

# CII – iPATE 2.0 (2021)

Computer Based PAN India Examination

Category: GRADUATE ENGINEER (ENTRY LEVEL)

Engineering Discipline: INSTRUMENTATION ENGINEERING

Questions & Answers

(Reviewed, Revised & Published dtd. 26.11.2021)

## 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	Virus and Aarti started a car journey from Chandigarh to Delhi, which are 288 km apart. Virus took 12 hours more than Aarti to complete the journey. Had Virus 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 Virus 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	D			

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			

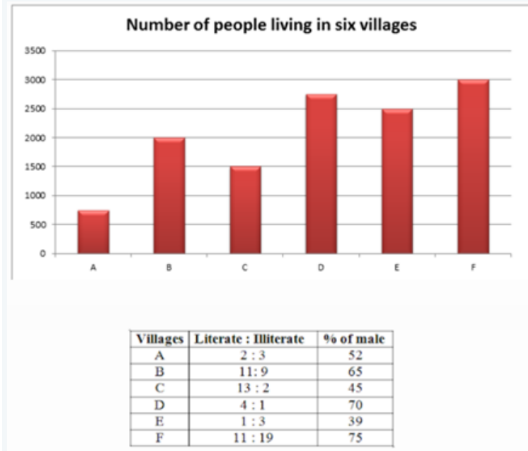
Question No. 14	In the following question choose the word which is the exact OPPOSITE of the given word. FICKLE			
Answer Options	A)	B)	C)	D)
	Courageous	Sincere	Steadfast	Humble
Right Answer	C			

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) 38%	B) 35%	C) 37%	D) 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) 55%	B) 53%	C) 51%	D) 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) 320:527	B) 527:330	C) 330:527	D) 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) 1823	B) 1723	C) 1623	D) 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) 25.72%	B) 25.76%	C) 24.76%	D) 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)	B)	C)	D)
	The average temperature of Earth's surface will increase gradually	The Oxygen content of the atmosphere will decrease	Increased amount of Ultraviolet radiation will reach earth's surface	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)	B)	C)	D)
	Purchase of building for cash	The sale of land for cash	Retirement of long-term debt	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)	B)	C)	D)
	Buildings	Machinery	Land	Equipment
Right Answer	C			

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

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

Question No. 38	What is the correct sequence in the formation of a contract?			
Answer Options	A)	B)	C)	D)
	Offer, acceptance, agreement, consideration.	Agreement, consideration, offer, acceptance.	Offer, agreement, consideration, acceptance.	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)
	$M^0L^2T^{-2}K^{-1}mol^{-1}$	$M^0L^2T^{-2}K^{-1}mol^{-1}$	$ML^2T^{-2}K^{-1}mol^{-1}$	$ML^{-2}T^{-2}K^{-1}mol^{-1}$
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	C			

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	The RMS value of the voltage $u(t)=3+4\cos(3t)$ is			
Answer Options	A) $\sqrt{17}$ V	B) 5 V	C) 7 V	D) $(3+2\sqrt{2})$ V
Right Answer	A			

Question No. 52	A passive 2-port network is in a steady-state. Compared to its input, the steady state output can never offer			
Answer Options	A) higher voltage	B) lower impedance	C) greater power	D) better regulation
Right Answer	C			

Question No. 53	An inductive coil connected to a 200V, 50Hz AC supply with 10A current flowing through it dissipates 1000W. Which of the following will have least value?			
Answer Options	A) Resistance R	B) Reactance X	C) Impedance Z	D) None of these
Right Answer	A			

Question No. 54	What is the major factor for determining, whether a medium is free space, lossless dielectric, lossy dielectric or good conductor			
Answer Options	A) Reflection coefficient	B) Attenuation constant	C) Loss tangent	D) Constitutive parameters
Right Answer	C			

Question No. 55	A parallel resonant circuit has a resistance of 2k ohm and half power frequencies of 80KHz and 90KHz. The quality factor is			
Answer Options	A) 8.5	B) 10	C) 48	D) 20
Right Answer	A			

Question No. 56	A sine wave voltage is applied across a capacitor, when the frequency of the voltage is increased, the current through capacitor			
Answer Options	A) increases	B) decreases	C) remains the same	D) is zero
Right Answer	A			

