42 (2) DSCL 1

2015

DATA STRUCTURE THROUGH C-LANGUAGE

Paper : 2.1

Full Marks : 70

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer ***any seven*** *questions.*

1. What is data structure ? What are linear and non linear data structure ? Explain with suitable examples. Write the structure for each kind of data structure. 10

2. What are the basic differences between Array and linked list ? Write a program to store data and display them by using either array or linked list. 10

3. Write a program to read a 3×3 matrix and find the sums of row-elements and column elements. 10

Contd.

4. Write the differences between stack and queue. Write a program to create a queue or stack and do the operations—read and display. 10

5. Write a program to create a linked list and display the elements in reverse order. 10

6. What is graph ? What are indegree & out-degree ? Write a structure to represent a graph. Explain the indegree, outdegree with an example of graph. 10

7. What is sorting ? Describe *either* bubble sort *or* insertion sort with a suitable example. 10

8. Write a program to implement selection sort. 10

9. Write a program to implement linear search or binary search. 10

10. Write short notes on ***any two*** : 5+5=10

(*a*) Binary Search tree

(*b*) Polish Notation

(c) Application of data structure.

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7. Write short notes (***any two***) 5×2=10

(*a*) e-mail address

(*b*) Social networking

(*c*) Web browser

(*d*) Client side scripting

Total number of printed pages–6

42 (2) IAWT 2

2015

INTERNET AND WEB TECHNOLOGY

Paper : 2.2

Full Marks : 50

Time : Two hours

The figures in the margin indicate full marks for the questions.

*Answer question no.**1** and **any 4 (four)** from the rest*

1. Choose the correct answer : 1×10=10

(*a*) A small network making up the internet and also having a small numbers of computers within it is called

(A) Stateless

(B) Stateful

(C) host

(b) Computers on the internet owned and operated by education institution through

(A) com domain

(B) mil domain

(C) edu domain

(D) IP address

(c) For a small web site , one needs to buy space from the

(A) Network administrator

(B) ISP

(C) Internet

(D) Telephone exchange

(d) The basic format for text link is

(A) <A HREF="URL"> The text describing link </A>

(B) <HREF="URL"> The text describing link </A>

(C) <A HREF="URL"> </A>

(D) <A HREF="URL"> The text describing link <\A>

(e) Some web pages are divided into independent panes named as

(A) Excel

(B) Outlook express

(C) Frames

(D) WAIS

(f) Identify odd word among the following:

(A) FTP

(B) SMTP

(C) HTTP

(D) JAVA

(g) A host on the internet finds another host by its

(A) TCP/IP address

(B) OSI address

(C) Physical address

(D) Both (A) & (B)

(h) In an e-mail id, the prefix refers to the .....

(A) domain name

(B) IP address

(C) user name

(D) both(A) & (C)

(i) In HTML a new paragraph can be started using

(A) Enter
(B) P
(C) \n
(D) r

(j) An user can get files from another computer on the internet by using

(A) UTP

(B) HTTP

(C) HTML

(D) FTP

2. (a) What are the roles played by ISP? 2

(b) Differentiate between host PC and home PC. 2

(c) Why HTML technology is not sufficient for electronic commerce? 2

(d) What is the main purpose of telnet? 2

(e) Explain the term "WWW". 2

3. Explain the role of internet in medical education. 10

4. Explain the different layers in the TCP/IP model. 10

5. (a) What does the following tag imply? Give one example of each (***any five***) 5

(i) <LI>

(ii) <UL>

(iii) <H3>

(iv) <P>

(v) <TITLE>

(vi) <HEAD>

(b) Create a static HTML page that display the following list of items 5

Item code	Item name	Price	Discount
01	Aalu	23.0	1%
02	Patal	17.6	1.5%
03	Vendi	86.5	3.5%
04	Vlue	73.8	1.5%
05	Tiea	18.0	2%

6. (a) Write PhP code to insert some records into a database table. 5

(b) Write the JavaScript code to display the following series 5

0 1 1 2 3 5 8 13.....(20 terms)

42 (2) CONM 3

2015

COMPUTER ORIENTED NUMERICAL METHODS

Paper : 2.3

Full Marks : 70

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer ***any seven.***

1. What do you mean by errors? What are different types of errors? Explain with an example. 10

2. Solve the following system of equations using Gaussian technique 10

$$10x+2y+z=9$$
$$x+10y-z=-22$$
$$-2x+3y-10z=22$$

3. Write a computer program to implement Simpson's $\frac{1}{3}$rd rule. 10

Contd.

