.



8. What is garbage collection ?
9. Define a binary tree.
10. Write different steps to insert a node at the beginning of a singly linked list.
11. What you mean by traversing a binary tree ? (7×2=14)

### SECTION – C

Answer **any four** of the following questions :

12. Write an algorithm to find the transpose of a Sparse matrix.
13. Explain about the application of stacks in implementing recursive function calls.
14. What are the advantages and disadvantages of doubly linked list over singly linked lists ?
15. Write an algorithm to perform selection sort.
16. The order of nodes of a binary tree in preorder and postorder traversals are given under :  
Preorder : {1, 2, 4, 8, 9, 5, 3, 6, 7}  
Postorder : {8, 9, 4, 5, 2, 6, 7, 3, 1}  
Construct the corresponding binary tree.
17. Discuss about different Binary tree representations in memory. (4×3=12)

### SECTION – D

Write an essay on **any two** of the following questions :

18. Convert the given Infix expression to Postfix form using stack and show the details of stack at each step of conversion.  
Expression :  $(a + b * c ^ d) * (e + f/g)$ . Note : ^ indicates exponent operator.
19. Write a C++ program to add two polynomials
20. Write an algorithm to insert an element into a circular queue.
21. Write a program using C++ to merge two singly linked lists. (2×5=10)



K15U 0323

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**Third Semester B.C.A. Degree (CCSS – 2014 Admn. – Regular)**  
**Examination, November 2015**  
**General Course**  
**3A13BCA : DATABASE MANAGEMENT SYSTEM**

Time : 3 Hours

Max. Marks : 40

SECTION – A

1. **One word answer :**

- a) A \_\_\_\_\_ consists of a collection of interrelated data and a collection of programs to access that data.
- b) The \_\_\_\_\_ subsystem of a database system compiles and executes DDL and DML.
- c) \_\_\_\_\_ is an abstraction through which relationships are treated as higher level entities.
- d) In a DBMS \_\_\_\_\_ facility is used for specifying retrievals and updates.
- e) \_\_\_\_\_ command of SQL enable us to remove table definitions.
- f) The property which ensures that changes made to the database by authorized users do not result in inconsistency of data is \_\_\_\_\_
- g) A relation that is not part of the logical model, but is made visible to a user as a virtual relation is called \_\_\_\_\_
- h) \_\_\_\_\_ operation outputs a new relation consisting of all tuples appearing in either or both of the two specific relations. **(8×½=4)**

P.T.O.



## SECTION – B

Write short notes on **any seven** of the following questions :

2. What is physical data independence ?
3. Define foreign key.
4. Define the term 'Data dictionary'.
5. Define Boyce Codd normal form.
6. Write the syntax of CREATE command in SQL.
7. Explain about natural join operation.
8. What do you mean by a trigger ?
9. List any four privileges included in SQL standard.
10. Differentiate between tuple relational calculus and domain relational calculus.
11. Define the projection operation in relational algebra. (7×2=14)

## SECTION – C

Answer **any four** of the following questions :

12. What are the basic elements of ER model ? Explain.
13. Discuss about desirable properties of a transaction.
14. What is normalization ? What is its role in database design ?
15. Briefly explain various DDL commands with syntax.
16. With the help of an example, explain the use of 'not unique' construct in SQL.
17. How relational calculus differs from relational algebra ? Explain with suitable example. (4×3=12)



SECTION – D

Write an essay on **any two** of the following questions :

18. Discuss various functions of database users and administrators.
  19. Draw an ER diagram for a library database system. Identify the appropriate entities, attributes and relationships.
  20. Create a STUDENT table with necessary attributes and write SQL statements for the following queries :
    - a) List all student names having age > 18.
    - b) Display the details of students whose average mark in all subjects  $\geq 60\%$ .
    - c) Display the name and address of students studying in either Computer Science or Mathematics department.
    - d) Display the details of students in each department with maximum total mark.
  21. Write short notes on :
    - a) Facilities in SQL to grant and revoke privileges to users
    - b) Concept of views in DBMS. **(2×5=10)**
-



K15U 0120

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**III Semester B.Sc. Degree (CCSS – Supple./Imp.)**  
**Examination, November 2015**  
**General Course in Computer Science/Computer Application**  
**3A11 CSC/BCA : ENTREPRENEURSHIP**  
**(2013 & Earlier Admissions)**

Time : 3 Hours

Max. Weightage : 21

PART – A

Answer **all** questions. Weightage for a bunch of **four** questions is **one**.

