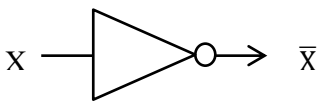
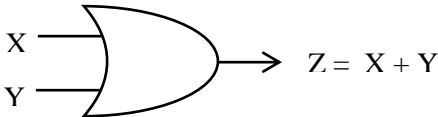
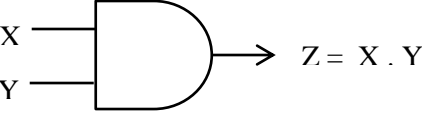


Scheme of valuation JUN-2018			
Subject Code : 41 (NS)			
COMPUTER SCIENCE			
Time : 3 Hours 15 Minutes] [Total No. Of questions : 37] [Max. Marks : 70			
PART-A			
Answer ALL the questions		10 x 1 = 10	
1	Expand SMPS. Ans.: Switched Mode Power Supply.	1	
2	Which basic logic gate is named as inverter? Ans.: NOT gate.	1	
3	Define searching. Ans.: The process of finding the position of an element is called searching.	1	
4	What is a member function? Ans.: A method that performs certain operations on objects(data members) of the class.	1	
5	How to declare a pointer? Ans.: Syntax: data_type *variable_name; Example: int *ptr; (any one)	1	
6	What is a table in DBMS? Ans.: The set of rows and columns used to store the data. (OR any relevant definition.)	1	
7	What is computer network? Ans.: The group of computers connected together to share the resources. (OR any relevant definition.)	1	
8	Mention any one anti-virus software. Ans.: Quick heal, AVG, Kaspersky etc., (any one)	1	
9	Define e-commerce. Ans.: Trading of goods or services through an internet is called e-commerce. (OR any relevant definition.)	1	
10	Write any one formatting HTML tag? Ans.: < B >, < I>, <U>, <BIG>, <SMALL> etc., (any one)	1	
PART B			
Answer any FIVE questions		5 x 2 = 10	
11	State and prove complementary laws. Ans.: i) $X + X' = 1$ ii) $X.X' = 0$ $X + X' = 1$ If $X = 0$, $X + X' = 1$ $0 + 1$ $= 1$ If $X = 1$, $X + X' = 1$ $1 + 0$ $= 1$		

	$X.X' = 0$ If $X = 0$, $X . X' = 0$ $0 . 1$ $= 0$ If $X = 1$, $X . X' = 0$ $1 . 0$ $= 0$	(mention any one 1 mark, proof any one 1 mark)	2																																																																																				
12	State and prove any one DeMorgan's theorem using truth table. Ans.: Truth table for $\overline{X+Y} = \overline{X}.\overline{Y}$ <table border="1" style="margin: 10px auto;"> <thead> <tr> <th>C1</th> <th>C2</th> <th>C3</th> <th>C4</th> <th>C5</th> <th>C6</th> <th>C7</th> </tr> <tr> <th>X</th> <th>Y</th> <th>X+Y</th> <th>$\overline{X+Y}$</th> <th>\overline{X}</th> <th>\overline{Y}</th> <th>$\overline{X}.\overline{Y}$</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>1</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <p style="text-align: center;">C4 = C7 LHS = RHS, hence proved</p> Truth table for $\overline{X.Y} = \overline{X} + \overline{Y}$ <table border="1" style="margin: 10px auto;"> <thead> <tr> <th>C1</th> <th>C2</th> <th>C3</th> <th>C4</th> <th>C5</th> <th>C6</th> <th>C7</th> </tr> <tr> <th>X</th> <th>Y</th> <th>X.Y</th> <th>$\overline{X.Y}$</th> <th>\overline{X}</th> <th>\overline{Y}</th> <th>$\overline{X} + \overline{Y}$</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>1</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <p style="text-align: center;">C4 = C7 LHS = RHS, hence proved</p>	C1	C2	C3	C4	C5	C6	C7	X	Y	X+Y	$\overline{X+Y}$	\overline{X}	\overline{Y}	$\overline{X}.\overline{Y}$	0	0	0	1	1	1	1	0	1	1	0	1	0	0	1	0	1	0	0	1	0	1	1	1	0	0	0	0	C1	C2	C3	C4	C5	C6	C7	X	Y	X.Y	$\overline{X.Y}$	\overline{X}	\overline{Y}	$\overline{X} + \overline{Y}$	0	0	0	1	1	1	1	0	1	0	1	1	0	1	1	0	0	1	0	1	1	1	1	1	0	0	0	0	(Proof any 1) 1 mark	1
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13	Define a) Class. A class is a blue print or template from which different objects can be created. b) Object A real world entity. OR An entity that combines both data and functions.		1 1																																																																																				
14	Mention any two features of parameterized constructors. Ans.: Parameterized constructors can be overloaded. They can have default arguments. OR (any two valid points) (1 mark each)		2																																																																																				
15	What is the difference ifstream and ofstream. ifstream - It creates file object for input operation. It provides the get(), getline(), read(), seekg() and tellg() functions of istream. Ofstream - It creates file object for output operation. It provides output operations. It provides put(), write(), seekp() and tellp() functions of ostream. (OR any two relevant points.) 1 mark each		2																																																																																				
16	Write any two differences between manual data processing and computerized (electronic) data processing. Manual data processing i) Entire process takes place manually	Electronic data processing i) Entire process takes place by the machine																																																																																					

