[14/37/A-14] SEAT No._____

No. Of Printed pages: 2

SARDAR PATELUNIVERSITY

M.Sc. - IT (Integrated) (NC) EXAMINATION, 2nd SEMESTER

& B.Sc. (A & IT) **Saturday, 15th April, 2017**

10:00 am to 1:00 pm

PS02CIIT02 [SYSTEMS ANALYSIS AND DESIGN]

Maximum Marks: 70

Q-1 Multiple Choice Question.[Each Question carries one Mark] [10]

1) _____ is a control device to maintain the equilibrium in a system.
   A. Feedback B. Subsystem
   C. Black box D. Interface

2) The procedure for computerizing outside problem is made more complex by a large area which can be called _____.
   A. Para computing B. System
   C. System Implementation D. System Study

3) Return of investment ROI = _____
   A. Net Profit / Investment B. Net Earnings/Total Investment
   C. Investment / Net Profit D. Total Investment/ Net Earning

4) _____ is considered as an output of the Structure Design.
   A. Structured Specification B. New System
   C. Packaged Design D. Feasibility Documents

5) Cost of converting from present system to proposed system is called_____.
   A. Recurring Cost B. Tangible Cost
   C. Intangible Cost D. One Time Cost

6) Which of the following is not included in Software Packaging?
   A. Structure Design B. Input-Output Design
   C. Program Design D. Control Design

7) A _____ can be considered as structure interview.
   A. Interview B. Questionnaires
   C. Record Review D. Observation

8) Generally Context level DFD contain _____ process.
   A. One B. Two
   C. Three D. Four

9) The _____testing strategy the logic of the program.
   A. Code B. Specification
   C. peak load D. none

10) _____ tool automate the preparation of computer software.
   A. Diagramming Tools B. Code Generator
   C. Interface Generator D. Management Tools

[pto]

Q-2 Give Answers for the following:(Any ten) [20]

1 Define: - Boundary and Environment.

2 List methods of feasibility study.

3 Write difference between open and close system.

4 What is system survey in SSADM ?

5 What is hardware study in SSADM ?

6 List all methodology of SSADM.

7 Define DFD and list the symbols used in it.

8 List any two differences between physical and logical DFDs.

9 What do you mean by fact gathering technique?

10 Define Quality Assurance and list levels of Assurance.

11 List Benefits of CASE.

12 What is CASE?

Q - 3 A) Explain General Model of System with example. [5]

B) Explain Problem Identification. [5]

OR

Q - 3 A) List Characteristics of System and explain any two in detail. [5]

B) Write difference between system analysis and system design. [5]

Q - 4 A) Explain system implements of SSADM. [5]

B) Write short note on documentation. [5]

OR

Q - 4 A) Explain need for structured analysis and design. [5]

B) Explain structure analysis of SSADM. [5]

Q - 5 What are the various fact gathering (finding) techniques? Explain any two in detail. [10]

OR

Q - 5 Write rules for constructing DFD and Draw the DFD for College Payroll System (context, zero and first level). [10]

Q - 6 A) Explain any two components of CASE. [5]

B) Explain any one testing strategies in detail. [5]

OR

Q - 6 A) Explain any one level of quality assurance. [5]

B) Explain any two weakness of CASE. [5]

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SEAT No._____

[41/A-15]

SARDAR PATEL UNIVERSITY
External Examination (CBCS)
M. Sc. - Information Technology (Integrated)
II[nd] - Semester (CBCS)
PS02CIIT03: Advanced 'C' and Introduction to Data Structures
18[th] April, Tuesday - 2017

Time : 10:00 am to 1:00 pm Total Marks :70

Q-1 Select an appropriate option. 10

1. Which operator is used with a pointer to access the value of the variable whose address is contained in the pointer?
   (a) Address (&) (b) Indirection (*) (c) Assignment (=) (d) Selection (->)

2. Which of the following defines a pointer variable to an integer?
   (a) int &ptr (b) int **ptr (c) int &&ptr (d) int *ptr

3. Which of the following is not a derived data type?
   (a) Arrays (b) Pointers (c) Float (d) Structure

4. Which of the following allows a portion of memory to be shared by different types of data?
   (a) Array (b) Union (c) Structure (d) File

5. Which one of the following is valid for opening a file for only reading?
   (a) fileopen (filenm, "r"); (b) fopen (filenm,"r");
   (c) fileopen (filenm, "ra"); (d) fopen (filenm, "read");

