General Aptitude (GA)

Q.1 – Q.5 Multiple Choice Question (MCQ), carry ONE mark each (for each wrong answer: – 1/3).

Q.1	**Getting to the top is _____ than staying on top.**
(A)	more easy
(B)	much easy
(C)	easiest
(D)	easier

Q.2	 **The mirror image of the above text about the X-axis is**
(A)	
(B)	
(C)	
(D)	

Q.3	**In a company, 35% of the employees drink coffee, 40% of the employees drink tea and 10% of the employees drink both tea and coffee. What % of employees drink neither tea nor coffee?**
(A)	15
(B)	25
(C)	35
(D)	40

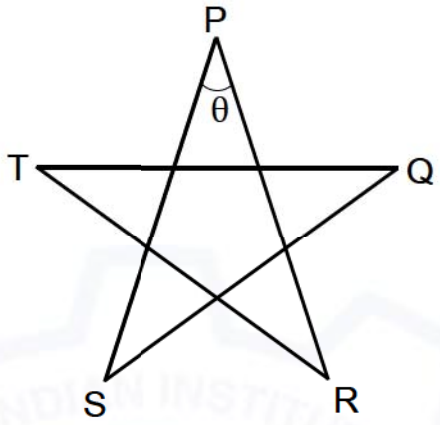
Q.4	$\oplus$ and $\odot$ are two operators on numbers p and q such that $p \oplus q = \frac{p^2+q^2}{pq}$ and $p \odot q = \frac{p^2}{q}$; If $x \oplus y = 2 \odot 2$, then $x =$
(A)	$\frac{y}{2}$
(B)	y
(C)	$\frac{3y}{2}$
(D)	$2y$

Q.5	Four persons P, Q, R and S are to be seated in a row, all facing the same direction, but not necessarily in the same order. P and R cannot sit adjacent to each other. S should be seated to the right of Q. The number of distinct seating arrangements possible is:
(A)	2
(B)	4
(C)	6
(D)	8

Q. 6 – Q. 10 Multiple Choice Question (MCQ), carry TWO marks each (for each wrong answer: – 2/3).

Q.6	**Statement: Either P marries Q or X marries Y** **Among the options below, the logical NEGATION of the above statement is:**
(A)	P does not marry Q and X marries Y.
(B)	Neither P marries Q nor X marries Y.
(C)	X does not marry Y and P marries Q.
(D)	P marries Q and X marries Y.

Q.7	**Consider two rectangular sheets, Sheet M and Sheet N of dimensions 6 cm x 4 cm each.** **Folding operation 1: The sheet is folded into half by joining the short edges of the current shape.** **Folding operation 2: The sheet is folded into half by joining the long edges of the current shape.** **Folding operation 1 is carried out on Sheet M three times.** **Folding operation 2 is carried out on Sheet N three times.** **The ratio of perimeters of the final folded shape of Sheet N to the final folded shape of Sheet M is _____.**
(A)	13 : 7
(B)	3 : 2
(C)	7 : 5
(D)	5 : 13

Q.8	 **Five line segments of equal lengths, PR, PS, QS, QT and RT are used to form a star as shown in the figure above.** **The value of θ, in degrees, is _____**
(A)	36
(B)	45
(C)	72
(D)	108

Q.9	**A function, λ, is defined by** $\lambda(p,q)=\begin{cases}(p-q)^2, & \text{if } p\geq q,\\ p+q, & \text{if } p<q.\end{cases}$ **The value of the expression** $\frac{\lambda\left(-(-3+2),(-2+3)\right)}{\left(-(-2+1)\right)}$ **is:**
(A)	-1
(B)	0
(C)	$\frac{16}{3}$
(D)	16

Q.10	**Humans have the ability to construct worlds entirely in their minds, which don't exist in the physical world. So far as we know, no other species possesses this ability. This skill is so important that we have different words to refer to its different flavors, such as imagination, invention and innovation.** **Based on the above passage, which one of the following is TRUE?**
(A)	No species possess the ability to construct worlds in their minds.
(B)	The terms imagination, invention and innovation refer to unrelated skills.
(C)	We do not know of any species other than humans who possess the ability to construct mental worlds.
(D)	Imagination, invention and innovation are unrelated to the ability to construct mental worlds.

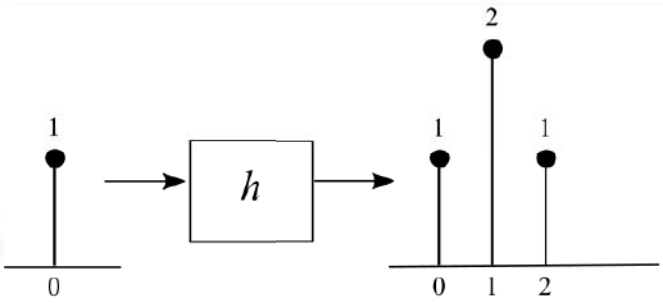
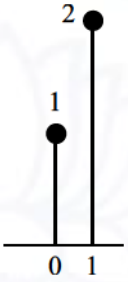
Instrumentation Engineering (IN)

Q.1 – Q.8 Multiple Choice Question (MCQ), carry ONE mark each (for each wrong answer: – 1/3).

