

# CII – iPATE 2.0 (2021)

Computer Based PAN India Examination

Category: GRADUATE ENGINEER (ENTRY LEVEL)

Engineering Discipline: COMPUTER ENGINEERING

Questions & Answers

(Published dtd. 19.11.2021)

## Paper Structure

Question Nos.	Sections & Topics		Marks
1 to 20	Section I : Cognitive Abilities	<ul style="list-style-type: none"><li>Quantitative Aptitude</li><li>Analytical Reasoning</li><li>Data Interpretation</li><li>English Communication</li></ul>	20
21 to 40	Section II : Professional Abilities	<ul style="list-style-type: none"><li>Project Management</li><li>Health, Safety &amp; Risk Management</li><li>Environmental Laws</li><li>Social Responsibility &amp; Ethics</li><li>Finance &amp; Accounts</li><li>Legal, Contracts &amp; Arbitration</li></ul>	20
41 to 50	Section III (A) : Technical Abilities	Physics & Chemistry (10+2 level)	10
51 to 100	Section III (B) : Technical Abilities	Engineering Discipline	50
<b>TOTAL</b>			<b>100</b>

**NOTE:**

- Exam Duration: 3 Hours
- Total 100 no. of Questions of 1 Mark each with Negative Marking of ½ Mark for every wrong answer
- Questions (Section wise) and respective Answer Options shuffled at Candidates' terminal

Question No. 1	Discriminant of a second-degree polynomial with integer coefficients cannot be:			
Answer Options	A)	B)	C)	D)
	43	33	68	25
Right Answer	A			

Question No. 2	How many subsets A of {1, 2, 3, 4, 5, 6, 7, 8, 9, and 10} have the property that no two elements of A sum to 11?			
Answer Options	A)	B)	C)	D)
	1024	512	343	243
Right Answer	C			

Question No. 3	Viru and Aarti started a car journey from Chandigarh to Delhi, which are 288 km apart. Viru took 12 hours more than Aarti to complete the journey. Had Viru travelled at double his actual speed, he would have taken 4 hours less than Aarti to complete the journey. Find the respective speeds (in km/hr) at which Viru and Aarti travelled.			
Answer Options	A)	B)	C)	D)
	14.4 and 9	14.5 and 28.5	9 and 14.4	15 and 20
Right Answer	C			

Question No. 4	The height of a trapezoid whose diagonals are mutually perpendicular is equal to 4. Find the area of the trapezoid if it is known that the length of one of its diagonals is equal to 5.			
Answer Options	A)	B)	C)	D)
	50/3 square units	100/3 square units	16/6 square units	None of these
Right Answer	A			

Question No. 5	A polyhedron has faces that are all either triangles or squares. No two square-faces share an edge, and no two triangular-faces share an edge. What is the ratio of triangular-faces to the number of square-faces?			
Answer Options	A)	B)	C)	D)
	03:04	04:03	01:02	04:05
Right Answer	B			

Question No. 6	Your mind likes reading and it actually has a number of important health affects you can't get in any other way. Reading gives you a unique "pause button" for comprehension. Typically, when you read, you have more time to think. When you watch a film or listen to a tape, you don't press that pause button. Reading requires a great deal of concentration, which calls your intelligence to action. The author of this passage would agree that:			
Answer Options	A)	B)	C)	D)
	Reading is a good way to relax, since it doesn't require that much thinking.	Watching a movie has the same effect on the intelligence as reading.	Reading develops your intelligence.	Both A and C
Right Answer	C			

Question No. 7	Read the following information carefully and answer the question given below. P stands 5m west of R. T stands 5m south of Q. T stands 6m east of U. V stands 2m west of Q. A stands 2m south of U. V stands 3m north of R. If G stands 7m east of P, then in which direction does G stands with respect to T?			
Answer Options	A)	B)	C)	D)
	West	East	South	North
Right Answer	D			

Question No. 8	The French Revolution began in 1789 and ended in the late 1790s with the ascent of Napoleon Bonaparte. During this period, French citizens razed and redesigned their country's political landscape, uprooting centuries-old institutions such as absolute monarchy and the feudal system. Like the American Revolution before it, the French Revolution was influenced by Enlightenment ideals, particularly the concepts of popular sovereignty and inalienable rights. From this passage it can be concluded that:			
Answer Options	A)	B)	C)	D)
	The French revolution began before the Russian Revolution.	In the French Revolution their monarch was killed.	The American Revolution happened before the French Revolution.	Napoleon initiated the French Revolution.
Right Answer	C			

Question No. 9	A, B, C, D and E are sitting on a bench. A is sitting next to B, C is sitting next to D, D is not sitting with E who is on the left end of the bench. C is on the second position from the right. A is to the right of B and E. A and C are sitting together. In which position A is sitting?			
Answer Options	A)	B)	C)	D)
	Between B and C	Between E and D	Between B and D	Between C and E
Right Answer	A			

Question No. 10	A, P, R, X, S and Z are sitting in a row. S and Z are in the centre. A and P are at the ends. R is sitting to the left of A. Who is to the right of P?			
Answer Options	A)	B)	C)	D)
	X	Z	S	A
Right Answer	A			