6. Files are a _____type of Data Structure.
   (a) Linear (b) Non-Primitive (c) Primitive (d) Non-linear

7. A stack is ____ type of data structure.
   (a) Linear (b) Non-linear (c) Both (a) and (b) (d) None of these

8. A linked list is ____ type of data structure.
   (a) Linear (b) Non-linear (c) Both (a) and (b) (d) None of these

9. A data structure in which insertion and deletion of an elements occurs at both the end is known as _____.
   (a) Stack (b) Queue (c) Priority Queue (d) Deque

10. A linked list in which last node pointing to the first node is known as _____.
    (a) Singly linked list (b) Doubly linked list
    (c) Circular linked list (d) None of these

Q-2 Answer the following questions. (Attempt any **TEN**) 20

1. Define: indirection operator, pointer variable
2. Differentiate: structure and union

3. List out benefits of pointers.
4. List file modes available to manage the file in C.
5. Explain typedef in brief with suitable example.
6. Explain the fclose() function with example.
7. What is non-primitive Data Structure?
8. Draw the Hierarchical Structure of Data Structure.
9. State various applications of Stack.
10. State various types of queue.
11. What is a singly linked list?
12. Differentiate between stack and queue data structure.

Q-3
(a) What are pointers? How can they be used with arrays? Explain pointer to an array using appropriate examples. 5
(b) Write a short note on dynamic memory allocation. 5

OR

Q-3
(a) What is structure? Explain its definition, declaration and assigning values to members of structure. 5
(b) Explain pointer to structure array using appropriate example. 5

Q-4
(a) What is union? Explain its definition, declaration and assigning values to members of union. 5
(b) Explain fprintf and fscanf function with example. 5

OR

Q-4
(a) Explain storage representation of union. How a member of union is assigned an initial value? Explain. 5
(b) Explain the getw and putw function with example. 5

Q-5
(a) What is data structure? Also write advantages of data structure. 5
(b) Write an algorithm: (i) PUSH operation (ii) PEEP operation. 5

OR

Q-5
(a) Write a short note on primitive data structure operations. 5
(b) Write an algorithm: (i) POP operation (ii) CHANGE operation 5

Q-6 Write an algorithm for the followings: 10
(i) Insert an element at the beginning of a singly linked list.
(ii) Insert an element at the end of a singly linked list.

OR

Q-6 Write an algorithm for the followings: 10
(i) Insert an element into a simple queue.
(ii) Delete an element from a simple queue.

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[17]

SARDAR PATEL UNIVERSITY

B.Sc. (CA & IT) Semester – II (Regular) /
M.Sc. INFORMATION TECHNOLOGY (Integrated) NC
Tuesday, Date: 18th April 2017
Session: Morning Time : 10:00 A.M. to 1:00 P.M.

Subject Code: PS02CIIT03

Subject Title : Advanced 'C' Programming and Introduction to Data Structures

Total Marks: 70

Q1. Multiple Choice Questions. (Attempt all) [10]

1. _____ operator is used to access structure member .
   A. Indirection(*) C. Assignment (=)
   B. Address (&) D. Dot (.)

2. Given a pointer ptr to a structure stud containing a field called name which of the following statements correctly fetch value of name?
   A. ptr->name C. ptr.stud
   B. ptr->stud D. name

3. _____ keyword is used in structure tag definition along name of structure.
   A. FILE C. struct
   B. union D. ptr

4. f = fopen(filename, "r");
   Referring to the code above, what does "r" indicate?
   A. Read mode C. Read and write mode
   B. Write mode D. Append mode

5. Which of the following data structure store all the elements of same data type only?
   A. Linked List C. Union
   B. File D. Array

6. PUSH and POP are operations of _____.
   A. Linked list C. Stack
   B. Queue D. Union

7. TOP & Bottom pointers are related to _____.
   A. Stack C. Queue
   B. Linked List D. Array

8. A linked list in which last node pointing to the first node is known as _____.
   A. Singly linked list C. Doubly Linked list
   B. Circular linked list D. None of the above

9. Data structure in which insertion and deletion of an elements based on specific criteria is known as _____ Queue.
   A. Doubly C. Circular
   B. Priority D. Simple

10. Nature of Queue is _____.
   A. FIFO C. Both A and B.
   B. LIFO D. None of these.

Q2. Answer the following short questions (Attempt any TEN) [20]

1. Define a structure called "student" consisting of integers called stud_id and age, character string called name and address. Declare structure variable called stud along with definition.
2. List different pointer declaration styles. Which one is preferable and why?
3. List different dynamic memory allocation functions with its use.
4. Explain the fclose() function with example.
5. State the use of getc and putc functions.
6. List the functions used to read and write the integer number from the file.
7. Draw the Hierarchical Structure of Data Structure.
8. List the examples of Primitive Data Structures.
9. State various applications of Stack data structure.
10. State various types of linked list.
11. State various applications of Queue data structure.
12. Give representation of simple Queue.