Q.1	**Consider the row vectors $v = (1, 0)$ and $w = (2, 0)$. The rank of the matrix $M = 2v^T v + 3w^T w$, where the superscript T denotes the transpose, is**
(A)	1
(B)	2
(C)	3
(D)	4

Q.2	**Consider the sequence $x_n = 0.5x_{n-1} + 1, n = 1, 2, \ldots \ldots$ with $x_0 = 0$. Then $\lim_{n\to\infty} x_n$ is**
(A)	0
(B)	1
(C)	2
(D)	∞

Q.3	**An infinitely long line, with uniform positive charge density, lies along the z-axis. In cylindrical coordinates $(r, \emptyset, z)$, at any point $\vec{P}$ not on the z-axis, the direction of the electric field is**
(A)	$\hat{r}$
(B)	$\hat{\emptyset}$
(C)	$\hat{z}$
(D)	$\frac{(\hat{r}+\hat{z})}{\sqrt{2}}$

Q.4	**The input-output relationship of an LTI system is given below.**  **For an input $x[n]$ shown below**  **the peak value of the output when $x[n]$ passes through h is ____.**
(A)	2
(B)	4
(C)	5
(D)	6

Q.5	In an ac main, the rms voltage V_{ac}, rms current I_{ac} and power W_{ac} are measured as: $V_{ac} = 100\ V \pm 1\%$, $I_{ac} = 1\ A \pm 1\%$ and $W_{ac} = 50\ W \pm 2\%$ (errors are with respect to readings). The percentage error in calculating the power factor using these readings is
(A)	1%
(B)	2%
(C)	3%
(D)	4%

Q.6	Let $u(t)$ denote the unit step function. The bilateral Laplace transform of the function $f(t) = e^t u(-t)$ is ____.
(A)	$\frac{1}{s-1}$ with real part of s < 1
(B)	$\frac{1}{s-1}$ with real part of s > 1
(C)	$\frac{-1}{s-1}$ with real part of s < 1
(D)	$\frac{-1}{s-1}$ with real part of s > 1

Q.7	Input-output characteristic of a temperature sensor is exponential for a
(A)	Thermistor
(B)	Thermocouple
(C)	Resistive Temperature Device (RTD)
(D)	Mercury thermometer

Q.8	The signal $\sin\left(\sqrt{2\pi t}\right)$ is
(A)	periodic with period $T = \sqrt{2\pi}$
(B)	not periodic
(C)	periodic with period $T = 2\pi$
(D)	periodic with period $T = 4\pi^2$

Q.9 – Q.11 Multiple Select Question (MSQ), carry ONE mark each (no negative marks).

Q.9	**The step response of a circuit is seen to have an oscillatory behaviour at the output with oscillations dying down after some time. The correct inference(s) regarding the transfer function from input to output is/are**
(A)	that it is of at least second order.
(B)	that it has at least one pole-pair that is underdamped.
(C)	that it does not have a real pole.
(D)	that it is a first order system.

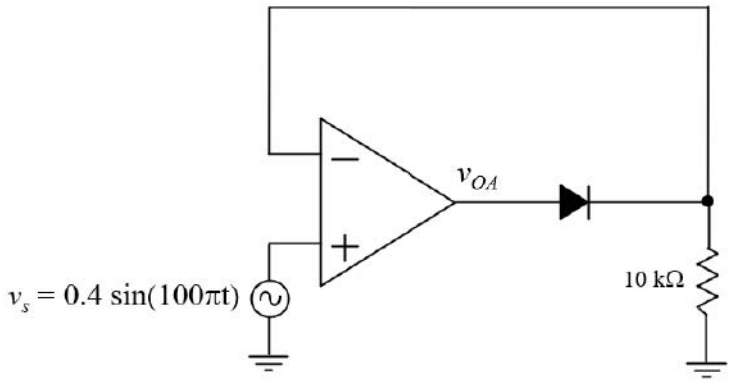
Q.10	**For a 4-bit Flash type Analog to Digital Convertor (ADC) with full scale input voltage range "V", which of the following statement(s) is/are true?**
(A)	The ADC requires 15 comparators.
(B)	The ADC requires one 4 to 2 priority encoder and 4 comparators.
(C)	A change in the input voltage by $\frac{V}{16}$ will always flip MSB of the output.
(D)	A change in the input voltage by $\frac{V}{16}$ will always flip the LSB of the output.