Question No. 11	In the following question choose the word which is the exact OPPOSITE of the given word. STRINGENT			
Answer Options	A)	B)	C)	D)
	Magnanimous	Vehement	General	Lenient
Right Answer	D			

Question No. 12	Some proverbs/idioms are given below together with their meanings. Choose the correct meaning of proverb/idiom. To catch a tartar			
Answer Options	A)	B)	C)	D)
	To trap wanted criminal with great difficulty	To catch a dangerous person	To meet with disaster	To deal with a person who is more than one's match
Right Answer	B			

Question No. 13	Which of the phrases A), B), C) and D) given below each sentence should replace the word/phrase printed in bold in the sentence to make it grammatically correct? If the sentence is correct as it is given and no correction is required, mark (E) as the answer. <b>Since the girl did not want to be disturbed while studying, she left the phone off hooks.</b>			
Answer Options	A)	B)	C)	D)
	of hook	for the hook	off hooking	off the hook
Right Answer	D			

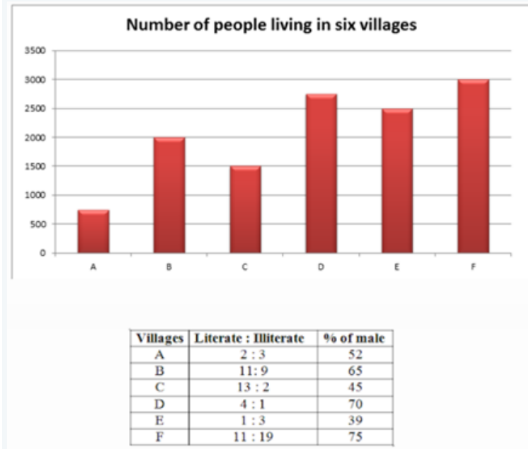
Question No. 14	In the following question choose the word which is the exact OPPOSITE of the given word. FICKLE			
Answer Options	A)	B)	C)	D)
	Courageous	Sincere	Steadfast	Humble
Right Answer	C			

Question No. 15	<p>In question below, the passage consists of six sentences. The first and sixth sentence are given in the correct places. The middle four sentences in each have been removed and jumbled up. These are labelled as P, Q, R and S. Find out the proper order for the four sentences.</p> <p><b>S1:</b> In the middle of one side of the square sits the Chairman of the committee, the most important person in the room.</p> <p><b>P:</b> For a committee is not just a mere collection of individuals.</p> <p><b>Q:</b> On him rests much of the responsibility for the success or failure of the committee.</p> <p><b>R:</b> While this is happening, we have an opportunity to get the 'feel' of this committee.</p> <p><b>S:</b> As the meeting opens, he runs briskly through a number of formalities.</p> <p><b>S6:</b> From the moment its members meet, it begins to have a sort nebulous life of its own.</p> <p>The Proper sequence should be:</p>			
Answer Options	A)	B)	C)	D)
	RSQP	QSRP	SQPR	PQRS
Right Answer	B			

Question  
No. 16

**Question nos. 16 to 20:**

Following bar chart represents the number of people in 6 different villages (A, B, C, D, E and F) and the tabular column depicts the ratio of literate to illiterate people and percentage of male living in those villages.



If 40% of the female from village B is literate, then what is the percentage of male, who is illiterate from village B?

Answer  
Options

A)	B)	C)	D)
38%	35%	37%	cannot be determined

Right  
Answer

C

Question  
No. 17

What is the percentage of literate people in all the six villages together?

Answer  
Options

A)	B)	C)	D)
55%	53%	51%	cannot be determined

Right  
Answer

B

Question  
No. 18

What is the ratio between numbers of illiterate people from villages B, C & D to number of females from villages A, E & F?

Answer  
Options

A)	B)	C)	D)
320:527	527:330	330:527	527:320

Right  
Answer

C

Question  
No. 19

If 3% of female from village D & 5% of female from village E are literate then what is the total number of literate males from D & F together?

Answer  
Options

A)	B)	C)	D)
1823	1723	1623	cannot be determined

Right  
Answer

D

Question  
No. 20

The number of females from villages A & C is how much percentage more or less than number of females from villages D & F?

Answer  
Options

A)	B)	C)	D)
25.72%	25.76%	24.76%	24.72%

Right  
Answer

C

Question No. 21	A project plan results in a project schedule seems to be too long. If the project network diagram cannot change but extra personnel resources is available, what is the best thing to do?			
Answer Options	A)	B)	C)	D)
	Fast track the project	Level the resources	Crash the project	Any other option
Right Answer	C			

Question No. 22	Which of the following is not Project Management's goal			
Answer Options	A)	B)	C)	D)
	Keeping overall cost within the budget	Delivering the project/goods to the client at agreed time	Maintaining a satisfactory and well-functioning development	Avoiding customer/client complaints
Right Answer	D			