Q3. a. Define pointer variable. Explain how to declare and initialize a pointer variable? Also Differentiate between '*' and '&' operators in pointers. [05]

b. Explain pointer arithmetic in detail. [05]

OR

Q3. a. Explain the concept of pointer-to-pointer with example. [05]

b. Differentiate between: Structure and Union. [05]

Q4.a. What is union? Explain its definition, declaration and assigning values to members of union. [05]

b. What is a file data structure? How to access a file? Explain the all the modes of file management with example. [05]

OR

Q4.a. Explain storage representation of union and also explain with example how to assign initial value to member of union. [05]

b. Explain typedef in detail with example. [05]

Q5.a. Write an algorithm to insert and delete an element from a stack. [06]

b. What do you mean by Data Structure? Explain various operations that can be performed on data structures. [04]

OR

Q5.a. What is stack? Write an algorithm for PEEP and CHANGE operations of stack. [06]

b. Explain advantages of data structures in brief. [04]

Q6. What is Linked list ? Write an algorithm to insert an element at the beginning into a Singly linked list. [10]

OR

Q6. Write an algorithm to insert an element in a Queue. [10]

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SEAT No._____ No. of Printed Pages : 2

[11/A14]

SARDAR PATEL UNIVERSITY

B.Sc.(CA&IT) (Sem- 2 NC)

PS02CIIT04: Web Application Development

Date: 20-04-2017
Thursday

Time : 10.00 am – 1.00 pm

Marks: 70

Q-1 **Select the correct option.** **10**

(1) ___ is used to create line break.

A
 B <break>

C <lbr> D None of these

(2) Web information is stored in documents which are called _____.

A Web client B Web pages

C Web server D Web documents

(3) An image can be inserted into html page using _____ tag.

A <image> B <pic>

C <img> D <picture>

(4) The _____ tag indicates a new row of the table.

A <td> B <th>

C <tr> D None of these

(5) DHTML stands for _____.

A Discrete HTML B Dynamic HTML

C DOM HTML D Document HTML

(6) __ allows you to access any part of your Web page to change it with DHTML.

A JavaScript B HTML

C CSS D DOM

(7) Which keyword is used to declare a variable as an integer in JavaScript?

A int B Num

C var D None of these

(8) Which operator is used to concatenate two strings in JavaScript?

A + B ++

C . (dot) D None of these

(9) To connect an external Style Sheet with HTML file _____ must be used.

A <script> B <style>

C <link> D style attribute

(10) Which of the following is an invalid data type?

A Number B Boolean

C String D VarChar

Q-2		Do as directed. (ATTEMPT **ANY TEN**)	20
	(1)	Give the full form of URL and DNS.	
	(2)	What do you mean by a Web-server?	
	(3)	What is Internet?	
	(4)	Discuss <TR> tag.	
	(5)	Explain the checkbox control.	
	(6)	How you create an anchor in HTML? Explain.	
	(7)	What is Client-side Scripting?	
	(8)	Explain the syntax of inline styling in HTML file.	
	(9)	What is Scripting?	
	(10)	Write down the rules for defining variable.	
	(11)	Write a note on Decrement operator.	
	(12)	Explain isNaN function.	
Q-3	A	Draw and discuss the structure of HTML Document.	5
	B	Explain different List in HTML.	5
		OR	
	A	Explain in brief Web-client and Web-browser.	5
	B	Explain BODY tag with Syntax and Example.	5
Q-4	A	Explain TABLE creation in HTML in detail.	5
	B	Write a note on <frame> with all the associated attributes.	5
		OR	
	A	Write a detail note on IMAGE tag.	5
	B	How you can create different type of LINK? Explain.	5
Q-5	A	Write a short note on Components of DHTML.	5
	B	What is Server-side Scripting?	5
		OR	
	A	Write a note on the various ways of including a style sheet in HTML.	5
	B	What is Client-side Scripting?	5
Q-6		Write a note on operators used in JavaScript.	10
		OR	
		Explain different loop controls available in JavaScript.	10

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SEAT No._____

[5,6,A-6]

No. of printed pages : 02

Sardar Patel University

B.Sc.(CA & IT) External Examination (CBCS) &
M. Sc.(Integrated) II[nd] Semester (Information Technology)