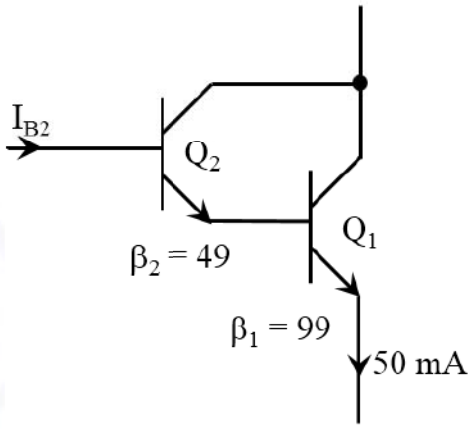
Q.11	**A 16-bit microprocessor has twenty address lines (A_0 to A_{19}) and 16 data lines. The higher eight significant lines of the data bus of the processor are tied to the 8-data lines of a 16 Kbyte memory that can store one byte in each of its 16K address locations. The memory chip should map onto contiguous memory locations and occupy only 16 Kbyte of memory space. Which of the following statement(s) is/are correct with respect to the above design?**
(A)	If the 16 Kbyte of memory chip is mapped with a starting address of 80000H, then the ending address will be 83FFFH.
(B)	The active high chip-select needed to map the 16 Kbyte memory with a starting address at F0000H is given by the logic expression ($A_{19} \cdot A_{18} \cdot A_{17} \cdot A_{16}$).
(C)	The 16 Kbyte memory cannot be mapped with contiguous address locations with a starting address as 0F000H using only A_{19} to A_{14} for generating chip select.
(D)	The above chip cannot be interfaced as the width of the data bus of the processor and the memory chip differs.

Q.12 – Q.25 Numerical Answer Type (NAT), carry ONE mark each (no negative marks).

Q.12	**A single-phase transformer has a magnetizing inductance of 250 mH and a core loss resistance of 300 Ω, referred to primary side. When excited with a 230 V, 50 Hz sinusoidal supply at the primary, the power factor of the input current drawn, with secondary on open circuit, is ____ (rounded off to two decimal places).**

Q.13	**Taking N as positive for clockwise encirclement, otherwise negative, the number of encirclements N of $(-1, 0)$ in the Nyquist plot of $G(s) = \frac{3}{s-1}$ is ____.**

Q.14	**The diode used in the circuit has a fixed voltage drop of 0.6 V when forward biased. A signal v_s is given to the ideal OpAmp as shown. When v_s is at its positive peak, the output (v_{OA}) of the OpAmp in volts is _____.** 

Q.15	**The transistor Q_1 has a current gain $\beta_1 = 99$ and the transistor Q_2 has a current gain $\beta_2 = 49$. The current I_{B2} in microampere is _____.** 

Q.16	**A 300 V, 5 A, LPF wattmeter has a full scale of 300 W. The wattmeter can be used for loads supplied by 300 V ac mains with a maximum power factor of _____ (rounded off to one decimal place).**

Q.17	**A 10-bit ADC has a full-scale of 10.230 V, when the digital output is $(11\ 1111\ 1111)_2$. The quantization error of the ADC in millivolt is _____.**

Q.18	**A strain gage having nominal resistance of 1000 Ω has a gage factor of 2.5. If the strain applied to the gage is 100 μm/m, its resistance in ohm will change to _____ (rounded off to two decimal places).**

Q.19	**Given: Density of mercury is 13,600 kg/m^3 and acceleration due to gravity is 9.81 m/s^2. Atmospheric pressure is 101 kPa. In a mercury U-tube manometer, the difference between the heights of the liquid in the U-tube is 1 cm. The differential pressure being measured in pascal is _____ (rounded off to the nearest integer).**

Q.20	**A piezoresistive pressure sensor has a sensitivity of 1 (mV/V)/kPa. The sensor is excited with a dc supply of 10 V and the output is read using a 3 ½ digit 200 mV full-scale digital multimeter. The resolution of the measurement set-up, in pascal is ___.**

Q.21	**An amplitude modulation (AM) scheme uses tone modulation, with modulation index of 0.6. The power efficiency of the AM scheme is ____ % (rounded off to one decimal place).**

Q.22	**When the movable arm of a Michelson interferometer in vacuum $(n = 1)$ is moved by 325 µm, the number of fringe crossings is 1000. The wavelength of the laser used in nanometers is ____.**

Q.23	**Consider the function $f(x) = -x^2 + 10x + 100$. The minimum value of the function in the interval $[5, 10]$ is ___.**

Q.24	**Let $f(z) = \frac{1}{z^2+6z+9}$ defined in the complex plane. The integral $\oint_c f(z)dz$ over the contour of a circle c with center at the origin and unit radius is ____.**

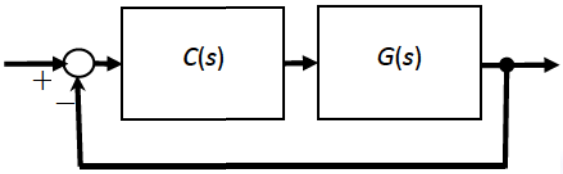
Q.25	**The determinant of the matrix M shown below is ____.** $$M = \begin{bmatrix} 1 & 2 & 0 & 0 \\ 3 & 4 & 0 & 0 \\ 0 & 0 & 4 & 3 \\ 0 & 0 & 2 & 1 \end{bmatrix}$$