1. A periodic report can be used to
  - a) identify the problem
  - b) evaluate solutions
  - c) identify solutions
  - d) none of the above
2. Computing systems designed to supply supervisory information include
  - a) invoicing system
  - b) pay roll systems
  - c) process control systems
  - d) all of the above
3. Information about the items ordered (item description, price warehouse location etc.) is provided by the
  - a) order entry subsystem
  - b) Manufacturing information system
  - c) Marketing information system
  - d) None of the above
4. A characteristic of an MIS is
  - a) User - oriented information
  - b) Restrictions on the systems size to inhibit future growth
  - c) Priority for data handling over the output of decision - oriented information
  - d) All of the above

P.T.O.



5. The computer generation that triggered the explosion of interest in information processing was the

- a) first generation of computers
- b) second generation of computers
- c) third generation of computers
- d) none of the above

6. Duplicate copies of the data base are stored at all locations under

- a) partitioning
- b) polling
- c) replication
- d) data sharing

7. Which of the following is part of the decision making process ?

- a) problem identification
- b) alternative selection
- c) problem recognition
- d) all of the above

8. The Management information system provides timely and effective information to support decision making and other necessary management functions. Can you point out the sub-system which does not belong to the MIS ?

- a) Decision support system
- b) Data communication system
- c) Automated office system
- d) None of the above (2x1=2)

#### PART – B

Answer **any 5** questions. Weightage **1 each**.

9. What are the major components of MIS ?

10. What are the different operations of information management ?



11. Explain the role of computers in the field of information system.
12. What are the important steps in system implementation ?
13. Explain the basic concepts of MIS.
14. What are the advantages of MIS ?
15. What are the characteristics of structured decisions ?
16. Explain the different type of information ? (5×1=5)

PART – C

Answer **any five** question. Weightage **2 each**.

17. What are the important technique of managing information overload ?
18. Explain the important characteristics of a system.
19. What are the important steps in controlling ?
20. Explain the important functional classification of MIS.
21. What are the important qualities of an information system ?
22. What are the advantages of data base system ?
23. Explain the features of transaction processing system.
24. What are the causes for project implementation failure ? (5×2=10)

PART – D

Answer **any one** question. Weightage **4**.

Maximum weighted grade point  $4 (W) \times 1(Qn.) \times 4(\text{Max. GP}) = 16$

25. Explain the structure of MIS based on management activity.
26. Explain the different type of systems. (1×4=4)



K15U 0325

Reg. No. : .....

Name : .....

**III Semester B.C.A. Degree (CCSS – 2014 Admn. – Regular)**  
**Examination, November 2015**  
**Core Course**

**3B07 BCA : INTRODUCTION TO MICROPROCESSORS**

Time : 3 Hours

Max. Marks : 40

**SECTION – A**

1. **One word answer :** (8×0.5=4)
- a) \_\_\_\_\_ is the first 4 bit microprocessor by Intel.
  - b) The contents of Accumulator and Status Flags clubbed together is known as \_\_\_\_\_
  - c) The \_\_\_\_\_ unit in 8086 makes the system bus signals available for external interfacing of devices.
  - d) \_\_\_\_\_ pin in 8086 indicates that the other system bus masters will be prevented from gaining the system bus.
  - e) The \_\_\_\_\_ directive is used to reserve byte or bytes of memory locations in the available memory.
  - f) \_\_\_\_\_ describe the type of operands and the way they are accessed for executing an instruction.
  - g) \_\_\_\_\_ is a 16 bit register that contains the offset of the address that lies in the stack segment.
  - h) \_\_\_\_\_ is the fastest among all modes of data transfer.

**SECTION – B**

Write short notes on **any seven** of the following questions : (7×2=14)

- 2. Explain the physical address formation of 8086.
- 3. Explain the function of LOCK pin of 8086.

P.T.O.