Question No. 23	You have recently been named as Project Manager of a new project under a Contract. The Project Management Unit (PMU) gave you the contract signed by the Customer and a Statement of Work and asked you to go on with initiation. Which document should you develop next?			
Answer Options	A)	B)	C)	D)
	Project Manager Plan	Milestone Schedule	Project Charter	Scope Statement
Right Answer	C			

Question No. 24	The analysis tool for a quality problem that involves selecting the problem, identifying major categories of potential causes and associating likely specific causes is			
Answer Options	A)	B)	C)	D)
	Pareto chart	Fishbone diagram	Scatter diagram	Check list
Right Answer	B			

Question No. 25	The Occupational Safety & Health Administration requires employers to have Hearing Conservation Plans if the average 8-hour noise exposure is more than			
Answer Options	A)	B)	C)	D)
	1000 dB	500 dB	105 dB	85 dB
Right Answer	D			

Question No. 26	Ammonia becomes an immediate danger to your life and health when it is present at the following level or greater			
Answer Options	A)	B)	C)	D)
	10 ppm	30 ppm	300 ppm	1000 ppm
Right Answer	C			

Question No. 27	Exposure to high levels of noise can lead to which of the following:			
Answer Options	A)	B)	C)	D)
	High blood pressure	Gastrointestinal problems	Chronic fatigue	All of the above
Right Answer	D			

Question No. 28	Which type of fire extinguishing system is most commonly used to protect areas containing valuable equipment such as data processing rooms, telecommunications switches, and process control rooms?			
Answer Options	A)	B)	C)	D)
	Fixed extinguishing systems	Portable extinguishing systems	Hose extinguishing systems	It's up to the discretion the employer
Right Answer	A			

Question No. 29	If you need to wear glasses with your eye or face protection, which of the following options is acceptable			
Answer Options	A)	B)	C)	D)
	Wearing prescription spectacles with side shields and protective lenses that meet safety requirements and also correct your vision	Wearing goggles that fit comfortably over your glasses	Wearing goggles that have corrective lenses mounted behind the protective lenses	All of the above
Right Answer	D			

Question No. 30	Under which Section of Environment Pollution Act, the CPCB can issue the directions directly to industries			
Answer Options	A)	B)	C)	D)
	Section 16	Section 18	Section 11	Section 5
Right Answer	D			

Question No. 31	Which of these divisions of Pollution Control Implementation deals with Air Polluting Industries			
Answer Options	A)	B)	C)	D)
	PCI - I	PCI - II	PCI - III	SSI & Law
Right Answer	B			

Question No. 32	The Kyoto Protocol is an international treaty which extends the United Nations Framework Convention on Climate Change (UNFCCC). In which year the convention held?			
Answer Options	A)	B)	C)	D)
	1987	1995	1992	1997
Right Answer	C			

Question No. 33	What is the harm from manipulation of Earth's Ozone layer?			
Answer Options	A) The average temperature of Earth's surface will increase gradually	B) The Oxygen content of the atmosphere will decrease	C) Increased amount of Ultraviolet radiation will reach earth's surface	D) Sea level will rise as the polar ice caps will gradually melt
Right Answer	C			

Question No. 34	Which of the following would not represent the cash outflows for the business?			
Answer Options	A) Purchase of building for cash	B) The sale of land for cash	C) Retirement of long-term debt	D) The payment of cash for dividends
Right Answer	B			

Question No. 35	Which one of the following tangible fixed assets would not normally be depreciated?			
Answer Options	A) Buildings	B) Machinery	C) Land	D) Equipment
Right Answer	C			

Question No. 36	A Profit is earned if?			
Answer Options	A) Assets exceed Expenditure	B) Income exceeds Expenditure	C) Cash Inflow exceeds Cash Outflow	D) Income exceeds Liabilities
Right Answer	B			

Question No. 37	Which of the following budgets is normally prepared first?			
Answer Options	A) Cash budget	B) Sales budget	C) Merchandise purchases budget	D) Selling expense budget
Right Answer	B			

Question No. 38	What is the correct sequence in the formation of a contract?			
Answer Options	A) Offer, acceptance, agreement, consideration.	B) Agreement, consideration, offer, acceptance.	C) Offer, agreement, consideration, acceptance.	D) Offer, acceptance, consideration, agreement.
Right Answer	D			



Question No. 39	Which of the following answers is most accurate description of arbitration?			
Answer Options	A)	B)	C)	D)
	An informal meeting between the parties involving a discussion to sort out the dispute	An adjudicative process where the parties submit their disputes for a binding decision to an impartial tribunal	A meeting between the parties where an impartial third party gives decision	An impartial umpire selected to decide after hearing the dispute from parties
Right Answer	B			

Question No. 40	Which of the following answers is not type of alternative dispute resolution?			
Answer Options	A)	B)	C)	D)
	Arbitration	Court proceedings	Conciliation	Mediation
Right Answer	B			