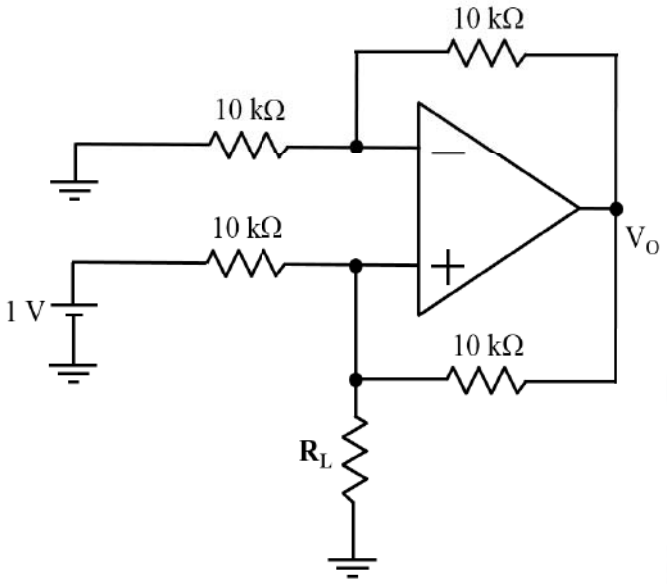
Q.26 – Q.36 Multiple Choice Question (MCQ), carry TWO mark each (for each wrong answer: – 2/3).

Q.26	**$f(z) = (z-1)^{-1} - 1 + (z-1) - (z-1)^2 + \cdots$ is the series expansion of**
(A)	$\frac{-1}{z(z-1)}$ for $\lvert z-1\rvert < 1$
(B)	$\frac{1}{z(z-1)}$ for $\lvert z-1\rvert < 1$
(C)	$\frac{1}{(z-1)^2}$ for $\lvert z-1\rvert < 1$
(D)	$\frac{-1}{(z-1)}$ for $\lvert z-1\rvert < 1$

Q.27	**A single-phase transformer has maximum efficiency of 98 %. The core losses are 80 W and the equivalent winding resistance as seen from the primary side is 0.5 Ω. The rated current on the primary side is 25 A. The percentage of the rated input current at which the maximum efficiency occurs is**
(A)	35.7%
(B)	50.6%
(C)	80.5%
(D)	100%

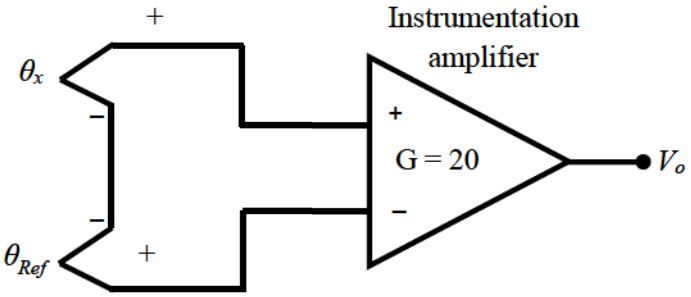
Q.28	**A slip-ring induction motor is expected to be started by adding extra resistance in the rotor circuit. The benefit that is derived by adding extra resistance in the rotor circuit in comparison to the rotor being shorted is**
(A)	The starting torque would be higher.
(B)	The power factor at start will be lower.
(C)	The starting current is higher.
(D)	The losses at starting would be lower.

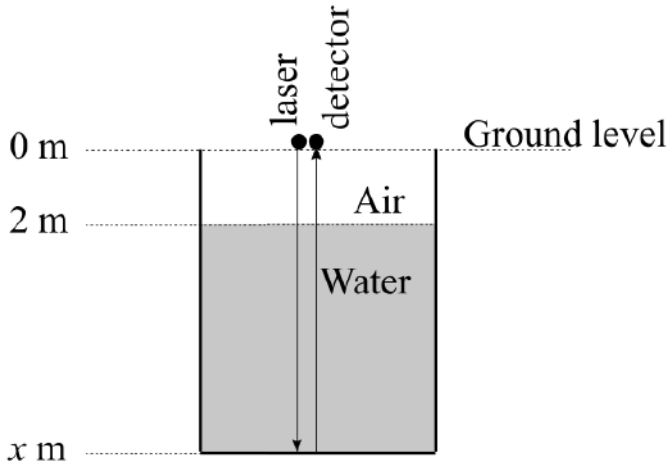
Q.29	**Consider a unity feedback configuration with a plant and a PID controller as shown in the figure. $G(s) = \frac{1}{(s+1)(s+3)}$ and $C(s) = K\frac{(s+3-j)(s+3+j)}{s}$ with K being scalar. The closed loop is** 
(A)	only stable for $K > 0$
(B)	only stable for K between -1 and +1
(C)	only stable for $K < 0$
(D)	stable for all values of K