4. What are assembler directives ?
5. State and explain the instruction formats of 8086.
6. What is ISR ?
7. What are macros ?
8. Write an Assembly Language program to generate a delay of 100 ms using an 8086 system that runs on 10 Mhz frequency.
9. What is Interrupt Request register ?
10. What is BSR mode ?
11. What is instruction register ?

SECTION – C

Answer **any four** of the following questions :

(4×3=12)

12. What are the flag registers of 8085 ?
13. Explain the general bus operation cycle in maximum mode.
14. Explain the addressing modes of 8086.
15. Differentiate between maskable and non maskable interrupts.
16. What are data transfer schemes ?
17. Explain the two operating modes of 8086.

SECTION – D

Write an essay on **any two** of the following questions :

(2×5=10)

18. Discuss the register organization of 8086.
  19. Explain the branch instructions in 8086 with an example.
  20. Explain the stack structure of 8086.
  21. Explain the modes of operation of 8255.
-



K15U 0283

Reg. No. : .....

Name : .....

**Third Semester B.Sc. Degree (CCSS – 2014 Admn. – Regular)**  
**Examination, November 2015**  
**Complementary Course in Mathematics for B.C.A.**  
**3C03 MAT-BCA : MATHEMATICS FOR BCA – III**

Time : 3 Hours

Max. Marks : 40

SECTION – A

All the first 4 questions are **compulsory**. They carry 1 mark each.

1. Solve :  $(1 - x) dy - (3 + y) dx = 0$ .
2. Find the general solution of  $y'' + y = 0$ .
3. Find the Laplace transform of  $\cos 2\pi t$ .
4. Write the two-dimensional wave equation. (4x1=4)

SECTION – B

Answer **any 7** questions from among the questions 5 to 13. These questions carry 2 marks each.

5. Solve :  $y' + y \sec x = \tan x$ .
6. Show that the equation,  $-\pi \sin \pi x \sinh y dx + \cos \pi x \cosh y dy = 0$  is exact and solve it.
7. Find the orthogonal trajectories of the family of curves,  $y^2 = cx^3$ .
8. Find the solution to the initial value problem,  $y'' + y' - 2y = 0$ ,  $y(0) = 0$ ,  $y'(0) = 1$ .
9. Using Laplace transform, solve the following initial value problem.

$$y'' - \frac{1}{4}y = 0, y(0) = 4, y'(0) = 0.$$

P.T.O.



10. Find the inverse transform of  $\frac{3s - 137}{s^2 + 2s + 401}$ .
11. Find the first order PDE, by eliminating the arbitrary constants  $a$  and  $b$ , satisfied by  $u$  where  $u(x, y) = (x + a)(y + b)$ .
12. Determine whether  $u(x, y) = x^2 + y^2$  is a solution to the PDE,  $u_{xx} + u_{yy} = 0$ .
13. Find the general solution to the PDE,  $u_{yy} - u = 0$ . (7×2=14)

## SECTION – C

Answer **any 4** questions from among the questions **14 to 19**. These questions carry **3** marks **each**.

14. Solve the initial value problem :  $y' = e^{x^2} + 2xy$ ,  $y(0) = 0$ .
15. Solve :  $y'' + 3y' + 2y = \cos 2x$ .
16. Solve the initial value problem,  $y'' + 3y' + 2.25y = -10e^{-1.5x}$ ,  $y(0) = 1$ ,  $y'(0) = 0$ , by the method of undetermined coefficients.
17. Using convolution theorem, solve :  $y'' + 4y = \sin 3t$ ,  $y(0) = 0$ ,  $y'(0) = 0$ .
18. Find the type, transform to normal form and solve :  $u_{xy} - u_{yy} = 0$ .
19. Find the Fourier series of  $f(x) = (\pi - x)/2$  in the interval  $(0, 2\pi)$ . (4×3=12)

## SECTION – D

Answer **any 2** questions from among the questions **20 to 23**. These questions carry **5** marks **each**.

20. Find an integrating factor and solve,  $(e^{x+y} + ye^y) dx + (xe^y - 1) dy = 0$ ,  $y(0) = -1$ .
21. Solve  $y'' + y = \sec x$ , by variation of parameters.



