

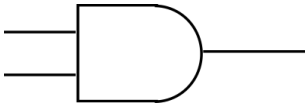
KARNATAKA STATE PRE-UNIVERSITY EDUCATION EXAMINATION BOARD

SECOND YEAR PUC EXAMINATION

SCHEME OF VALUATION

SUBJECT CODE: 41

SUBJECT: COMPUTER SCIENCE

Q #	Answer	Marks
PART - A		
1	Collection of parallel wires in the motherboard that form a pathway to carry address, data, and control signals.	1
2		1
3	Collection of homogeneous elements under the same name.	1
4	Yes. If the data members are declared in public access specifier, the data members can be accessed from outside the class also, which is against OOP concept.	1
5	<ul style="list-style-type: none"> i. Possible to write efficient programs ii. Memory is utilized properly iii. Dynamic allocation and de-allocation of memory iv. Easy to deal with hardware components v. Establishes communication between programs and data <p style="text-align: right;">Any one</p>	1
6	An Entity is a set of attributes OR An entity is real world thing or object.	1
7	Online exchange of text messages using network.	1
8	It the main computer that controls and co-ordinates all the operations of the network OR It is the main computer that allows the workstations/clients to share specific resources.	1
9	World Wide Web	1
10	Collection of webpages and each webpage consist of basic layout of a webpage like images, links, URL, forms, tables etc.	1
PART - B		
11	$\begin{aligned} \text{LHS} &= X + XY \\ &= X (1 + Y) \\ &= X \cdot 1 \\ &= X \\ &= \text{RHS} \end{aligned}$	2
12	<p>This principle states that starting from a Boolean relation another relation can be derived by changing each:</p> <ul style="list-style-type: none"> i. OR sign (+) to an AND sign (.) ii. AND sign (.) to an OR sign (+) iii. 0 by 1 and 1 by 0 <p>Dual of $1 + X = 1$ is $0 \cdot X = 0$</p> <p style="text-align: right;">One mark One mark</p>	2
13	<p>Base class is the class whose properties are inherited by another class. One mark</p> <p>Derived class is the class that inherits propertied from base class. One mark</p>	2

14	<p>i. For every object created, the constructor is automatically called.</p> <p>ii. All the objects of a class are initialized with the same set of values by the default constructor.</p> <p>iii. If different objects are to be initiated with different values, it cannot be done using default constructor.</p>	Any two	2	
15	<p>read():</p> <p>write():</p>	<p>i. It belongs to the class ifstream</p> <p>ii. It reads binary data from a file</p> <p>i. It belongs to the class ofstream</p> <p>ii. It writes binary data to a file.</p>	<p>One mark</p> <p>One mark</p>	2
16	<p>Data is collection of facts, figures, statistics which can be processed to produce meaningful information.</p> <p>The Processed data is called information.</p>	<p>One mark</p> <p>One mark</p>	2	
17	<p>Syntax: UPDATE <table_name> SET column_name = Value WHERE (condition);</p> <p>Example: UPDATE employee SET address = "UDUPI" WHERE id = 9; OR Any other suitable example</p>	<p>One mark</p> <p>One mark</p>	2	
18	<p>Communication mode or Transmission mode defines the direction of the flow of data between two communication devices.</p> <p>Simplex mode On this panel, only one interface is a transmitter and all other interfaces are receivers.</p> <p>For example, Radio and TV</p>		2	

PART - C

19	<p>i. Form factor It refers to the motherboard's geometry, dimensions, arrangement and electrical requirements.</p> <p>ii. Chipset Chipset controls the majority of resources of the computer. The function of chipset is to coordinate data transfer between the various components of the computer.</p> <p>iii. Processor socket It is a rectangular connector into which the processor is mounted vertically or a square shaped connector with many small connectors into which the processor is directly inserted.</p>	Each one mark	3																
20	<p>The diagram shows three examples of NAND gate equivalents:</p> <ul style="list-style-type: none"> A single NAND gate with both inputs connected to A, resulting in output \bar{A}. The equation $\bar{A} \bar{A} = \bar{A}$ is shown. Two NAND gates: the first has inputs A and B, output \overline{AB}; the second has inputs \overline{AB} and \overline{AB}, output AB. The equation $\overline{\overline{AB} \overline{AB}} = AB$ is shown. Two NAND gates: the first has inputs A and \bar{A}, output \bar{A}; the second has inputs B and \bar{B}, output \bar{B}. These two outputs are connected to a third NAND gate, resulting in output $\overline{\bar{A} \bar{B}} = A + B$. 		3																
21	<p>Let 'a' is a two dimensional array of 3 rows and 3 columns</p>	<table border="1"> <tr> <td></td> <td>[0]</td> <td>[1]</td> <td>[2]</td> </tr> <tr> <td>a[0]</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>a[0]</td> <td>3</td> <td>5</td> <td>6</td> </tr> <tr> <td>a[0]</td> <td>7</td> <td>8</td> <td>9</td> </tr> </table>		[0]	[1]	[2]	a[0]	1	2	3	a[0]	3	5	6	a[0]	7	8	9	3
	[0]	[1]	[2]																
a[0]	1	2	3																
a[0]	3	5	6																
a[0]	7	8	9																