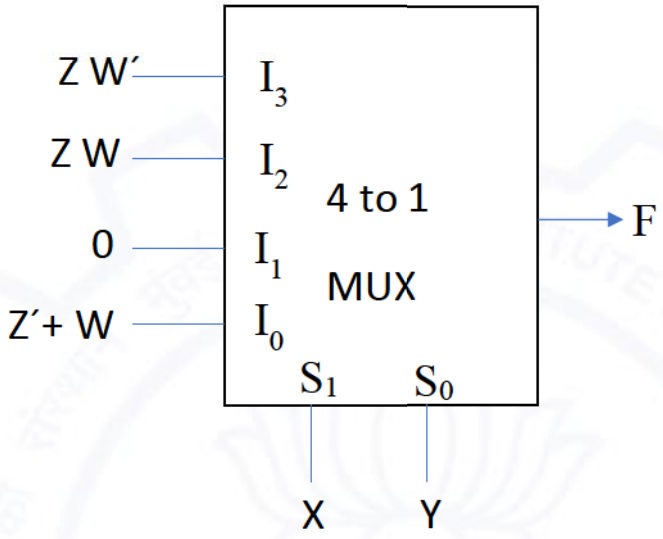
Q.30	**The output V_o of the ideal OpAmp used in the circuit shown below is 5 V. Then the value of resistor R_L in kilo ohm (kΩ) is** 
(A)	2.5
(B)	5
(C)	25
(D)	50

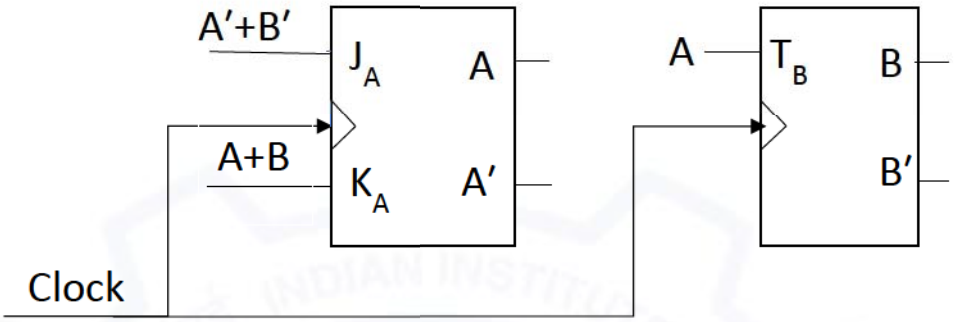
Q.31	**A Boolean function F of three variables X, Y, and Z is given as** **$F(X, Y, Z) = (X' + Y + Z).(X + Y' + Z').(X' + Y + Z').(X' Y' Z' + X' Y Z' + X Y Z')$** **Which one of the following is true?**
(A)	$F(X, Y, Z) = (X + Y + Z').(X' + Y' + Z')$
(B)	$F(X, Y, Z) = (X' + Y).(X + Y' + Z')$
(C)	$F(X, Y, Z) = X' Z' + Y Z'$
(D)	$F(X, Y, Z) = X' Y' Z + X Y Z$

Q.32	**A 10½ digit Counter-timer is set in the 'frequency mode' of operation (with $T_s = 1$ s). For a specific input, the reading obtained is 1000. Without disconnecting this input, the Counter-timer is changed to operate in the 'Period mode' and the range selected is microseconds (μs, with $f_s = 1$ MHz). The counter will then display**
(A)	0
(B)	10
(C)	100
(D)	1000

Q.33	**A J-type thermocouple has an output voltage $V_\theta = (13650 + 50\ \theta_x)$ μV, where θ_x is the junction temperature in Celsius (°C). The thermocouple is used with reference junction compensation, as shown in the figure. The Instrumentation amplifier used has a gain G = 20. If θ_{Ref} is 1 °C, for an input θ_x of 100 °C, the output V_o of the instrumentation amplifier in millivolt is** 
(A)	98 mV
(B)	99 mV
(C)	100 mV
(D)	101 mV

Q.34	**A laser pulse is sent from ground level to the bottom of a concrete water tank at normal incidence. The tank is filled with water up to 2 m below the ground level. The reflected pulse from the bottom of the tank travels back and hits the detector. The round-trip time elapsed between sending the laser pulse, the pulse hitting the bottom of the tank, reflecting back and sensed by the detector is 100 ns. The depth of the tank from ground level marked as x in metre is ____.** **(Refractive index of water $n_{water} = 1.3$ and velocity of light in air $c_{air} = 3 \times 10^8$ m/s)** 
(A)	9
(B)	10
(C)	11
(D)	12