22. Write the following function using unit step function and find its transform.

$$f(t) = \begin{cases} 2 & \text{if } 0 < t < 1 \\ \frac{1}{2}t^2 & \text{if } 1 < t < \frac{1}{2}\pi \\ \cos t & \text{if } t > \frac{1}{2}\pi \end{cases}$$

23. Find (a) the Fourier cosine series and (b) the Fourier sine series of the function,

$$f(x) = x; \quad 0 < x < L.$$

(2x5=10)

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K15U 0121

Reg. No. : .....

Name : .....

**III Semester B.Sc. Degree (CCSS – Supple./Imp.)**  
**Examination, November 2015**  
**GENERAL COURSE IN COMPUTER SCIENCE/COMPUTER APPLICATION**  
**3A14CSC/BCA : Methodology of Computer Science**  
**(2013 and Earlier Admissions)**

Time : 3 Hours

Max. Weightage : 21

- Instructions :** 1) Section – **A** : Answer **all** questions.  
2) Section – **B** : Answer **any five** questions.  
3) Section – **C** : Answer **any five** questions.  
4) Section – **D** : Answer **any one** question.

**SECTION – A**

Answer **all** questions. Bunch weightage **1** :

1. The postfix expression of  $A + B * (C + D) / F + D * E$ 
  - a)  $AB + CD + *F/D + E*$
  - b)  $ABCD + *F/+DE* +$
  - c)  $A*B + CD/F* DE**$
  - d)  $A+ *BCD/F*DE ++$
2. Maximum number of nodes at level 'r' of a Binary tree is
  - a)  $2^r$
  - b)  $2^{r-1}$
  - c)  $2^r - 1$
  - d)  $2^{r+1}$
3. An algorithm is made up of two modules M1 and M2. If the order of M1 is  $f(n)$  and M2 is  $g(n)$  then the ordered of the algorithm is
  - a)  $\min(f(n), g(n))$
  - b)  $\text{avg}(f(n), g(n))$
  - c)  $\max(f(n), g(n))$
  - d) None of these
4. Algorithms which maintain the relative order of records with equal keys are called
  - a) Consistent
  - b) Stable
  - c) External
  - d) Internal

P.T.O.





SECTION – C

Answer **any five**. Weightage **2 each** :

- 17. Show the various passes of Bubble sort on the unsorted list : 11, 15, 2, 13, 6.
- 18. Write a procedure to insert a node into a linked list at a specific position.
- 19. Write down the algorithm for quicksort.
- 20. Write down the selection sort algorithm. Analyse its best-case behaviour.
- 21. What are circular queues ? Write down the algorithms for inserting and deleting elements from a circular queue. Implemented using arrays.
- 22. Write down the pseudo code for Huffman algorithm.
- 23. Write a procedure to reverse a singly linked list.
- 24. Describe the binary search technique. What is the maximum number of key comparisons in binary search ? (5×2=10)

SECTION – D

Answer **any one**. Weightage **4** :

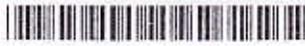
- 25. What are the applications of Stack ? Also write algorithms to implement that.
- 26. A binary tree has 9 nodes. The inorder and pre-order traversals of the tree are given below :

**Inorder** : E A C K F H D B G

**Pre-order** : F A E K C D H G B.

Draw the tree. Also write down the algorithm to construct the tree. (1×4=4)

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K16U 2070

Reg. No. : .....

Name : .....

III Semester B.C.A. Degree (CBCSS – Reg./Supple./Improve.)

Examination, November 2016

(2014 Admn. Onwards)

Core Course

3B06 BCA : COMPUTER ORGANIZATION

Time : 3 Hours

Max. Marks : 40

SECTION – A

1. Fill in the blanks :

(8×½=4)

- a) Each pipeline stage is expected to complete in \_\_\_\_\_ clock cycle.
- b) The potential increase in performance resulting from pipelining is proportional to the number of \_\_\_\_\_
- c) Each memory cell can hold \_\_\_\_\_ bit of information.
- d) Memory cells are organized in the form of \_\_\_\_\_
- e) One row is one memory \_\_\_\_\_
- f) Two transistor inverters are cross connected to implement a basic.
- g) Memory bandwidth is the number of \_\_\_\_\_ or \_\_\_\_\_ that can be transferred in one second.
- h) \_\_\_\_\_ can transfer a block of data from an external device to the processor, without any intervention from the processor.

P.T.O.