Row major order The elements of the first-row are stored first in consecutive memory locations, and then the elements of second-row are stored and so on.

Phy. Addr	Elements	Logi. Addr	
5000	1	a[0][0]	1 st row
5001	2	a[0][1]	
5002	3	a[0][2]	
5003	4	a[1][0]	2 nd row
5004	5	a[1][1]	
5005	6	a[1][2]	
5006	7	a[2][0]	3 rd row
5008	8	a[2][1]	
5009	9	a[2][2]	

Column major order The elements of the first-column are stored first in consecutive memory locations, and then the elements of second-column are stored and so on.

Phy. Addr	Elements	Logi. Addr	
5000	1	a[0][0]	1 st column
5001	3	a[1][0]	
5002	7	a[2][0]	
5003	2	a[0][1]	2 nd column
5004	5	a[1][1]	
5005	8	a[2][1]	
5006	3	a[0][2]	3 rd column
5008	6	a[1][2]	
5009	9	a[2][2]	

22

Pointer It is a variable that holds the memory address of another variable.
Static memory allocation Memory allocated at the time of compilation of a program.
Dynamic memory allocation Memory allocated at the time of running the program.
 Each one mark

3

23

File Mode	Meaning
ios::in	Open file for reading only
ios::out	Open file for writing only
ios::app	Append to end-of-file
ios::ate	Open a file for updation
ios::binary	Open a binary file
ios::noreplace	Turn-down opening file if the file already exists
ios::nocreate	Turn-down opening file if the file does not exists

3

24

i. Database designers
 ii. End Users
 iii. Database Administrator (DBA)
 iv. Application programmers and system analysts
 Any three. Each one mark

3

25	1. EDI (Electronic Data Interchange) 2. E-Mail 3. Electronic Fund Transfer(EFT) 4. Electronic Benefits Transfer (EBT) 5. Electronic forms 6. Digital Cash 7. Interoperable Database Access 8. Bulletin Boards 9. Electronic Banking	3
26	<p><P> </P> This element defines a paragraph in the HTML document.</p> <p><CENTER> </Center> This tag is used to get center alignment.</p> <p>.... This tag is used to specify the font style, color and size of the text.</p> <p>
 This tag is used to break the line.</p> <p>OR Any other three suitable tags. Each One Mark</p>	3