	ii) Speed and accuracy is limited iii) Volume of data processed is limited iv) Papers and files are used. v) Overall cost is high	ii) High speed and greater accuracy iii) Large volume of data can be Processed iv) Magnetic disks are used for storage. v) Overall cost is low (Any two) 1 mark each	2								
17	Give the syntax and example of INSERT command in SQL. Ans.: Syntax: INSERT INTO TableName values (Value1, Value2 ValueN); Example: INSERT INTO student values (1124, 'Santhosh', '11-10-2014', 'PCMC', 525);		1	1							
18	What are communication modes? Explain any one. Ans.: The term Communication mode defines the direction (one way or two way) of the flow of <u>information</u> between two communication devices. There are three modes of data transmission: Simplex, Half duplex and Full duplex. Simplex – The data transfer takes place from one sender to one receiver through the communication system. The communication is unidirectional. Example: Radio and television broadcasting. Half duplex - A half-duplex system can transmit data in both directions alternatively. That means one device is sending the other can only receive the data and vice-versa. Example: Walkie-talkie and ham radio. Full duplex - A full duplex system can transmit data simultaneously in both directions on transmission path. Example : Mobile and telephone communication. (Definition 1 mark. Explanation of any one, 1 mark)		2								
PART – C											
Answer any FIVE questions		5 x 3 = 15									
19	What is motherboard? Explain any two characteristics of motherboard. Ans.: A Printed Circuit Board (PCB) used to connect all the system components like CPU, RAM, expansion cards, graphic cards etc., is called motherboard. characteristics of motherboard. The form factor is the specification of a motherboard – It explains the dimensions, power supply type, location of mounting holes, number of ports on the back panel, etc. A chipset is a collection of microchips (such as CPU, BIOS, memory, mass storage, interfaces, controllers and input-output devices) designed with built-in circuits on motherboard to work together to perform specific functions. Processor socket – It is a place where CPU is connected. It is designed as per the compatibility of the CPU and the motherboard. (Definition 1 mark, any two characteristics 1 mark each)		3								
20	Explain basic logic gates with standard symbol and truth table. NOT gate	<table border="1" style="display: inline-table; vertical-align: middle;"> <thead> <tr> <th>X</th> <th>X'</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> </tr> <tr> <td>1</td> <td>0</td> </tr> </tbody> </table>	X	X'	0	1	1	0			
X	X'										
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1	0										