## SECTION – B

Write short notes on **any seven** of the following questions.

(7×2=14)

2. What is the significance of addressing mode ? Explain any one addressing mode.
3. What is arithmetic overflow ?
4. Explain straight-line sequencing of instruction execution.
5. Explain Three-state bus buffers.
6. Explain different instruction code formats.
7. What is interrupt service routine ?
8. What is control memory ?
9. What is programmed I/O ?
10. What is hit ratio ?
11. What is an effective address ?

## SECTION – C

Answer **any four** of the following questions.

(4×3=12)

12. Explain instruction cycle.
13. Describe the general register organization of CPU.
14. Explain priority interrupt.
15. What is locality of reference ?
16. Distinguish between RISC and CISC.
17. Explain 2's complement addition with an example.

## SECTION – D

Write an essay on **any two** of the following questions.

(2×5=10)

18. With the help of a diagram explain Set Associative Memory mapping.
  19. Explain Microprogrammed Control Unit.
  20. Explain pipelining in detail.
  21. Give an account of stack organization.
-



K16U 2068

Reg. No. : .....

Name : .....

Third Semester B.C.A. Degree (CBCSS-Reg/Supple./Imp.)  
Examination, November 2016

General Course

3A12 BCA : DATA STRUCTURE

(2014 Admn. Onwards)

Time : 3 Hours

Max. Marks : 40

SECTION – A

1. Fill in the blanks.

- a) The complexity of binary search algorithm is \_\_\_\_\_
- b) The number of interchanges required to sort 5, 1, 6, 2, 4 in ascending order using bubble sort is \_\_\_\_\_
- c) A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as \_\_\_\_\_
- d) In the array representation of a sparse matrix, each non-zero element is represented as a triplet with the format \_\_\_\_\_
- e) Before inserting an element into a stack, one must check the condition \_\_\_\_\_
- f) \_\_\_\_\_ is a searching technique which is independent of the number of elements in the collection S of data.
- g) In a binary expression tree \_\_\_\_\_ tree traversal produces an infix expression.
- h) The maximum number of nodes on level i of a binary tree is \_\_\_\_\_

(8×1/2=4)

SECTION – B

Write short notes on **any seven** of the following questions.

2. What is an Abstract Data Type ?
3. Write the expressions for computing the address of the (i, j)<sup>th</sup> element of a two dimensional array on row major order and column major order.

P.T.O.



4. What is linear search ? What is the complexity of linear search algorithm ?
5. What is a stack ?
6. Transform the expression  $(A+B \uparrow D)/(E-F)+G$  into postfix form.
7. What is priority queue ?
8. What is recursion ?
9. Define a binary search tree.
10. Write different steps to insert an element into a circular queue.
11. What is the use of head node in a linked list ? (7×2=14)

### SECTION – C

Answer **any four** of the following questions.

12. Briefly discuss about classification of data structures.
13. Explain how insertion and deletion takes place in a circular queue.
14. Sort the following sequence of keys using Merge sort.  
66, 77, 11, 88, 99, 22, 33, 44, 55
15. Describe any two applications of stack data structure.
16. Write a C++ program to insert a node into a sorted singly linked list.
17. The preorder traversal of a certain binary search tree is {10, 5, 1, 7, 40, 50}.  
Draw the corresponding binary search tree (4×3=12)

### SECTION – D

Write an essay on **any two** of the following questions.

18. Write a recursive algorithm for Merge sort and trace the Merge sort algorithm on the list {2, 3, 7, 12, 8, 9, 7, 5, 4}.
19. Explain how addition and deletion operations are implemented in a queue.
20. Write a program to add two polynomials using linked list.
21. Write short notes on :
  - a) The notations used for representing the complexity.
  - b) Doubly linked list. (2×5=10)



K16U 2069

Reg. No. : .....

Name : .....