PART - D

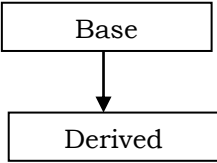
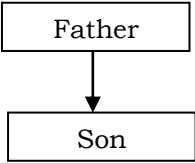
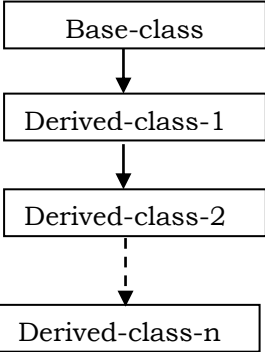
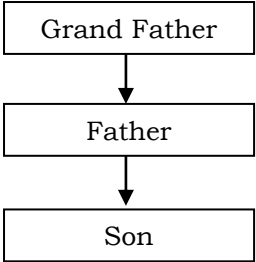
27	<p>Quad 1: C'D' Quad 2: BD' Quad 3: BC Quad 2 is redundant and removed Result: $F(A, B, C, D) = C'D' + BC$</p> <p>Drawing K-map One mark Marking One mark Quad 1 One mark Quad 3 One mark Result One mark</p>	5
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28	<p>Step 1 : For I = N - 1 downto P $A[I + 1] = A[I]$ [End of for loop]</p> <p>Step 2 : $A[P] = ITEM$</p> <p>Step 3 : $N = N + 1$</p> <p>Step 4 : Exit</p>	5
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29	<p>Stack is an ordered collection of items where the insertion and deletion takes place at only one end called TOP. One Mark</p> <p>Algorithm: PUSH</p> <p>Step 1: If (TOP = N-1) then PRINT "Stack is full" Exit</p> <p> End of If</p> <p>Step 2: TOP = TOP + 1</p> <p>Step 3: STACK[TOP] = ITEM</p> <p>Step 4: Return Two Marks</p> <p>Algorithm: POP</p> <p>Step 1: If (TOP = NULL) then PRINT "Stack is empty" Exit</p> <p> End of If</p> <p>Step 2: ITEM = STACK[TOP]</p> <p>Step 3: TOP = TOP - 1</p> <p>Step 4: Return Two Marks</p>	5
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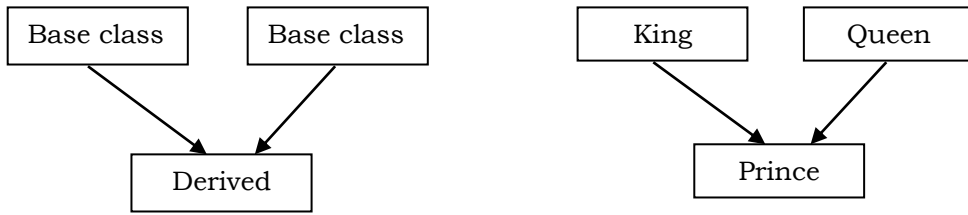
30	<p>a. Computer graphic applications b. CAD/CAM Software c. Object Oriented Database d. User-Interface design e. Real-time systems f. Simulation and Modeling g. Artificial Intelligence and Expert System</p> <p style="text-align: right;">Any five. Each one mark</p>	5	
31	<p>A group of objects having similar characteristics and behavior</p> <p>Syntax class class_name { private: Member data; Member functions; protected: Member data; Member functions; public: Member data; Member functions; };</p> <p>Example class number { private: int a, b; public: void read() { cin >> a>>b; } };</p> <p style="text-align: right;">OR any other example</p>	<p>One mark</p> <p>Two marks</p> <p>Two Marks</p>	5
32	<p>Inline function is a short function whose body is inserted at the place of its call.</p> <p>Syntax inline return-type functionName (arguments) { Body of inline function; }</p> <p>Example Inline function to find square of a number #include<iostream.h> class example { private: int n; public: example(int nn) inline int example::square() { { n = nn; return n*n; } } int square(); };</p> <p>void main() { int n; cout<<"Enter the number: "; cin>>n; example N = n; cout<<"Cube of "<<n<<" = "<<N.square(); }</p> <p style="text-align: right;">OR any other suitable example</p>	<p>One mark</p> <p>Two marks</p> <p>Two marks</p>	5

33	<p>Destructor is a special function that automatically executed when an object is destroyed. Destructor is used to de-allocate all the resources, such as memory, allocated for the object. One Mark</p> <p>Syntax</p> <pre> class class_name { private: data members; public: class_name() // constructor { } ~ class_name() //destructor { } }; </pre> <p style="text-align: right;">Two marks</p> <p>Example</p> <pre> class A { private: int x; public: A() // constructor { } ~A() //destructor { } }; </pre> <p style="text-align: center;">OR any other suitable example Two marks</p>	5
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34	<p>The types of inheritance are:</p> <ol style="list-style-type: none"> Single inheritance Multilevel inheritance Multiple inheritance Hierarchical inheritance Hybrid inheritance <p style="text-align: right;">One mark</p> <p>a. Single inheritance If a class is derived from a single base class, it is calls as single inheritance.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <pre> graph TD Base[Base] --> Derived[Derived] </pre> </div> <div style="text-align: center;">  <pre> graph TD Father[Father] --> Son[Son] </pre> </div> </div> <p>b. Multilevel inheritance</p> <p>The classes can also be derived from the classes that are already derived. This type of inheritance is called multilevel inheritance.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <pre> graph TD BC[Base-class] --> DC1[Derived-class-1] DC1 --> DC2[Derived-class-2] DC2 -.-> DCn[Derived-class-n] </pre> </div> <div style="text-align: center;">  <pre> graph TD GF[Grand Father] --> F[Father] F --> S[Son] </pre> </div> </div>	5
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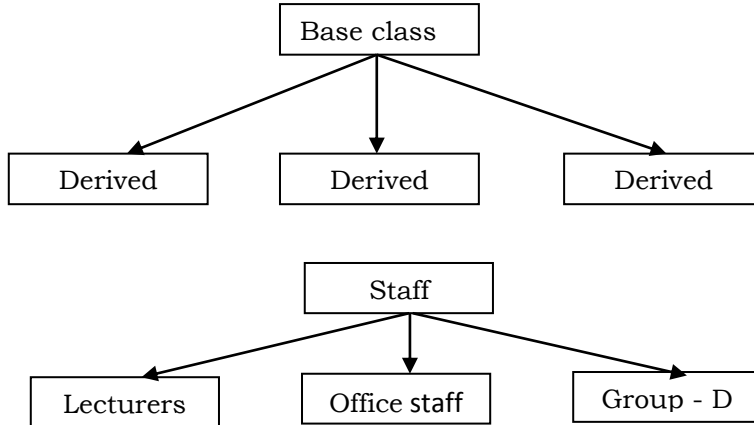
c. Multiple inheritance

If a class is derived from more than one base class, it is called as multiple inheritances.