Question No. 41	The equation of state for n moles of an ideal gas is $PV = nRT$ , where R is the universal gas constant and all other quantities have their usual meanings. What are the dimensions of R?			
Answer Options	A)	B)	C)	D)
	$M^0L^{-2}K^{-1}mol^{-1}$	$M^0L^2T^{-2}K^{-1}mol^{-1}$	$ML^2T^{-2}K^{-1}mol^{-1}$	$ML^{-2}T^{-2}K^{-1}mol^{-1}$
Right Answer	C			

Question No. 42	A cylindrical tube open at both ends has fundamental frequency n. If one of the ends is closed, the fundamental frequency will become			
Answer Options	A)	B)	C)	D)
	$n/2$	$2n$	$4n$	$n$
Right Answer	A			

Question No. 43	The speed of sound in a gas is V and the root mean square speed of the gas molecules is $V_{rms}$ . If the ratio of the specific heats of the gas is 1.5, then the ratio of V: $V_{rms}$ will be			
Answer Options	A)	B)	C)	D)
	1:2	1:3	$1:\sqrt{2}$	$1:\sqrt{3}$
Right Answer	C			

Question No. 44	Which of the following phenomena gives evidence of the molecular structure of the matter?			
Answer Options	A)	B)	C)	D)
	Brownian motion	Diffusion	Evaporation	All of these
Right Answer	D			

Question No. 45	Starting with the same initial conditions, an ideal gas expands from volume $V_1$ to $V_2$ in three different ways. The work done by the gas is $W_1$ if the process is purely isobaric, $W_2$ if the process is purely isochoric and $W_3$ if the process is purely adiabatic. Then			
Answer Options	A) $W_1 > W_2 > W_3$	B) $W_2 > W_1 > W_3$	C) $W_1 > W_3 > W_2$	D) $W_3 > W_1 > W_2$
Right Answer	A			

Question No. 46	A vessel contains a mixture of 1 mole of oxygen and two moles of nitrogen at 300K. The ratio of the rotational kinetic energy per $O_2$ molecule to that per $N_2$ molecule is			
Answer Options	A) 1:1	B) 1:2	C) 2:1	D) Depends on the moment of inertia of the two molecules
Right Answer	A			

Question No. 47	In a test experiment on a model aeroplane in a wind tunnel, the flow speeds on the lower and upper surfaces of the wing are $v$ and $\sqrt{2}v$ respectively. If the density of air is $\rho$ and the surface area of the wing is $A$ , the dynamic lift on the wing is given by			
Answer Options	A) $(\rho v^2 A)/\sqrt{2}$	B) $(\rho v^2 A)/2$	C) $2\rho v^2 A$	D) $\sqrt{2}\rho v^2 A$
Right Answer	B			

Question No. 48	A boy whirls a stone in a horizontal circle 2m above the ground by means of a string 1.25m long. The string breaks and the stone flies off horizontally, striking the ground 10m away. What is the magnitude of the centripetal acceleration during circular motion? (Take $g=10\text{m/s}^2$ )			
Answer Options	A) $400\text{m/s}^2$	B) $300\text{m/s}^2$	C) $200\text{m/s}^2$	D) $100\text{m/s}^2$
Right Answer	C			

Question No. 49	Radium (with Atomic no. = 87, Mass No. = 221) undergoes radioactive decay with a half-life of 4 days. The probability that a Ra nucleus will disintegrate in 8 days is			
Answer Options	A) 1/4	B) 3/4	C) 1/2	D) 1
Right Answer	B			

Question No. 50	A tunnel is dug along the diameter of the earth. An object is held in the tunnel at a distance $x$ from the centre of the earth. The magnitude of the gravitational force on the object is proportional to			
Answer Options	A) $1/x$	B) $1/x^2$	C) $x$	D) $x^2$
Right Answer	C			

Question No. 51	<b>Predict the output?</b> <pre>#include &lt;iostream&gt; using namespace std; template &lt;typename T&gt; void Test(const T&amp;x) {     static int count = 0;     cout &lt;&lt; "x = " &lt;&lt; x &lt;&lt; " count = " &lt;&lt; count &lt;&lt; endl;     ++count;     return; } int main() {     Test&lt;int&gt; (1);     cout &lt;&lt; endl;     Test&lt;int&gt;(1);     cout &lt;&lt; endl;     Test&lt;double&gt;(1.1);     cout &lt;&lt; endl;     Test&lt;float&gt;(1.1);     cout &lt;&lt; endl;     Test&lt;float&gt;(1.1);     cout &lt;&lt; endl;     Test&lt;float&gt;(1.1);     return 0; }</pre>			
Answer Options	A x = 1 count = 0 x = 1 count = 0 x = 1.1 count = 0 x = 1.1 count = 0 x = 1.1 count = 0 x = 1.1 count = 0	B x = 1 count = 0 x = 1 count = 1 x = 1.1 count = 0 x = 1.1 count = 0 x = 1.1 count = 1 x = 1.1 count = 2	C x = 1 count = 0 x = 1 count = 1 x = 1.1 count = 2 x = 1.1 count = 3 x = 1.1 count = 4 x = 1.1 count = 5	D Compiler Error
Right Answer	B			

