2016

Time : 3 hours

Full Marks : 80

The figures in the right-hand margin indicate marks.

Answer all questions.

(ENGLISH FOR TECHNICAL COMMUNICATION)

1. (a) Form abstract nouns from the following adjectives : 2×5 = 10

    (i) Broad

    (ii) Lazy

    (iii) Long

    (iv) Wide

    (v) High

   (b) Fill in the blanks by using 'some' **or** 'any' : 2×5 = 10

    (i) I have _____ money.

    (ii) I haven't got _____ bread.

    (iii) Have you _____ food ?

(Turn over)

(iv) Will you bring me _____ bread ?

(v) _____ men come here.

2. (a) Fill in the blanks with the appropriate word given in the brackets :   2×5 = 10

(i) Arvind came _____ than Bishu.

(later or letter)

(ii) The two soldiers _____ had a gun.   (each or every)

(iii) The boys stood in _____ row.

(each of every)

(iv) _____ man wants to be happy.

(each of every)

(v) I am _____ than you.

(older or elder)

(b) Strike out the wrong verb and choose the correct verb to be used in the following sentences :   2×5 = 10

(i) I (left/had) the college last year.

(ii) Shyam (went/has gone) School.

(iii) She (sat/sit) in her room writing.

DE – 75/2   (2)   Contd.

(iv) I (have graduated/graduated) in 1989.

(v) His uncle (does not live/did not live) here last year.

OR

(c) Change the speech of the following sentences : 2×5 = 10

(i) He said, "I will speak here."

(ii) Mohan said, "I have no time to talk to you now."

(iii) He said that the man should come.

(iv) The accused pleaded not guilty.

(v) He said, "A thousand curses on the cruel villain !"

(d) Write an application for the post of software executive in a multinational company. 10

3. Write an essay on any **one** of the following (250 words) : 20

(a) The problem of Rising Prices

(b) World Cup-2015.

OR

(c) Write a letter to the Principal for remaining absent in college due to your illness for 10 days. 10

(d) Design your biodata which is to be submitted for the vacancy in public sector.

10

4. (a) Write antonyms of the following and make a sentence :   2×5 = 10

    (i) Improvement

    (ii) Care

    (iii) Attract

    (iv) Bright

    (v) Praise

(b) Give synonyms of the following and make a sentence :   2×5 = 10

    (i) Grab

    (ii) Obscure

    (iii) Detect

    (iv) Support

    (v) Severe

OR

Write a paragraph on any **one** of the following (250 words) :   20

(c) Role of women in agriculture sector

(d) Increase of population in India

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(DATA STRUCTURE)

1. (a) Discuss about the Time and Space complexity issues in Data Structure.

   (b) State the alogrithm for inserting elements in a sparse matirx.

   ### OR

   (c) State the "C" Pseudocode for declaring a 2-Dimentional array.

   (d) Write the algorithm for insertion and deletion of elements from an array.

(Turn over)

2. (a) Define how stock is different from queue. State the algorithm for FIFO and LIFO.

   (b) State the mechanism to convert a linear queue to a circular queue.

   OR

   (c) Discuss about the memory representations in a linked list and state its advantages.

   (d) Write the "C" pseudocode to reverse the elements of a linked list.

3. (a) Compare and contrast between Pre-order and In-order traversal.

   (b) State about the memory representation schemes of a Binary tree.

   OR

   (c) Discuss about the traversal mechanisms of a Binary tree.

   (d) Differentiate between Binary search tree and Binary threaded tree.

4. (a) Distinguish the Time complexity between the best and worst case in a linear case, with examples.

   (b) Compare and contrast between the Heap sort and Merge sort.

   ## OR

   (c) Write the algorithm for Bubble sort of 10 elements.

   (d) State the distinction between Selection sort and Insertion sort.

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2016

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The questions are of equal value.

Answer all questions.

DISCRETE MATHEMATICS

(MATHEMATICS – I)

1. (a) Describe the steps for construction of truth table.

   (b) Show that the following propositions are logically equivalent or not.

   ~ (a v b) and (~ a) ∧ (~ b)

OR

Distinguish between Quadratic function and exponential function with the help of suitable example.

2. (a) Find out eigenvalues of the following matrix

(Turn over)

$$A = \begin{bmatrix} -5 & 3 & 2 \\ 4 & -6 & 8 \\ -1 & 2 & 5 \end{bmatrix}$$

(b) Write properties of inverse of a square matrix.

OR

(c) Find out rank of the following matrix

$$A = \begin{bmatrix} 10 & 8 & 9 \\ 7 & 12 & 14 \\ 18 & 11 & 17 \end{bmatrix}_{3 \times 3}$$

(d) In how many ways can 6 different beads be strung on a necklace ?

(e) If $p\,(n, 3) : p\,(n - 2, 3) = 3 : 1$, find n

3. Write short notes on the following :

(a) Recursion

(b) Binary operators

OR

(c) If G is a group, then it has unique inverse of every element. Verify.

(d) Define normal sub group.

4. (a) Discuss the concept of Boolean Algebra with suitable example.

   (b) Prove that every graph with n-number of vertices (n is more than or equal to 2) has atleast two vertices with same degree.

OR

Define the following :

(a) Isomorphisms of graphs

(b) Basic Laws of sum of product forms

(c) Adjacency matrix of a graph

(d) Connectedness in directed graphs

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2016

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The questions are of equal value.

*Answer **all** questions.*

(COMPUTER FUNDAMENTAL)

1. (a) Discuss about the various input output devices of computer and state their functions.

   (b) State the function of CPU and discuss its role in a computer.

OR

   (c) Describe about the working of a Micro Computer and discuss its role in computing.

   (d) Discuss about the secondary storage devices and state its applications.

2. (a) Do as directed :

   (i) Divide $(100)_{16}$ with $(8)_{16} = (\quad)_{16}$

(ii) Subtract $(24)_{10}$ from $(102)_{10}$ by using 6 bit 2's complement notation format,

OR

(b) (i) Discuss about the ASCII, BCD and EBCDIC code format with examples.

(ii) Convert $(1024)_{10}$ to Octal, Hexa decimal and Binary format.

3. (a) Differentiate between system software and application software.

(b) Discuss about Firm ware software with examples.

OR

(c) State the functions of Translators and Assemblers in Computer Applications.

(d) Discuss about spooling and state the applications of spooling.

4. (a) Discuss about the various types of computer networkings. Site with examples about the network applications.

(b) State the functionalities of communication processors.

OR

(c) Differentiate between synchronous and Asynchronous Transmission.

(d) Discuss about the various types of switching techniques. Site with examples.

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