**Third Semester B.C.A. Degree (CBCSS-Reg./Supple./Improve.)  
Examination, November 2016  
(2014 Admn. Onwards)  
General Course**

**3A 13 BCA : DATABASE MANAGEMENT SYSTEM**

Time : 3 Hours

Max. Marks : 40

**SECTION – A**

1. Fill in the blanks :

- a) \_\_\_\_\_ is a language in DBMS for specifying the database scheme as well as other properties of the data.
- b) A \_\_\_\_\_ is a collection of operations that performs a single logical function in a database application.
- c) An object that exists in the real world and is distinguishable from other objects is called \_\_\_\_\_
- d) An entity set that has a primary key is termed as \_\_\_\_\_
- e) \_\_\_\_\_ option in a DROP command enables us to remove database schema and all its tables, domains and other elements.
- f) If every non-prime attribute A of a relation R is fully functionally dependent on the primary key of R, then R is said to be in \_\_\_\_\_
- g) In SQL \_\_\_\_\_ clause is used to sort the rows selected by a query.
- h) \_\_\_\_\_ operation allows us to find tuples that are in one relation but are not in another.

(8×½=4)

P.T.O.



## SECTION – B

Write short notes on **any seven** of the following questions.

2. What is the difference between a database schema and a database instance ?
3. Why we need transaction management in DBMS ?
4. Distinguish between strong and weak entity sets.
5. Define 3NF.
6. Name any four column constraints.
7. Differentiate between inner and outer join.
8. Write the syntax of DELETE command in SQL.
9. List various set operations available in SQL.
10. Distinguish between tuple relational calculus and domain relational calculus.
11. Define set intersection operation in relational algebra. (7×2=14)

## SECTION – C

Answer **any four** of the following questions.

12. What are the responsibilities of DBA ?
13. What is normalization ? Discuss 3NF with example.
14. Define an integrity constraint. What is the role of a foreign key in maintaining the data integrity ?
15. Write short notes on triggers and cursors.
16. Explain with example, the importance of 'on delete cascade' option in a CREATE TABLE command.
17. Discuss about the following relational algebra operations :
  - a) Cartesian product.
  - b) Union.(4×3=12)



SECTION – D

Write an essay on **any two** of the following questions.

- 18. Discuss the different views and levels of architecture for a DBMS.
- 19. Briefly discuss about functions and sequences available in SQL with example.

20. Consider the following relational database :

*employee*(employee\_name, street, city)

*works*(employee\_name, company\_name, salary)

*company*(company\_name, city)

*manager*(employee\_name, manager\_name)

Give an SQL DDL definition of this database. Identify referential integrity constraints that should hold and include them in the DDL definition.

21. Write short notes on :

- a) Various data models
- b) Transaction management in DBMS.

(2×5 =10)

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K16U 2071

Reg. No. : .....

Name : .....

III Semester B.C.A. Degree (CBCSS-Reg./Supple./Imp.)  
Examination, November 2016  
(2014 Admn. Onwards)  
Core Course  
3B07 BCA : INTRODUCTION TO MICROPROCESSORS

Time : 3 Hours

Max. Marks : 40

SECTION – A

1. Fill in the blanks. (8×0.5=4)
- a) In 8085, the \_\_\_\_\_ register holds the address of the next instruction to be executed.
  - b) 8085 has \_\_\_\_\_ bit address bus.
  - c) \_\_\_\_\_ prefetches 6 bytes of instructions from memory in order to speed up instruction execution in 8086 microprocessor
  - d) 8086 is operated in the maximum mode by strapping the \_\_\_\_\_ pin to the ground.
  - e) \_\_\_\_\_ breaks the normal sequence of execution of instructions.
  - f) \_\_\_\_\_ has the highest priority among external interrupts.
  - g) 8086 has \_\_\_\_\_ general purpose registers.
  - h) \_\_\_\_\_ instruction forms 2's complement of the specified destination in the instruction.

SECTION – B

Write short notes on any seven of the following questions.

- 2. What is meant by pipelined architecture ?
- 3. Explain the physical memory organization in 8086.

P.T.O.



4. List the machine control instructions of 8086 and their functions.
5. Differentiate between ROR and ROL.
6. What is stack ?
7. Distinguish between macro and subroutine.
8. Describe the execution of a CALL instruction.
9. What is an internal interrupt ?
10. What is the function of DMA address register ?
11. What is auxiliary carry flag ?

SECTION – C

Answer **any four** of the following questions.

(4×3=12)

12. What are the advantages of segmented memory ?
13. Explain the two operating modes of 8086.
14. Distinguish between register indirect and register relative addressing modes.
15. Explain the procedure of generating delays in a microprocessor.
16. List the features of 8259.
17. What are data transfer schemes ?