PS02EIIT01 – Digital Electronics

22[nd] April, Saturday - 2017

Time : 10:00 A.M. to 12:00 P.M. Total Marks :70

Q.1 Select an appropriate option. **10**

1. A combinational circuit that performs the arithmetic addition of two bits is called _____.
   (a) Full Adder (b) Half Adder (c) Binary Adder (d) Decoder
2. In half adder XOR gate's output is _____.
   (a) carry (b) sum (c) remainder (d) none
3. A _____ is a combinational circuit that converts binary information from the 2^n coded inputs to an output.
   (a) carry (b) sum (c) remainder (d) none
4. Which is used as data selector?
   (a) Encoder (b) Decoder (c) Multiplexer (d) Flip-Flop
5. A 16 X 1 line multiplexer requires _____ data select line.
   (a) 3 (b) 4 (c) 8 (d) 16
6. The 16 bit register is separated into groups of 4 bit where each groups is called _____.
   (a) BCD (b) Nibble (c) Half byte (d) None
7. In k-map, pair eliminates _____ variable.
   (a) one (b) two (c) three (d) four
8. Don't care conditions are marked as _____ in the output column of the function table.
   (a) 1 (b) 0 (c) X (d) none of these
9. In D flip-flop, when CLK is low then input is _____.
   (a) High (b) Low (c) Don't care (d) Not change
10. In shift right register, the arrival of the first rising clock edge sets the _____ flip-flop.
    (a) left (b) right (c) up (d) down

Q.2 Answer the following questions. (Attempt any TEN) **20**

1. Describe half adder in short.
2. Draw the circuit of decoder.
3. Describe binary adder in short.
4. What is multiplexer?
5. Explain comparator in brief.
6. Draw the circuit of Seven Segment Decoder.
7. Explain Sum of Product in detail.

8. Explain K-Map for 2 variable with example.
9. Simplify using k-map F(A,B,C)=E(1,2,5).
10. Define flip-flop.
11. Draw circuit diagram of D flip-flop.
12. Explain shift left register in brief.

Q.3 [a] Explain de Morgan's first and second theorem. **6**

[b] Explain full-adder with circuit and truth able. **4**

OR

Q.3 [a] Explain binary adder-subtracter in detail. **6**

[b] Write notes on encoder. **4**

Q.4 [a] Explain 8x1 line multiplexer with circuit in detail. **5**

[b] Explain 4x1 line de-multiplexer with circuit in detail. **5**

OR

Q.4 [a] Write a short note on Nibble Multiplexer with circuit. **5**

[b] Explain 8x1 line de-multiplexer with circuit in detail. **5**

Q.5 What is k-map? Explain octet with example. Simplify this using k-map F(A,B,C,D)=Σ(1,3,5,6,8,11,15). **10**

OR

Q.5 Explain pair and quad of k-map in detail. Simplify this using k-map F(A,B,C,D)= Σ (1,2,5,6,8,12,14). **10**

Q.6 [a] Explain JK Master Slave flip-flop in detail. **5**

[b] Explain ring counters in detail. **5**

OR

Q.6 [a] Explain controlled buffer register. **5**

[b] Explain shift right circuit in detail. **5**

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SEAT No._____ No. of Printed Pages : 03

[8/12/A-9]

SARDAR PATEL UNIVERSITY

B.Sc.(CA&IT) (Regular)/ M.SC(IT) Integrated (NC)

***Sem-II* EXAMINATION**

MONDAY, 10th APRIL, 2017

10:00 am to 12:00 noon

SUBJECT: MATHEMATICS-II (PS02FIIT02)

Maximum Marks: 70

Q-1 Write the correct option in the answer book. [10]

(1) 3 boys can be selected from group of 9 boys in..... ways.

(a) 9! (b) 504 (c) 84 (d) $\frac{9!}{4!}$

(2) The set {N, +} is

(a) group (b) ring (c) monoid (d) semi group

(3) The quartile Q_2 is coincides with

(a) Mean (b) Mode (c) Median (d) Standard deviation

(4) Let A = {0,1}, then A closed under:

(a) multiplication (b) addition (c) Division (d) Subtraction

(5) How many ways the judge can award first and second prizes among 10 contestants?