Question No. 52	<b>What will be the output of the following program?</b> <pre>#include &lt;iostream&gt; using namespace std; template&lt;int X&gt; struct templateStruct {     static const int val = 2*templateStruct&lt;X-1&gt;::val; }; template&lt;&gt; struct templateStruct&lt;0&gt; {     static const int val = 1 ; }; int main() {     cout &lt;&lt; templateStruct&lt;10&gt;::val &lt;&lt; endl;     return 0; }</pre>			
Answer Options	A Compiler error	B 0	C 1	D 1024
Right Answer	D			

Question No. 53	<b>What will be the output of the following program?</b> <pre>#include&lt;iostream&gt; using namespace std; class Base { public:     Base() { cout&lt;&lt;"Constructor: Base"&lt;&lt;endl; }     virtual ~Base() { cout&lt;&lt;"Destructor : Base"&lt;&lt;endl; } }; class Derived: public Base { public:     Derived() { cout&lt;&lt;"Constructor: Derived"&lt;&lt;endl; }     ~Derived() { cout&lt;&lt;"Destructor : Derived"&lt;&lt;endl; } }; int main() {     Base *Var = new Derived();     delete Var;     return 0; }</pre>			
Answer Options	A Constructor : Base Constructor : Derived Destructor : Base	B Constructor : Base Constructor : Derived Destructor : Derived	C Constructor : Base Constructor : Derived Destructor : Derived Destructor : Base	D Constructor : Derived Destructor : Derived
Right Answer	C			

Question No. 54	<b>What is the output of following C++ program. It is assumed that there is no alignment and a typical implementation of virtual functions is done by the compiler?</b> <pre>#include &lt;iostream&gt; using namespace std; class A { public:     virtual void fun(); }; class B : public A { public:     void fun(); }; int main() { int a = sizeof(A), b = sizeof(B);   if (a == b) cout &lt;&lt; "a == b";   else if (a &gt; b) cout &lt;&lt; "a &gt; b";   else cout &lt;&lt; "a &lt; b";   cout &lt;&lt; endl &lt;&lt; "Size of A = " &lt;&lt; sizeof(A);   cout &lt;&lt; endl &lt;&lt; "Size of B = " &lt;&lt; sizeof(B);   return 0; }</pre>			
Answer Options	A a > b Size of A = 8 Size of B = 4	B a == b Size of A = 8 Size of B = 8	C a < b Size of A = 4 Size of B = 8	D a == b Size of A = 4 Size of B = 4
Right Answer	B			

Question No. 55	<b>What will be the output of the following program?</b> <pre>#include &lt;iostream&gt; using namespace std; class X { public:     virtual void Test() { cout &lt;&lt; "X::Test() "; } }; class Y: public X { public:     void Test() { cout &lt;&lt; "Y::Test() "; } }; class Z: public Y { public:     void Test() { cout &lt;&lt; "Z::Test() "; } }; int main() {     Y *yp = new Z;     yp-&gt;Test();     return 0; }</pre>			
Answer Options	A X::Test()	B Y::Test()	C Z::Test()	D Runtime error
Right Answer	C			

Question No. 56	<b>What will be the output of the following program?</b> <pre>#include&lt;iostream&gt; using namespace std; class Test { private:     int x; public:     Test() {x = 0;}     void destroy() { delete this; }     void print() { cout &lt;&lt; "x = " &lt;&lt; x; } }; int main() {     Test obj;     obj.destroy();     obj.print();     return 0; }</pre>			
Answer Options	A x = 0	B Compiler error	C Runtime error	D undefined behavior
Right Answer	D			

Question No. 57	<b>What will be the output of the following program?</b> <pre>#include&lt;iostream&gt; using namespace std; class Base { public : int x, y; public: Base(int i, int j){ x = i; y = j; } }; class Derived : public Base { public: Derived(int i, int j):x(i), y(j) {} void print() {cout &lt;&lt; x &lt;&lt;" "&lt;&lt; y; } }; int main(void) { Derived q(10, 10); q.print(); return 0; }</pre>			
Answer Options	A	B	C	D
	Compiler Error	0 0	10 10	10 0
Right Answer	A			

Question No. 58	<b>What will be the output of the following program?</b> <pre>#include&lt;iostream&gt; using namespace std; class Base { protected: int a; public: Base() {a = 0;} }; class Derived1: public Base { public: int c; }; class Derived2: public Base { public: int c; }; class DerivedDerived: public Derived1, public Derived2 { public: void show() { cout &lt;&lt; a; } }; int main(void)</pre>			
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	<pre> {     DerivedDerived d;     d.show();     return 0; } </pre>			
Answer Options	A	B	C	D
	Compiler Error in Line "cout << a;"	0	Compiler Error in Line "class DerivedDerived: public Derived1, public Derived2"	1
Right Answer	A			

Question No. 59	<b>What will be the output of the following program?</b> <pre> #include&lt;iostream&gt; using namespace std; class Base1 { public:     char c; }; class Base2 { public:     int c; }; class Derived: public Base1, public Base2 { public:     void show() { cout &lt;&lt; c; } }; int main(void) {     Derived d;     d.show();     return 0; } </pre>			
Answer Options	A	B	C	D
	Garbage Value	Compiler Error in "class Derived: public Base1, public Base2"	Compiler Error in "cout << c;"	Runtime error
Right Answer	C			