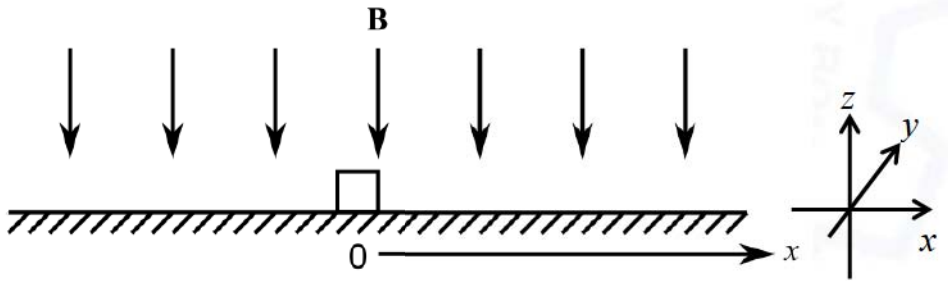
Q.35	**A 4 × 1 multiplexer with two selector lines is used to realize a Boolean function F having four Boolean variables X, Y, Z and W as shown below. S_0 and S_1 denote the least significant bit (LSB) and most significant bit (MSB) of the selector lines of the multiplexer respectively. I_0, I_1, I_2, I_3 are the input lines of the multiplexer.**  **The canonical sum of product representation of F is**
(A)	F (X, Y, Z, W) = Σ m(0,1,3,14,15)
(B)	F (X, Y, Z, W) = Σ m(0,1,3,11,14)
(C)	F (X, Y, Z, W) = Σ m(2,5,9,11,14)
(D)	F (X, Y, Z, W) = Σ m(1,3,7,9,15)

Q.36	**Given below is the diagram of a synchronous sequential circuit with one J-K flip-flop and one T flip-flop with their outputs denoted as A and B respectively, with $J_A = (A' + B')$, $K_A = (A + B)$, and $T_B = A$.**  **Starting from the initial state (AB = 00), the sequence of states (AB) visited by the circuit is**
(A)	00 → 01→ 10 → 11→ 00 …
(B)	00 → 10→ 01 → 11→ 00 …
(C)	00 → 10→ 11 → 01→ 00 …
(D)	00 → 01→ 11 → 00 …

Q.37 – Q.55 Numerical Answer Type (NAT), carry TWO mark each (no negative marks).

Q.37	**Consider that X and Y are independent continuous valued random variables with uniform PDF given by X ~ U(2, 3) and Y ~ U(1, 4). Then P(Y ≤ X) is equal to _____ (rounded off to two decimal places).**

Q.38	**Given $A = \begin{pmatrix} 2 & 5 \\ 0 & 3 \end{pmatrix}$. The value of the determinant $\left| A^4 - 5A^3 + 6A^2 + 2I \right| =$ ___.**

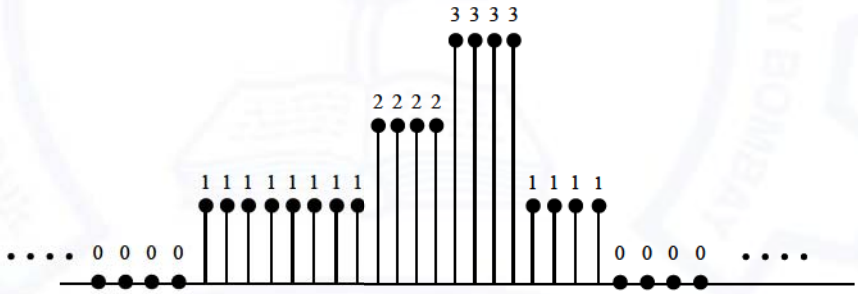
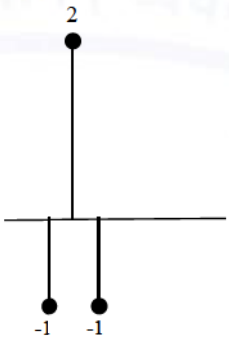
Q.39	**The figure below shows an electrically conductive bar of square cross-section resting on a plane surface. The bar of mass of 1 kg has a depth of 0.5 m along the *y* direction. The coefficient of friction between the bar and the surface is 0.1. Assume the acceleration due to gravity to be 10 m/s^2. The system faces a uniform flux density $B = -1\,\hat{z}$ T. At time $t = 0$, a current of 10 A is switched onto the bar and is maintained.**  **When the bar has moved by 1 m, its speed in metre per second is ____ (rounded off to one decimal place).**

Q.40	**A toroid made of CRGO has an inner diameter of 10 cm and an outer diameter of 14 cm. The thickness of the toroid is 2 cm. 200 turns of copper wire is wound on the core. $\mu_o = 4\pi \times 10^{-7}$ H/m and μ_R of CRGO is 3000. When a current of 5 mA flows through the winding, the flux density in the core in millitesla is ____.**

Q.41	**An air cored coil having a winding resistance of 10 Ω is connected in series with a variable capacitor C_x. The series circuit is excited by a 10 V sinusoidal voltage source of angular frequency 1000 rad/s. As the value of the capacitor is varied, a maximum voltage of 30 V was observed across it. Neglecting skin-effect, the value of the inductance of the coil in millihenry is _____.**