Question No. 57	The diagonal elements of a nodal admittance matrix are strengthened by adding			
Answer Options	A) shunt inductors	B) shunt capacitors	C) loads	D) generators
Right Answer	A			

Question No. 58	An integration of any vector around closed path is always equal to the integration of the curl of that vector throughout the surface enclosed by that path. The above statement is known as			
Answer Options	A) Ampere's law	B) Stoke's theorem	C) Biot-Savart's law	D) Physical interpretations of curl
Right Answer	B			

Question No. 59	In a uniform electric field, field lines and equipotentials			
Answer Options	A) are parallel to one another	B) intersect at 45 degree	C) intersect at 30 degree	D) are orthogonal
Right Answer	D			

Question No. 60	Inside a hollow conducting sphere			
Answer Options	A) electric field is zero	B) electric field is a non-zero constant	C) electric field changes with the magnitude of the charge given to the conductor	D) electric field changes with distance from the centre of the sphere
Right Answer	A			

Question No. 61	Which one is a causal system?			
Answer Options	A) $y(n)=3x(n)-2x(n-1)$	B) $y(n)=3x(n)+2x(n+1)$	C) $y(n)=3x(n+1)+2x(n-1)$	D) $y(n)=3x(n+1)+2x(n-1)+x(n)$
Right Answer	A			

Question No. 62	Which one is most appropriate dynamic system out of the following			
Answer Options	A) $y(n)=y(n-1)+y(n+1)$	B) $y(n)=y(n-1)$	C) $y(n)=y(n)$	D) $y(n)+y(n+1)+y(n+3)=0$
Right Answer	A			

Question No. 63	A LTI system is completely characterized by its			
Answer Options	A) unit impulse response	B) time shifted impulses	C) unit step response	D) response to any signal (bounded)
Right Answer	A			

Question No. 64	Consider a signal $f(t)=3t^2+2t+1$ which is multiplied by 2 unit delayed version of impulse and integrated over period $-a$ to $a$ , the resultant is given by			
Answer Options	A) 1	B) 6	C) 17	D) 16
Right Answer	C			

Question No. 65	For a particular signal, average power in its six harmonic components as 10mW each and fundamental component also has 10mV power. Then, average power in the periodic signal will be			
Answer Options	A) 70	B) 60	C) 10	D) 5
Right Answer	B			

Question No. 66	Which type of signal is ramp signal?			
Answer Options	A) energy signal	B) power signal	C) both energy and power signal	D) neither energy nor power signal
Right Answer	D			

Question No. 67	Fourier transform of the signal $x(t)=e^{-4 t }$ is			
Answer Options	A) $8/(16+\omega^2)$	B) $-4/(16+\omega^2)$	C) $4/(16+\omega^2)$	D) $-8/(16+\omega^2)$
Right Answer	A			

Question No. 68	In a constant voltage transformer (CVT), the output voltage remains constant due to			
Answer Options	A) Capacitor	B) input inductor	C) saturation	D) tapped windings
Right Answer	A			

Question No. 69	The core flux of a practical transformer with a resistive load			
Answer Options	A) is strictly constant with load changes	B) increases linearly with load	C) increases as the square root of the load	D) decreases with increased load
Right Answer	A			

Question No. 70	The colour code of 1K ohm resistance is			
Answer Options	A) black, brown and red	B) red, brown and brown	C) brown, black and red	D) black, black and red
Right Answer	C			

Question No. 71	In an Amplitude modulation with Modulating Signal $30 \sin(2\pi 1000t)$ and the Carrier Signal is $60 \sin(2\pi 10000t)$ . The modulated signal frequency response will have			
Answer Options	A) a) Upper Side band -Frequency = 11KHz -Amplitude = 120 b) Lower Side Band -Frequency = 9KHz -Amplitude = 120	B) a) Upper Side band -Frequency = 11KHz -Amplitude = 15 b) Lower Side Band - Frequency = 9KHz -Amplitude = 15	C) a) Upper Side Band -Frequency= 9KHz -Amplitude = 30 b) Lower Side Band -Frequency = 11KHz -Amplitude = 30	D) a) Upper Side band -Frequency= 10KHz -Amplitude = 30 b) Lower Side Band -Frequency = 10KHz -Amplitude = 30
Right Answer	B			