	<p>OR gate</p> <table border="1" data-bbox="284 232 724 416"> <thead> <tr> <th>X</th> <th>Y</th> <th>X+Y</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table>  <p>AND gate</p> <table border="1" data-bbox="284 501 724 685"> <thead> <tr> <th>X</th> <th>Y</th> <th>X.Y</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table>  <p>(Truth table or gate any one 1 mark each)</p>	X	Y	X+Y	0	0	0	0	1	1	1	0	1	1	1	1	X	Y	X.Y	0	0	0	0	1	0	1	0	0	1	1	1	3	
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21	<p>Explain the memory representation of 1-dimentional array. Ans.: If an array has the N elements, the address of the first element is identified as A[0], address of second element is A[1], address of third element is A[2] and so on. An array of 10 elements are represented as follows:</p> <table border="1" data-bbox="296 920 1270 987"> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>a[0] a[1] a[2] a[3] a[4] a[5] a[6] a[7] a[8] a[9]</p>											3																					
22	<p>Write the differences between static and dynamic allocation of memory.</p> <table border="0" data-bbox="284 1099 1342 1346"> <tbody> <tr> <td style="vertical-align: top;"> <p>Static memory allocation</p> <p>i) A static memory is allocated at compile time.</p> <p>ii) The lifetime of a variable in static memory is the lifetime of the program.</p> <p>iii) Waste of memory space.</p> </td> <td style="vertical-align: top;"> <p>Dynamic memory allocation</p> <p>i) A dynamic memory is allocated at run time.</p> <p>ii) You can control the exact size and the lifetime of these memory locations.</p> <p>iii) No waste of memory space</p> </td> </tr> </tbody> </table> <p>(Also any other valid points 1 mark each)</p>	<p>Static memory allocation</p> <p>i) A static memory is allocated at compile time.</p> <p>ii) The lifetime of a variable in static memory is the lifetime of the program.</p> <p>iii) Waste of memory space.</p>	<p>Dynamic memory allocation</p> <p>i) A dynamic memory is allocated at run time.</p> <p>ii) You can control the exact size and the lifetime of these memory locations.</p> <p>iii) No waste of memory space</p>	3																													
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23	<p>Write the types of files and explain them. Ans.:</p> <p>i) Text file – It stores the information in ASCII characters. Each line of text is terminated with a special character known as EOL (End Of Line) character. Some internal translation takes place when this eol character is read or written. A text file is ended with EOF (Endo Of File) character.</p> <p>ii) Binary file – It is a file that contains information in the binary form. As information is held in computer’s memory, in this there is no delimits for a line and there is no translation occur after the read and write operations. These binary files are faster and easier for programming to read and write the data or information. (mention 1 mark, explanation – each 1 mark)</p>	3																															
24	<p>Explain any three applications of of DBMS.</p> <p>a) Ans.: Academic application – databases are used store the students information in the schools, colleges and universities.</p> <p>b) Medical applications – patients records / history is stored in data base for quick access.</p> <p>c) Business applications – In shops, malls and share market business transactions are stored in the database for online access</p>																																

	<p>d) Banking applications – The transaction details such as deposit, withdrawal or transfer of amount from one ledger to another is stored in data bases. Thus generating the accounting statement is easy and quick. (any 3 points with explanation) Each 1 mark</p>	3	
25	<p>Define : Ans.:</p> <p>a. World Wide Web – It is a system of interlinked hypertext documents that are accessed through the Internet. A web browser is used to view web pages that may contain text, images, videos, and other multimedia and navigate between them using hyperlinks.</p> <p>b. Web Browser - A web browser is a software application for retrieving, presenting and transferring the information resources on the World Wide Web. Examples: Netscape Navigator, Internet Explorer, Opera etc,</p> <p>c. Web Page - A web page is a web document that is suitable for the World Wide Web and the <i>web browser</i>. Generally it contains text, pictures, videos etc., (each 1 mark)</p>	3	
26	<p>Write the features of DHTML.</p> <p>Ans.: i)Dynamic HTML is an extension of HTML. ii)It enables a web page to response to an user input without sending requests to the web server. iii)It displays the web content which changes each time. iv)It is DHTML page is dynamic in nature. (any 3 points) each 1 mark</p>	3	
PART – D			
Answer any SEVEN questions		7 x 5 = 35	
27	<p>Simplify the following Boolean function using K-map $F(A, B, C, D) = \Sigma(0, 2, 4, 5, 6, 7, 8, 10, 12, 13, 14, 15)$</p> <p>Octet 1: Reduced term D' Octet 2: Reduced term B Final reduced term $F(A,B,C,D) = D' + B$ Map with proper labelling 2 marks Grouping and Extraction of terms 2 mark Final expression 1 marks</p>		
28	<p>Write an algorithm to delete an element from an array.</p> <p>Ans.: Algorithm: Deletion (A, N, POS)</p> <ol style="list-style-type: none"> INPUT POS FOR I = POS TO N-1 DO 		