Question No. 60	<b>What will be the output of the following program?</b> <pre> #include&lt;iostream&gt; using namespace std;  class A { public:     A(){ cout &lt;&lt;"1";}     A(const A &amp;obj){ cout &lt;&lt;"2";} }; </pre>			
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	<pre> class B: virtual A { public:     B(){cout &lt;&lt;"3";}     B(const B &amp; obj){cout&lt;&lt;"4";} };  class C: virtual A { public:     C(){cout&lt;&lt;"5";}     C(const C &amp; obj){cout &lt;&lt;"6";} };  class D:B,C { public:     D(){cout&lt;&lt;"7";}     D(const D &amp; obj){cout &lt;&lt;"8";} };  int main() {     D d1;     D d(d1); } </pre>			
Answer	A	B	C	D
Options	13571358	15317538	13531758	13581357
Right Answer	A			

Question No. 61	<p><b>What will be the output of the following program?</b></p> <pre> #include &lt;iostream&gt; using namespace std;  class B; class A {     int a; public:     A():a(0) { }     void show(A&amp; x, B&amp; y); };  class B { private:     int b; public:     B():b(0) { }     friend void A::show(A&amp; x, B&amp; y); };  void A::show(A&amp; x, B&amp; y) {     x.a = 10;     cout &lt;&lt; "A::a=" &lt;&lt; x.a &lt;&lt; " B::b=" &lt;&lt; y.b; } </pre>
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	<pre>int main() {     A a;     B b;     a.show(a,b);     return 0; }</pre>			
Answer Options	A Compiler Error	B A::a=10 B::b=0	C Runtime Error	D A::a=0 B::b=0
Right Answer	B			

Question No. 62	Which of the following operators are overloaded by default by the compiler in every user defined classes even if user has not written? 1) Comparison Operator ( == ) 2) Assignment Operator ( = )			
Answer Options	A Both 1 and 2	B Only 1	C Only 2	D None of the two
Right Answer	C			

Question No. 63	<b>What is the output of the following program?</b> <pre>#include&lt;iostream&gt; using namespace std; class Location { private:     int x, y; public:     Location() : x(0), y(0) { }     Location&amp; operator()(int dx, int dy);     void show() {cout &lt;&lt; "x = " &lt;&lt; x &lt;&lt; ", y = " &lt;&lt; y; } }; Location&amp; Location::operator()(int dx, int dy) {     x = dx;     y = dy;     return *this; } int main() {     Location pt;     pt(3, 2);     pt.show();     return 0; }</pre>			
Answer Options	A x = 3, y = 2	B x = 2, y = 3	C Compiler Error	D Runtime Error
Right Answer	A			

Question No. 64	<b>Output of following C++ program?</b> <pre>#include&lt;iostream&gt; using namespace std; int main() {   int x = 10;   int&amp; ref = x;   ref = 20;   cout &lt;&lt; "x = " &lt;&lt; x &lt;&lt; endl ;   x = 30;   cout &lt;&lt; "ref = " &lt;&lt; ref &lt;&lt; endl;   return 0; }</pre>			
Answer Options	A x = 20 ref = 20	B x = 20 ref = 30	C x = 10 ref = 30	D x = 30 ref = 30
Right Answer	B			

Question No. 65	What is the value of A(4) using the following procedure: function A( X : integer) integer: begin if(X<3) then A:=X else A:=A(X-1)*A(X-2)+A(X-3) end:			
Answer Options	A 5	B 6	C 7	D 8
Right Answer	A			

Question No. 66	Stack X has the entries x, y, z (with x on top). Stack Y is empty. An entry popped out of stack X can be printed immediately or pushed to stack Y. An entry popped out of the stack Y can be only be printed. In this arrangement, which of the following permutations of x, y, z are not possible?			
Answer Options	A y x z	B y z x	C z x y	D x y z
Right Answer	C			

Question No. 67	Which of the following operations is performed more efficiently by doubly linked list than by linear linked list?			
Answer Options	A Deleting a node whose location is given	B Searching an unsorted list for a given item	C Inserting a node after the node with a given location	D Traversing the list to process each node
Right Answer	A			

Question No. 68	Which of the following algorithm design technique is used in the quick sort algorithm?			
Answer Options	A Dynamic programming	B Backtracking	C Divide and conquer	D Greedy method
Right Answer	C			

Question No. 69	The searching technique that takes $O(1)$ time to find a data is			
Answer Options	A Linear Search	B Binary Search	C Hashing	D Tree Search
Right Answer	C			