Question No. 72	The back-lighting technique for LCD, LED and OLED monitors are as follows			
Answer Options	A) a) LCD monitor has Fluorescent Back Lighting layer b) LED monitor has LED Backlighting layer. c) OLED monitor has OLED Backlighting	B) a) LCD monitor has Fluorescent Back Lighting layer. b) LED monitor has no Backlighting layer. c) OLED monitor has OLED Back Lighting layer	C) a) LCD monitor has no Back-Lighting layer. b) LED has LED Back Lighting layer. c) OLED monitor has OLED Backlighting layer	D) a) LCD monitor has Fluorescent Back Lighting b) LED monitor has LED Backlighting layer. c) OLED monitor has no separate Back Lighting layer
Right Answer	D			

Question No. 73	A linear second order system with the transfer function: $G(s) = \frac{49}{s^2 + 8s + 49}$ is initially at rest and is subject of the system will exhibit a peak overshoot of			
Answer Options	A) 16%	B) 9%	C) 2%	D) zero
Right Answer	C			

Question No. 74	The feedback system with characteristic equation $s^4 + 20ks^3 + 5s^2 + 10s + 15 = 0$			
Answer Options	A) stable for all values of k	B) stable for positive value of k	C) stable for $a > k > 7.0$	D) unstable for any value of k
Right Answer	D			

Question No. 75	Thermal conductivity measurement is used for the determination of			
Answer Options	A) O <sub>2</sub> percentage in flue gas	B) Specific gravity of petro fuels	C) Composition of an alloy	D) CO <sub>2</sub> percentage in flue gas
Right Answer	D			

Question No. 76	The transfer function for a PID controller is [where $T_i$ is the integral (reset) time and $T_d$ is the derivative time]			
Answer Options	A)	B)	C)	D)
	$K_c (1 + T_i S + T_d) \cdot S$	$K_c [1 + (1/T_i S) + T_d S]$	$K_c (1 + T_i S + (1/T_d S))$	None of these
Right Answer	B			

Question No. 77	Out of the following thermocouple wire insulating materials, the highest temperature rating is for			
Answer Options	A)	B)	C)	D)
	Teflon	Ceramic fibre	Asbestos	Fibre glass
Right Answer	B			

Question No. 78	Turbine flow meters are suitable for			
Answer Options	A)	B)	C)	D)
	Very limited flow range	Cryogenic flow measurements	Aerospace and air borne applications	Both B) and C)
Right Answer	D			

Question No. 79	Thermowells are used in thermocouples for temperature measurements to			
Answer Options	A)	B)	C)	D)
	Guard against corrosive and oxidizing action of thermocouple materials	Reduce measurement lag	Increase the fidelity	Increase the sensitivity
Right Answer	A			

Question No. 80	The pressure drop across an orifice plate for a particular flow rate is 5 kg/m <sup>2</sup> . If the flow rate is doubled (within the operating range of the orifice), the corresponding pressure drop in kg/m <sup>2</sup> is			
Answer Options	A)	B)	C)	D)
	2.5	5.0	20.0	25.0
Right Answer	C			

Question No. 81	Which of the following is the most widely employed logic family?			
Answer Options	A)	B)	C)	D)
	Emitter coupled logic	Transistor-transistor logic	CMOS logic family	NMOS logic
Right Answer	B			

Question No. 82	Which of the following is the detection limit of the Coulometric method used for measurement of Sulphur di-oxide?			
Answer Options	A)	B)	C)	D)
	0.1 PPM	1 PPM	10 PPM	0.01 PPM
Right Answer	D			

Question No. 83	What happens to the viscosity of liquid and gas when the temperature is increased?			
Answer Options	A)	B)	C)	D)
	Both increases	Both decreases	For liquid increases and for gas decreases	For liquid decreases and for gas increases
Right Answer	D			

Question No. 84	Pick up the wrong statement			
Answer Options	A)	B)	C)	D)
	O <sub>2</sub> , NO and NO <sub>2</sub> exhibit paramagnetic properties as a result of unpaired electrons	CO <sub>2</sub> is the strongest paramagnetic gas	Paramagnetic susceptibility of gases decreases with temperature	Paramagnetic susceptibility of gases permits the measurement of their concentration
Right Answer	B			