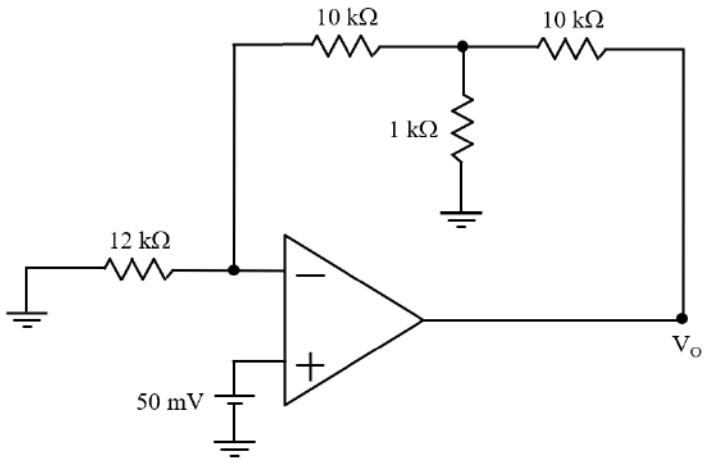
Q.42	**A household fan consumes 60 W and draws a current of 0.3125 A (rms) when connected to a 230 V (rms) ac, 50 Hz single phase mains. The reactive power drawn by the fan in VAr is _____ (rounded off to the nearest integer).**

Q.43	**Given $y(t) = e^{-3t}u(t) * u(t+3)$, where * denotes convolution operation. The value of $y(t)$ as $t \to \infty$ is _____ (rounded off to two decimal places).**

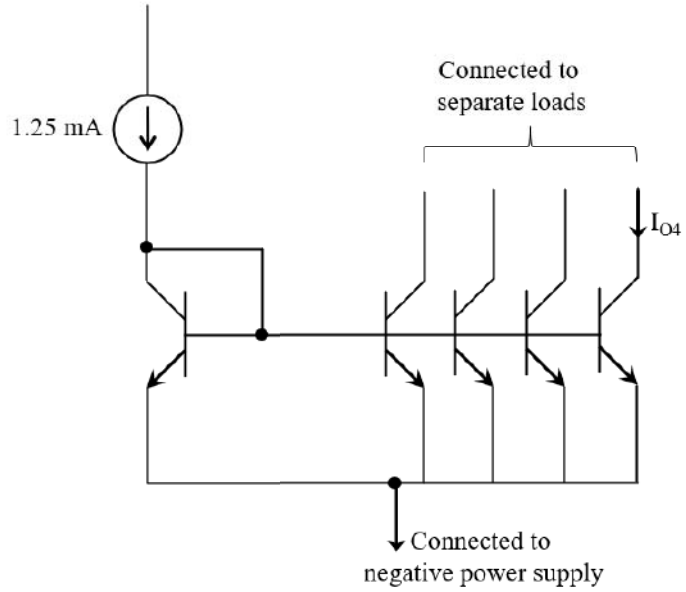
Q.44	**The input signal shown below**  **is passed through the filter with the following taps**  **The number of non-zero output samples is ____.**

Q.45	**A sinusoid $(\sqrt{2}\sin t)\,\mu(t)$, where $\mu(t)$ is the step input, is applied to a system with transfer-function $G(s) = \frac{1}{s+1}$. The amplitude of the steady state output is ____.**

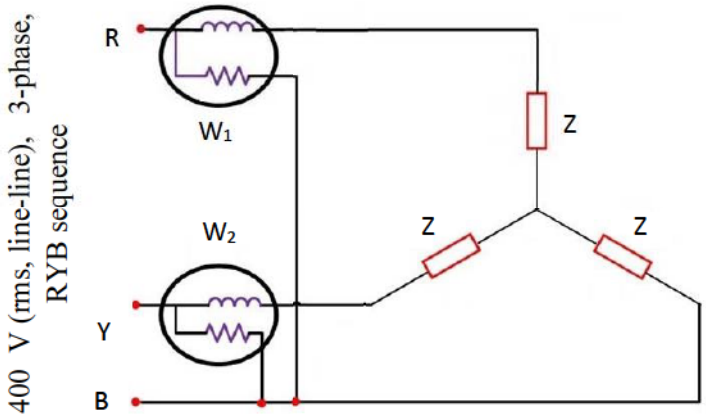
Q.46	**Consider a system with transfer-function $G(s) = \frac{2}{s+1}$. A unit step function $\mu(t)$ is applied to the system, which results in an output $y(t)$. If $e(t) = y(t) - \mu(t)$, then $\lim_{t\to\infty} e(t)$ is ____.**

Q.47	**The circuit shown below uses an ideal OpAmp. Output V_O in volt is _____ (rounded off to one decimal place).** 

Q.48	**All the transistors used in the circuit are matched and have a current gain β of 20. Neglecting the Early effect, the current I_{O4} in milliampere is _____.**