	<p>3. $A[I] = A[I+1]$ [End of Step 5 FOR loop]</p> <p>4. FOR I = 0 TO N-1 DO</p> <p>5. PRINT A[I] [End of Step 7 FOR loop]</p> <p>6. END</p> <p style="text-align: right;">(Each step 1 mark)</p>	5																																														
29	<p>Define queue. Explain different types of queues with neat diagrams.</p> <p>Ans.: A linear data structure that allows insertion of elements at one end called REAR end and deletion of elements at other end called FRONT.</p> <p>Simple queue - It has the simple structure with the FRONT and REAR pointers. The insertion operation takes place at the REAR end and deletion operation take place at the FRONT end.</p> <div style="text-align: center;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px 10px;">A</td> <td style="padding: 2px 10px;">B</td> <td style="padding: 2px 10px;">C</td> <td style="padding: 2px 10px;">D</td> <td style="padding: 2px 10px;">E</td> <td style="padding: 2px 10px;"></td> <td style="padding: 2px 10px;">F</td> <td style="padding: 2px 10px;">G</td> <td style="padding: 2px 10px;">H</td> <td style="padding: 2px 10px;">I</td> </tr> </table> <p style="margin-top: 5px;">Q[-1] Q[0] Q[1] Q[2] Q[3] Q[4] Q[5] Q[6] Q[7] Q[8] Q[9]</p> </div> <p>Circular queue – In this, last node of the queue is connected to first node of the queue and forms the circular organization of memory locations.</p> <div style="text-align: center;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px 10px;">Q</td> <td style="padding: 2px 10px;">U</td> <td style="padding: 2px 10px;">E</td> <td style="padding: 2px 10px;">U</td> <td style="padding: 2px 10px;">E</td> <td style="padding: 2px 10px;"></td> <td style="padding: 2px 10px;">F</td> <td style="padding: 2px 10px;">U</td> <td style="padding: 2px 10px;">L</td> <td style="padding: 2px 10px;">L</td> </tr> </table> <p style="margin-top: 5px;">Q[-1] Q[0] Q[1] Q[2] Q[3] Q[4] Q[5] Q[6] Q[7] Q[8] Q[9]</p> </div> <p>Priority queue – In this, data elements are accepted as per the time of occurrence and insertion and deletion of elements takes place according to the priority mentioned in the queue.</p> <div style="text-align: center; margin: 10px 0;"> <table style="border-collapse: collapse;"> <tr> <td style="padding-right: 10px;">Input order</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">35</td> <td rowspan="4" style="padding: 0 20px;">→</td> <td rowspan="4" style="border: 1px solid black; padding: 10px; text-align: center;">Queue formation</td> <td rowspan="4" style="padding: 0 20px;">→</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">10</td> </tr> <tr> <td>Priority queue</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">26</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">26</td> </tr> <tr> <td></td> <td style="border: 1px solid black; padding: 5px; text-align: center;">55</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">35</td> </tr> <tr> <td></td> <td style="border: 1px solid black; padding: 5px; text-align: center;">10</td> <td style="border: 1px solid black; padding: 5px; text-align: center;">55</td> </tr> </table> </div> <p>Double ended queue (Deque) – As name implies, the insertion of data elements into a queue and deletion of data elements from the queue takes place at both FRONT and REAR ends.</p> <div style="text-align: center;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px 10px;">Q</td> <td style="padding: 2px 10px;">U</td> <td style="padding: 2px 10px;">E</td> <td style="padding: 2px 10px;">U</td> <td style="padding: 2px 10px;">E</td> <td style="padding: 2px 10px;"></td> <td style="padding: 2px 10px;">F</td> <td style="padding: 2px 10px;">U</td> <td style="padding: 2px 10px;">L</td> <td style="padding: 2px 10px;">L</td> </tr> </table> <p style="margin-top: 5px;">Q[-1] Q[0] Q[1] Q[2] Q[3] Q[4] Q[5] Q[6] Q[7] Q[8] Q[9]</p> </div> <p style="text-align: center;">(Definition 1 mark. Explanation each 1 mark)</p>	A	B	C	D	E		F	G	H	I	Q	U	E	U	E		F	U	L	L	Input order	35	→	Queue formation	→	10	Priority queue	26	26		55	35		10	55	Q	U	E	U	E		F	U	L	L	5	
A	B	C	D	E		F	G	H	I																																							
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30	<p>Explain the advantages of OOPs.</p> <p>Ans.: i) Programs are modularized based on the principle of class and objects. ii) Improved software-development productivity due to Modularity, extensibility and re-usability. iii) Improved software maintainability iv) Data hiding using access specifiers. v) Faster development. Reuse of codes enables faster development. vi) Lower cost of development.</p> <p style="text-align: right;">(any 5 points) Each 1 mark</p>	5																																														
31	<p>Explain the member functions inside the class definition with syntax and programming example.</p> <p>Ans.: Syntax:</p>																																															