4. Obtain Simpson's $\frac{3}{8}$th rule. 10

5. Evaluate $\int_0^1 \frac{1}{1+x^2}$ by using any suitable technique of numerical Integration. 10

6. Deduce Newton's forward or backward interpolation formula. 10

7. Write a computer program to implement Gauss-Jordan method. 10

8. Obtain Lagrange's formula. 10

9. Write a program to implement Gauss-Seidal method. 10

10. Describe the methods of LPP. Solve to get the $max\ Z = 2x_1 + 5x_2 + x_3$ subject 10

to $x_1 + 2x_2 + x_3 \leq 200$

$3x_1 + 3x_3 \leq 350$

$3x_1 + 4x_2 \leq 300$

$x_1, x_2, x_3 \geq 0$

Total number of printed pages–4

42(2) OOPC 3

2015

COMPUTER SCIENCE

Paper : 2·3

(OOP using C++)

Full Marks : 70

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer ***any five*** of the following questions : 5×5=25

(a) Declare a class called 'point' to represent and points in the 2-dimensional plane. Each point is to be represented as x-cord : y-cord. Declare another class 'circle' to represent circles as radius : centre ; where centre is a point in the 2-dimensional plane. Write two member functions to compute and return the area and circumference of a circle. The value of π is to be taken as 3·1416. Write another function to determine of two circles are concentric.

(c) What are the different forms of inheritance supported by C++ ? Explain each of them with examples.

(d) What is operator function ? Explain the syntax of binary operator overloading with an example. How many arguments are required by an overloaded unary operator ? Name two operators that cannot be overloaded in C++.

3. Answer ***any three*** of the following questions : 5×3=15

(a) Declare a class named 'complex' to represent complex numbers as a pair of real numbers. Write a general function for adding objects of the complex class. Declare this function as friend of the complex class. What is a friend class ? What is its significance ?

(b) Describe two methods of realizing polymorphism in C++.

(c) Explain any two file stream classes needed for file manipulation.

(d) Explain the exception handling mechanism of C++ with various constructs supported by it.

(b) Declare a class named 'rectangle' to represent rectangles as length : breadth. Write two member functions to compute and return the area and parameter of a rectangle. Write another member function to determine if a rectangle is a square. It should return 1 if it is a square and return 0 otherwise.

(c) Declare a class named 'complex' to represent complex nuumbers as a pair of real numbers. Write a default constructor to set both the real part and imaginary part to zero. Write a constructor with two parameters to set the values of real and imaginary part. Write also a copy constructor for the class.

(d) Declare a class named 'strings' to represent strings as an array of characters. Write a member function to return the length of a string without using standard library functions.

(e) What is runtime memory management ? What support is provided by C++ for this ? Explain.

(f) Differentiate between structure and class in C++.

(g) What are pointers ? Write down the syntax for defining pointer variables. Consider the following statements

```
int * a, * b ;
float * c ;
```

Assume that a, b and c initially point to memory locations 50,100 and 150 respectively. What values are stored in a, b and c after the execution of the following three statements ?

```
a++ ; - - b ; c + + ;
```

2. Answer ***any three*** of following questions : 10×3=30

(a) Explain different methods of passing parameters to functions in C++ with examples.

(b) Write a program for finding the maximum and minimum of a list of *n* integers. Accept the value of *n* at runtime *x* and allocate the required amount of memory space for the list at runtime. After printing the computed values release the memory space used.

Total number of printed pages–2

42 (2) COGR 3

2015

COMPUTER GRAPHICS

Paper : 2.3

Full Marks : 70

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer ***any six*** *questions from Part-A*

Part-A

1. *(a)* Define Computer Graphics. What are its major applications ? 3+4=7

   (b) Define input devices. Give some examples. 3

2. *(a)* What are refresh CRT ? Explain with the help of a neat diagram. 5+3=8

   (b) Define image scanners. 2

3. *(a)* Give DDA line drawing algorithm. Explain briefly with example. 8

Contd.

(b) Define LCD monitor. 2

4. (a) What do you mean by Raster scan display and Random scan system? Discuss. 8

(b) Define touch panels. 2

5. (a) What are colour look-up table ? Explain in detail. 8

(b) Define Data Glove. 2

6. (a) Define rotation and scaling about an arbitrary point. Explain briefly. 7

(b) Define zooming and panning. 3

7. (a) What do you mean by VGA and SVGA resolution ? Discuss. 6

(b) Define Hidden Surface removal. Explain. 4

Part-B

Answer ***any one***. 1×10=10

(a) Introduction to Multimedia.

(b) Window-to-viewport mapping.