SECTION – D

Write an essay on **any two** of the following questions.

(2×5=10)

18. Explain the registers of 8086.
  19. Describe the architecture of 8086 with a block diagram.
  20. Explain the assembler directives and operators.
  21. Explain the servicing of interrupts in 8086.
-



K16U 2115

Reg. No. : .....

Name : .....

Third Semester B.Sc./B.C.A. Degree (CBCSS – Reg./Supple./Imp.)  
Examination, November 2016  
(2014 Admn. Onwards)

COMPLEMENTARY COURSE IN MATHEMATICS FOR B.C.A.  
3C03 MAT-BCA : Mathematics for BCA – III

Time : 3 Hours

Max. Marks : 40

SECTION – A

All the first 4 questions are compulsory. They carry 1 mark each.

1. Solve :  $y' = e^{x-y} + x^2e^{-y}$ .
2. Find the general solution of  $y'' - y = 0$ .
3. Find the Laplace transform of  $t^2 - 2t$ .
4. Find the relation between a and b if  $u(x, t) = e^{ax + bt}$  is a solution to the PDE  $u_t = u_{xx}$ . (4×1=4)

SECTION – B

Answer any 7 questions from among the questions 5 to 13. These questions carry 2 marks each.

5. Solve :  $y' + y \tan x = \cos^3 x$ .
6. Show that the equation,  $(1 + 4xy + 2y^2)dx + (1 + 4xy + 2x^2)dy = 0$  is exact and solve it.
7. Find the orthogonal trajectories of the family of curves,  $x^2 - y^2 = c$ .
8. Find the solution to the initial value problem,  $-2y'' + y' + y = 0$ ,  $y(1) = 0$ ,  $y'(1) = 1$ .

P.T.O.



9. Using Laplace transform, solve the following initial value problem.

$$y'' - y = t, y(0) = 1, y'(0) = 1.$$

10. Find the inverse transform of  $\frac{3s + 1}{(s - 1)(s^2 + 1)}$ .

11. Find the first order PDE, by eliminating the arbitrary constants  $a$  and  $b$ , satisfied by  $u$  where  $u(x, y) = ax + by$ .

12. Solve the equation  $u_x = 1$  subject to the initial condition  $u(0, y) = y$ .

13. Show that  $u(x, y) = e^{-y} f(x - y)$  is the general solution of  $u_x + u_y + u = 0$ . (7×2=14)

### SECTION - C

Answer **any 4** questions from among the questions **14** to **19**. These questions carry **3** marks **each**.

14. Solve the initial value problem :  $y' - y = 2xe^{2x}$ ,  $y(1) = 0$ .

15. Solve :  $y'' - 3y' + 2y = \sin 3x$ .

16. Solve the following initial value problem by the method of undetermined coefficients.

$$y'' + y = 0.001x^2, y(0) = 0, y'(0) = 1.5.$$

17. Using Laplace transforms, solve :  $y(t) - \int_0^t y(\tau) \sin(t - \tau) d\tau = \cos t$ .

18. Find the Fourier series of the  $2\pi$ -periodic function  $f$  defined by

$$f(x) = \begin{cases} -k & \text{if } -\pi < x < 0 \\ k & \text{if } 0 < x < \pi \end{cases}$$

$$\text{Deduce that } 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots = \frac{\pi}{4}.$$

19. Find the type, transform to normal form and solve :  $u_{xx} + 9u_{yy} = 0$ . (4×3=12)



SECTION – D

Answer **any 2** questions from among the questions **20** to **23**. These questions carry **5 marks each**.

20. Find an integrating factor and solve,  $(x - y)dx - dy = 0$ ,  $y(0) = 2$ .

21. Solve,  $y'' + y = \tan x$ , by variation of parameters.

22. Applying Laplace transform, solve the following system :

$$y_1' = -4y_1 - 2y_2 + t \quad y_1(0) = 5.75,$$

$$y_2' = 3y_1 + y_2 - t \quad y_2(0) = -6.75.$$

23. Find :

a) the Fourier cosine series and

b) the Fourier sine series of the function,  $f(x) = \pi - x$ ;  $0 < x < \pi$ .

(2×5=10)

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