Question No. 85	Orifice type Viscometer converts viscosity to -----			
Answer Options	A)	B)	C)	D)
	Force	Pressure	Displacement	Potential difference
Right Answer	B			

Question No. 86	In an Anderson Bridge, the unknown inductance is measured in terms of			
Answer Options	A)	B)	C)	D)
	Known inductance & resistance	Known capacitance & resistance	Known resistance	Known inductance
Right Answer	B			

Question No. 87	Inter-network connection device that restricts data communication traffic between two connected networks is called			
Answer Options	A)	B)	C)	D)
	Anti-virus software	IDS	Firewall	Router
Right Answer	C			



Question No. 88	The number of comparators required for implementing an 8-bit flash analog-to-digital converter is			
Answer Options	A) 8	B) 128	C) 255	D) 256
Right Answer	C			

Question No. 89	If the ultimate gain and period of a control loop are 15 and 15 sec. respectively, then the quarter decay response tuning parameters for a PI controller ( $K_P$ , $T_I$ ) are			
Answer Options	A) $K_P = 6.75$ , $T_I = 0.4167$	B) $K_P = 7.5$ , $T_I = 0.3125$	C) $K_P = 9$ , $T_I = 0.25$	D) $K_P = 9$ , $T_I = 0.4167$
Right Answer	A			

Question No. 90	An Orifice plate is designed to generate a differential pressure (DP) of 250mm WC at the maximum flowrate of 100 lit/min (LPM). What is the flowrate when the DP across the orifice is 62.5mm WC			
Answer Options	A) 6.25 LPM	B) 25 LPM	C) 50 LPM	D) 75 LPM
Right Answer	C			

Question No. 91	An electronic level transmitter is calibrated to a range of 10 cm to 100 cm. If the transmitter output is 12 mA then the liquid level is			
Answer Options	A) 55 cm	B) 67.5 cm	C) 75 cm	D) 45 cm
Right Answer	A			

Question No. 92	A thermometer is calibrated from 100°C to 200 °C. The accuracy specified within 0.20% of instrument span. The maximum static error is			
Answer Options	A) $\pm 0.125$ °C	B) $\pm 0.40$ °C	C) $\pm 0.20$ °C	D) $\pm 0.10$ °C
Right Answer	C			

Question No. 93	Ripple frequency of a six-phase half-wave rectifier for 230V, 50Hz input will be			
Answer Options	A) 150 Hz	B) 50 Hz	C) 300 Hz	D) 100 Hz
Right Answer	C			

Question No. 94	Two major devices, such as, Parabolic dish antennae and Core antennae are used for _____ type level measuring device			
Answer Options	A) Ultrasonic type	B) Radar type	C) Differential pressure type	D) Nucleonic type
Right Answer	B			

Question No. 95	"An e.m.f. of the order of mV is generated when two solutions of different hydrogen ion concentrations are separated by a thin glass wall." This is the working principle of a			
Answer Options	A) pH meter	B) Polarimeter	C) Chromatograph	D) Polarograph
Right Answer	A			

Question No. 96	Working principle of Radiation pyrometer is based on			
Answer Options	A) Planck's law	B) Rayleigh-Jeans law	C) Stefan-Boltzmann law	D) Sakuma-Hattori equation
Right Answer	C			

Question No. 97	A manometer measures the _____ pressure			
Answer Options	A) Atmospheric	B) Absolute	C) Gauge	D) None of these
Right Answer	C			

Question No. 98	Which of the following thermocouples can measure the maximum temperature?			
Answer Options	A) Platinum-Rhodium	B) Tungsten-Molybdenum	C) Chromel-Alumel	D) Iron-Constantan
Right Answer	B			

Question No. 99	Liquid discharge from a tank or reservoir cannot be measured by			
Answer Options	A) Orifice meter	B) Weirs	C) Mouthpieces	D) Notches
Right Answer	A			

Question No. 100	In the Root locus method, a pole of transfer function $G(S)$ is the value of 'S' for which $G(S)$ approaches			
Answer Options	A) -1	B) 0	C) 1	D) $\alpha$ (Infinity)
Right Answer	D			