Question No. 70	For the tree below, write the in-order traversal.			
	<pre> graph TD     2((2)) --&gt; 7((7))     2 --&gt; 5((5))     7 --&gt; 2((2))     7 --&gt; 11((11))     2 --&gt; 6((6))     2 --&gt; 5((5))     5 --&gt; 9((9))     9 --&gt; 4((4)) </pre>			
Answer Options	A 6, 2, 5, 7, 11, 2, 5, 9, 4	B 6, 5, 2, 11, 7, 4, 9, 5, 2	C 2, 7, 2, 6, 5, 11, 5, 9, 4	D 2, 7, 6, 5, 11, 2, 9, 5, 4
Right Answer	A			

Question No. 71	The data structure required to evaluate a postfix expression is			
Answer Options	A Queue	B Stack	C Array	D linked-list
Right Answer	B			

Question No. 72	The data structure required to check whether an expression contains balanced parenthesis is			
Answer Options	A Stack	B Queue	C Tree	D Array
Right Answer	A			

Question No. 73	Stack is useful for implementing			
Answer Options	A Radix	B Breadth first search	C Recursion	D None of these
Right Answer	C			

Question No. 74	The hexadecimal equivalent of decimal 241 is			
Answer Options	A (F1)16	B (D3)16	C (E7)16	D (10A)16
Right Answer	A			

Question No. 75	Convert the decimal number 14.875 to binary			
Answer Options	A 1110.0111	B 1110.111	C 1111.1011	D 1100.11
Right Answer	B			

Question No. 76	TCP ensures delivery of packets by _____.			
Answer Options	A Using Queues	B Using CheckSum	C Both Checksum and Queues	D None of these
Right Answer	B			

Question No. 77	Does TCP, UDP, IP code functions same in both Windows and Linux OS?			
Answer Options	A Only in Unix variants but not in Windows.	B FALSE	C Depends	D TRUE
Right Answer	D			

Question No. 78	What is the order of arguments in listen()?			
Answer Options	A Param 1 = Maximum number of connections, Param 2= The Socket to Listen	B Param 1 = Port Number, Param 2= IP address	C Param 1 = The Socket to Listen, Param 2= Maximum number of connections	D None
Right Answer	C			

Question No. 79	Socket Programming is generally _____ programming, meaning _____ applications and graphical user interfaces run over the top of its structures and objects.			
Answer Options	A Lower Level, Higher Level	B Lower Level, Middle Level	C Middle Level, Higher Level	D Higher Level, Lower Level
Right Answer	A			

Question No. 80	SMTP is part of the _____ layer of the TCP/IP protocol.			
Answer Options	A application	B transport	C internet	D link
Right Answer	A			

Question No. 81	Which one describes the position of the waveform relative to time 0.			
Answer Options	A	B	C	D
	Frequency	Phase	Amplitude	Voltage
Right Answer	B			

Question No. 82	<pre>#include &lt;stdio.h&gt;  int main () { char c = 'i'; while (c++ &lt;= 'p') putchar(c-1); return 0; }</pre> <p>What should replace 'xyz' such that the output will be: ijklmnop</p>			
Answer Options	A	B	C	D
	c++	c-1	c	-c
Right Answer	B			

Question No. 83	<p>Consider the following type definition:  typedef char c[2];  c Array [5];  What will be the sizeof(Array)?  (Assume one character occupies 1 byte)</p>			
Answer Options	A	B	C	D
	10	7	5	2
Right Answer	A			

Question No. 84	<p>What is the output of the following?  enum coin {penny, nickel, dime, quarter = 25, half – dollar, dollar}; printf ("%d %d", dime, dollar);</p>			
Answer Options	A	B	C	D
	2,5	2,27	3,27	2,25
Right Answer	B			

Question No. 85	Which of the following sequence of array elements form a valid binary min-heap?			
Answer Options	A	B	C	D
	4, 7, 10, 8, 9, 12, 13	23, 25, 28, 24, 32, 30	14, 17, 25, 30, 15, 24, 33	60, 80, 70, 65, 85, 90, 95
Right Answer	A			

Question No. 86	To remove an element (dequeue) from the linear and circular queue of N max size the operations we must perform is of respective order			
Answer Options	A	B	C	D
	O(N) and O(N)	O(1) and O(N)	O(N) and O(1)	O(1) and O(1)
Right Answer	C			

Question No. 87	A circular queue is empty when			
Answer Options	A	B	C	D
	rear = (front+1)%QUEUE_SIZE	front = (rear+1)%QUEUE_SIZE	rear = (front)%QUEUE_SIZE	front = (rear)%QUEUE_SIZE
Right Answer	B			

Question No. 88	<pre> Func3() { } Func2() {     Func3() } Func1() {     Func2() } main() {     Func1() } </pre> <p>The calls to the functions will be maintained by which data structure?</p>			
Answer Options	A	B	C	D
	Queue	Tree	Stack	Table
Right Answer	C			

Question No. 89	When a collision occurs in hash table which strategy/s is/are adopted? 1. Linear probe 2. This replaces the existing element 3. Bucket of elements for collision spot is created 4. Collision is avoided by selecting proper key			
Answer Options	A	B	C	D
	(1), (2) and (4)	(1) and (3)	(1) and (4)	(1), (2) and (3)
Right Answer	C			

Question No. 90	To implement binary tree which construct you must use?			
Answer Options	A	B	C	D
	Array	Linked list	Array or linked list	None of these
Right Answer	C			