	<pre> class <class_name> { access_control_specifier: return_type function_name(argument1, argument2 argument n) { Statement /s; } }; // Program to calculate the electricity bill class ebill { int cmr, pmr, amt, units; public: void getdata() { cout<<"Enter the current month reading"; cin>>cmr; cout<<"Enter the previous month reading"; cin>>pmr; } void calculate() { units = cmr - pmr; if(units<=100) amt = units * 4.50; else amt = units * 5.50; } void display() { cout<<"Units consumed = "<<units<<endl; cout<<"Bill amount = "<<amt; } }; void main() { ebill b; b.getdata(); b.calculate(); b.display(); } </pre> <p style="text-align: right;">(Syntax 2 marks prog. segment 3 marks)</p>	5	
32	<p>Discuss overloaded functions with an example.</p> <p>Ans.: When two or more functions share the same name irrespective of number of arguments and type of arguments, they are called overloaded functions.</p> <pre> class Sum_calc { public: int sum(int a, int b) { return(a + b); } float sum(float a, float b, float c) { return(a + b + c); } }; </pre>		

	<pre>void main() { Sum_calc S; cout<<"Sum of two numbers = "<<S.sum(10, 20)<<endl; cout<<"Sum of three numbers = "<<S.sum(2.1, 3.1, 4.1)<<endl; } (Explanation 2 marks example 3 marks)</pre>	5	
33	<p>What is a constructor? Give the rules for writing the constructor function.</p> <p>Ans.: A special member function has the same name as that of class and designed for object initialization.</p> <p>Rules:</p> <ol style="list-style-type: none"> A constructor must have the same name as that of the class name. There is no return type for a constructor (not even void). A constructor should be defined under public specifier. A constructor can have default arguments. <p>(Definition 1 mark, any 4 rules 1 mark each)</p>	5	
34	<p>Explain single level inheritance with programming example.</p> <p>Ans.: A single level inheritance is a mechanism of creating a new class / subclass by inheriting the properties of super class. i.e. properties are inherited from base class to derived class. A derived class cannot be used as base class further.</p> <p>//Program to find the sum and average of 3 numbers</p> <pre>class sum { int n1, n2, n3; public: void getdata() { cout<<"Enter three numbers"; cin>>n1>>n2>>n3; } class average : public sum { private: float avg; int s; public: void calculate() { s = n1 + n2 + n3; avg = (float)s/3; } void display() { cout<<"Sum of three numbers = "<<s; cout<<"Average of three numbers = "<<avg; } }; void main() { average ag; ag.getdata();</pre>		

	<pre> ag.calculate() ag.display(); } </pre> <p style="text-align: right;">(Explanation 2 marks, Prog. Segment 3 marks)</p>	5
35	<p>Explain data processing cycle.</p> <p>Ans.: It has following stages.</p> <ol style="list-style-type: none"> i) Data collection – The required data may exist in different places and in different forms. All required data items must be gathered together for data processing. ii) Data input – The mechanism of providing the data into a data processing system. iii) Data process –It uses many functions such as classification, sorting, verification, calculation, summarization, generating the reports etc., iv) Data output – After the successful data processing activity, results are generated. It is important to check the result whether it is according to the requirement or not. v) Data storage – The result must be stored in the secondary storage medium for future use. vi) Communication – As information is generated, it has to be transferred to the proper destinations through the communication and network technology. <p style="text-align: right;">(1 mark for each step)</p>	5
36	<p>Discuss any five character (text) built-in functions in SQL.</p> <p>Ans: UPPER(), LOWER(), MID(), LENGTH(), LTRIM(), RTRIM(), LPAD(), RPAD(), SUBSTR() etc.,</p> <p style="text-align: right;">(any 5 with explanation or example) Each 1 mark</p>	5
37	<p>Write a note on network topologies.</p> <p style="text-align: center;">Note on topologies (Any 5 relevant points). 5 marks.</p>	5
*** END ***		