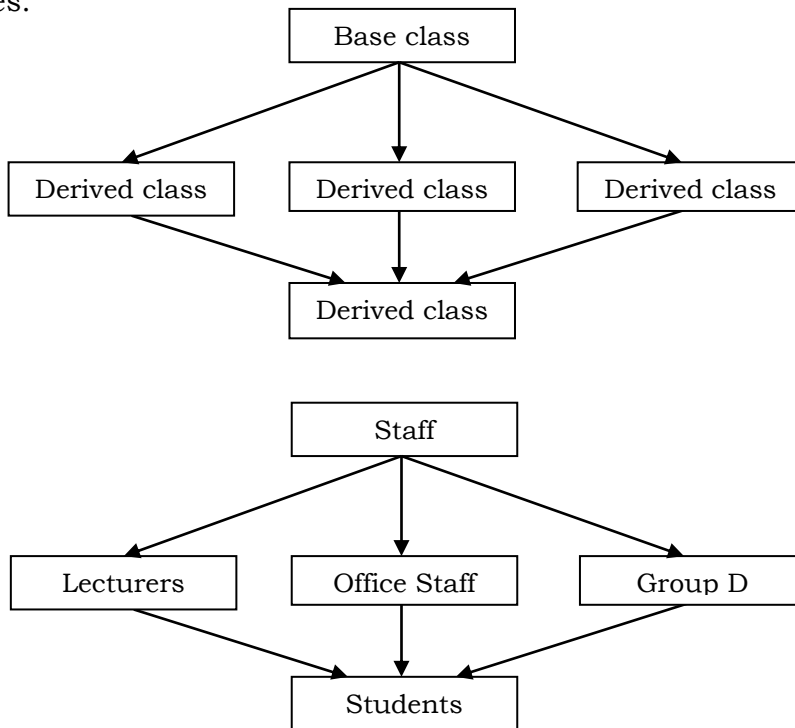
d. Hierarchical inheritance

If a number of classes are derived from single base class is called Hierarchical inheritance.



e. Hybrid inheritance

It is a combination of hierarchical and multiple inheritances.



Explanation of any two marks. Each explanation carries two marks

35	<div data-bbox="558 107 1220 593" data-label="Diagram"> <pre> graph TD Collection --> Input Input --> PROCESS PROCESS <--> Storage PROCESS --> Output Output --> Communication Communication --> Collection </pre> </div> <p>Data Collection It is the process of systematic gathering of data from various sources that has been systematically observed, recorded and organized.</p> <p>Data Input The raw data is put into the computer using a keyboard, mouse or other devices such as the scanner, microphone and the digital camera.</p> <p>Data Processing Processing is the series of actions or operations on the input data to generate outputs.</p> <p>Data storage Data and information should be stored in memory so that it can be accessed later.</p> <p>Output The result obtained after processing the data must be presented to the user in user understandable form. The output can be generated in the form of report as hard copy or soft copy.</p> <p>Communication Computers now-a-days have communication ability which increases their power. With wired or wireless communication connections, data may be input from a far place, processed in a remote area and stored in several different places and then transmitted by modem as an e-mail or posted to the website where the online services are rendered.</p> <p>Figure 1 Mark Explanation 3 Marks OR Explanation of any five steps. Each step 1 Mark</p>	5
36	<p>COUNT() This function returns the number of rows in the table.</p> <p>MAX() This function returns the maximum value of all the elements in a column.</p> <p>MIN() This function returns the minimum value of all the elements in a column.</p> <p>AVG() This function returns the average value of data present in the column.</p> <p>SUM() This function returns the sum of all the elements in a column.</p> <p style="text-align: right;">Each one Mark</p>	5
37	<ol style="list-style-type: none"> 1. Never use foreign disk or CD without scanning for viruses. 2. Always scan downloaded files from internet or other sources. 3. Use licensed software only. 4. Make your PC password protected to prevent unauthorized access. 5. Install and use antivirus software. 6. Keep antivirus software up to date. <p style="text-align: right;">Any Five. Each one mark</p>	5