Question No. 91	A file system with 300 GB uses a file descriptor with 8 direct block address, 1 indirect block address and 1 doubly indirect block address. The size of each disk block is 128 Bytes and the size of each disk block address is 8 Bytes. The maximum possible file size in this file system is			
Answer Options	A	B	C	D
	35 KB	30 KB	280 KB	140 KB
Right Answer	A			

Question No. 92	An application loads 100 libraries at startup. Loading each library requires exactly one disk access. The seek time of the disk to a random location is given as 10ms. Rotational speed of disk is 6000rpm. If all 100 libraries are loaded from random locations on the disk, how long does it take to load all libraries?  (The time to transfer data from the disk block once the head has been positioned at the start of the block may be neglected)			
Answer Options	A	B	C	D
	0.50s	1.00s	1.25s	1.50s
Right Answer	D			

Question No. 93	Consider the following table of arrival time and burst time for three processes P0, P1 and P2.															
	<table border="1"> <thead> <tr> <th>Process</th> <th>Arrival Time</th> <th>Burst Time</th> </tr> </thead> <tbody> <tr> <td>P0</td> <td>0 ms</td> <td>9 ms</td> </tr> <tr> <td>P1</td> <td>1 ms</td> <td>4 ms</td> </tr> <tr> <td>P2</td> <td>2 ms</td> <td>9 ms</td> </tr> </tbody> </table>			Process	Arrival Time	Burst Time	P0	0 ms	9 ms	P1	1 ms	4 ms	P2	2 ms	9 ms	
Process	Arrival Time	Burst Time														
P0	0 ms	9 ms														
P1	1 ms	4 ms														
P2	2 ms	9 ms														
	The pre-emptive shortest job first scheduling algorithm is used. Scheduling is carried out only at arrival or completion of processes. What is the average waiting time for the three processes?															
Answer Options	A	B	C	D												
	4.0 ms	4.33 ms	5.0 ms	6.33 ms												
Right Answer	C															

Question No. 94	In which one of the following page replacement policies, Belady's anomaly may occur?			
Answer Options	A	B	C	D
	FIFO	Optimal	LRU	MRU
Right Answer	A			

Question No. 95	Consider a disk system with 50 cylinders. The requests to access the cylinders occur in following sequence: 8, 37, 10, 9, 22, 44, 4, 16, 20 Assuming that the head is currently at cylinder 40, what is the time taken to satisfy all requests if it takes 1ms to move from one cylinder to adjacent one and shortest seek time first policy is used?			
Answer Options	A 46	B 34	C 56	D 63
Right Answer	A			

Question No. 96	To change the mode of access for a file in UNIX for owner full access, group read and execute access, and everyone only read access which decimal number should be used?			
Answer Options	A 713	B 124	C 731	D 421
Right Answer	C			

Question No. 97	Assume a process can have maximum 4 MB space in memory. What is the maximum size of an array of integers (signed) and array of pointers respectively for a 32bit OS?			
Answer Options	A $2^{20}$ and $2^{19}$	B $2^{20}$ and $2^{20}$	C $2^{14}$ and $2^{14}$	D $2^{14}$ and $2^{13}$
Right Answer	A			

Question No. 98	Which of the following statements are TRUE about an SQL query? P : An SQL query can contain a HAVING clause even if it does not have a GROUP BY clause Q : An SQL query can contain a HAVING clause only if it has a GROUP BY clause R : All attributes used in the GROUP BY clause must appear in the SELECT clause S : Not all attributes used in the GROUP BY clause need to appear in the SELECT clause			
Answer Options	A P and R	B Q and R	C Q and S	D P and S
Right Answer	B			

Question No. 99	What is wrong with the following table "emp"  <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>emp_id</th> <th>emp_city</th> <th>emp_city_std_code</th> </tr> </thead> <tbody> <tr> <td>1001</td> <td>Kolkata</td> <td>033</td> </tr> <tr> <td>1002</td> <td>Chennai</td> <td>044</td> </tr> </tbody> </table>				emp_id	emp_city	emp_city_std_code	1001	Kolkata	033	1002	Chennai	044
emp_id	emp_city	emp_city_std_code											
1001	Kolkata	033											
1002	Chennai	044											
Answer Options	A Not in 1NF	B Not in 2NF	C Not in 3NF	D Not in BCNF									
Right Answer	D												



Question No. 100	<p>Consider a database table T containing two columns X and Y each of type integer.</p> <p>After the creation of the table, one record (X=1, Y=2) is inserted in the table. Let MX and MY denote the respective maximum values of X and Y among all records in the table at any point in time. Using MX and MY, new records are inserted in the table 128 times with X and Y values being MX+1, 2*MY-1 respectively.</p> <p>It may be noted that each time after the insertion, values of MX and MY change. What will be the output of the following SQL query after the steps mentioned above are carried out?</p> <p>SELECT Y FROM T WHERE X=7;</p>			
Answer Options	A	B	C	D
	127	90	60	128
Right Answer	C			