(a) 100 (b) 90 (c) 10 (d) 45

(6) The number of elements in a set $\{ x \in Z: x^2 - 2 = 0\}$ are:

(a) 1 (b) 2 (c) $\pm\sqrt{2}$ (d) 0

(7) The set $\{x \in Z: -75 < x < 75\}$ is:

(a) finite (b) Infinite (c) Empty (d) none

(8) If the regression coefficient $b_{XY} > 1$, then

(a) $b_{YX} = 0$ (b) $b_{YX} > 0$ (c) $b_{YX} < 1$ (d) None of these

(9) De Morgan's Law:

(a) $(A \cup B)^c = A^c \cap B^c$ (b) $(A \cap B)^c = (A \cap B)^c$

(c) $(A \cup B)^c = A \cap B$ (d) None

(10) Every monoid are

(a) group (b) ring (c) semi group (d) none

Q:2 Answer the following in short. (**Any Ten**) [20]

(1) Find the number of distinct words that can be formed from all the letters of the word (1) ANAND (2) GUJARAT. (PTO)

(2) In Z_{10}, find $-3, -8, 3^{-1}, 5^{-1}$.

(3) Explain the positive correlation with two examples.

(4) How many committees of six with a given chair person can be selected from ten persons?

(5) Find the power set of a set {a, b, c}.

(6) Define Semi group and Monoid.

(7) Find variance of the observations: 3, 3, 3, 3, 3, 3, 3, 3.

(8) Find dual of the following:

(i) $(A \cap B \cup C)^c = (A \cap C)^c \cap (A \cap B)^c$, (ii) $(A \cap \phi) \cup (U \cap A^c) = A$.

(9) Find the number of ways that a party of 7 persons can arrange themselves: (i) around a circular table and (ii) in a row.

(10) If S is a nonempty set with the operation a*b = b. Is the operation* associative?

(11) Define range and variance.

(12) If A = {1,2,3,.....8} and B = {4,6,7,....., 14} then find the symmetrical difference between A and B.

Q-3

(a) Let n denote a positive integer. Suppose a function L is defined as [05]

$$L(n) = \begin{cases} 0 & \text{if } n = 1 \\ L([n/2]) + 1 & \text{if } n > 1 \end{cases}$$ .Find L (25) and L (34) .

(b) Find inverse of the function $f(x) = \frac{7x-3}{5x-2}$, $x \neq \frac{2}{5}$. [05]

Q-3 OR

(c) Prove that $1+2+3+.....+n = \frac{n(n+1)}{2}$. [05]

(d) If $f(x) = x^2 + 7$ and $g(x) = 2x - 5$ then find: (i) fog (ii) fog (–1) (iii) gof(1). [05]

Q-4

(a) For a,b rational number set Q, define a*b = ab/3. Show that (Q, *) is a group under binary operation *. Is it commutative? [05]

(b) For a, b rational number, define a*b = a + b – ab. Is (Q,*) commutative? Show that (Q,*) is Monoid and find its inverse if it exist. [05]

Q-4 OR

(c) Show that the set {1,2,3,4,5,6} is a group under multiplication modulo 7. [05]

(d) For a, b ∈ Q (rational numbers), define a*b = a + b + ab. [05]

(i) Is (Q,*) Semi group?

(ii) Is (Q,*) Monoid ?

(iii) Find it's inverse if it exist.

Q-5

(a) A debating team consists of 3 boys and 3 girls. Find the number of ways they can sit in a row where: (a) there are no restrictions; (b) the boys and girls are each to sit together; (c) just the girls are to sit together. [05]

(b) Find the number m of five letter "words" containing two different vowels and three different consonants that can be formed from the 26 alphabets. Also find m if the words must begin with B. [05]

Q-5 OR

(c) A class consist of seven men and five women. (i) Find the number m of committees of five that can be selected from the class (ii) Find the number m of committees of five if it consists of three men and two women. [05]

(d) Suppose repetitions are not permitted. (a) Find the number of three-digit numbers that can be formed from the six digits 2, 3, 5, 6, 7, and 9. (b) How many of them are less than 400? (c) How many of them are even? [05]

Q.6 (a) Calculate the correlation coefficient for the following heights (in inches) of fathers (X) and their sons (Y): [05]

X:	65	66	67	67	68	69	70	72
Y:	67	68	65	68	72	72	69	71

(b) Explain the linear regression and state its properties. [05]

OR

Q.6 (a) Following table shows the frequency distribution of marks. [05]

Marks :	0- 10	10-20	20-30	30-40	40-50	50-60
No. of students:	12	18	27	20	17	6

Find the Mean deviation from mean for above frequency distribution.

(b) Frequency distribution of the blood pressure given below, Compute the quartile Deviation of the frequency distribution. [05]

Systolic BP (mm Hg)	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of Infants	1	6	14	43	21	13	10	1

— X — X —