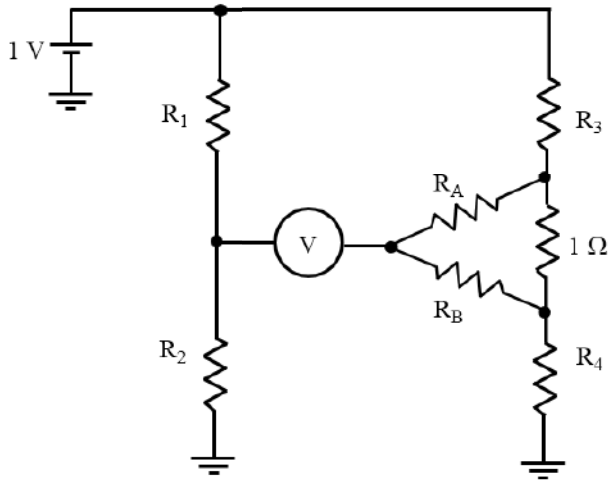


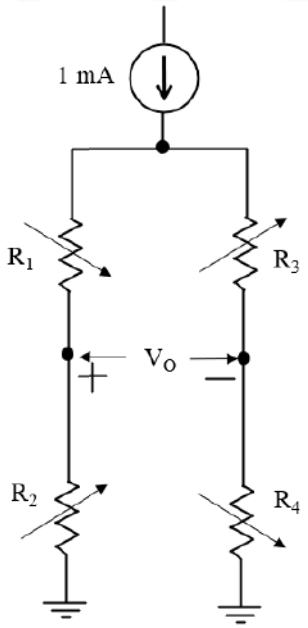
Q.49	**The power in a 400 V (rms, line-line) three-phase, three-wire RYB sequence system is measured using the two wattmeters, as shown. The R-line current is $5\angle 60^0$ A. Wattmeter W_1 in the R-line will read (in watt) _____.**



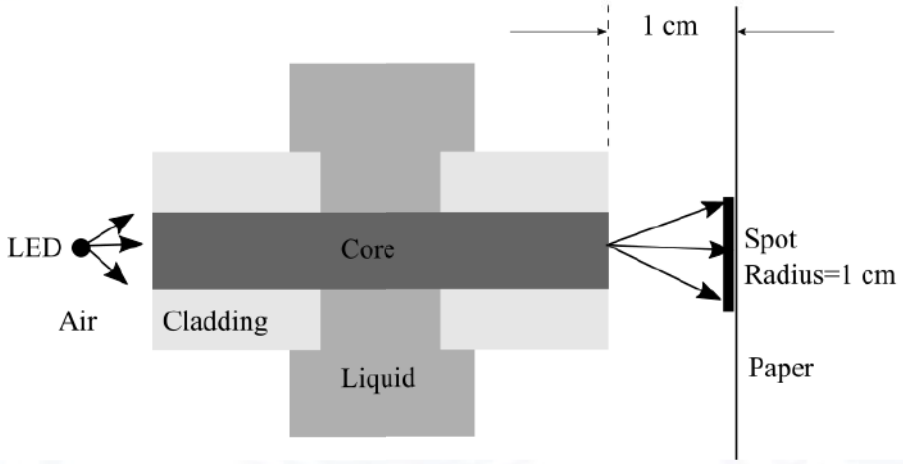
Q.50	**A 3½ digit, rectifier type digital meter is set to read in its 2000 V range. A symmetrical square wave of frequency 50 Hz and amplitude ±100 V is measured using the meter. The meter will read _____.**

Q.51	**A bar primary current transformer of rating 1000/1 A, 5VA, UPF has 995 secondary turns. It exhibits zero ratio error and phase error of 30 minutes at 1000 A with rated burden. The watt loss component of the primary excitation current in ampere is _____ (rounded off to one decimal place).**

Q.52	**In the bridge circuit shown, the voltmeter V showed zero when the value of the resistors are: $R_1 = 100\ \Omega$, $R_2 = 110\ \Omega$, and $R_3 = 90\ \Omega$. If $(R_1/R_2) = (R_A/R_B)$, the value of R_4 in ohm is _____.** 

Q.53	**For the full bridge made of linear strain gages with gage factor 2 as shown in the diagram, $R_1 = R_2 = R_3 = R_4 = 100\ \Omega$ at 0 °C and strain is 0. The temperature coefficient of resistance of the strain gages used is 0.005 per °C. All strain gages are made of same material and exposed to same temperature. While measuring a strain of 0.01 at a temperature of 50 °C, the output V_O in millivolt is _____ (rounded off to two decimal places).** 

Q.54	**A signal having a bandwidth of 5 MHz is transmitted using the Pulse code modulation (PCM) scheme as follows. The signal is sampled at a rate of 50% above the Nyquist rate and quantized into 256 levels. The binary pulse rate of the PCM signal in Mbits per second is ___.**

Q.55	**In the figure shown, a large multimode fiber with $n_{core} = 1.5$ and $n_{clad} = 1.2$ is used for sensing. A portion with the cladding removed passes through a liquid with refractive index n_{liquid}. An LED is used to illuminate the fiber from one end and a paper is placed on the other end, 1 cm from the end of the fiber. The paper shows a spot with radius 1 cm. The refractive index n_{liquid} of the liquid (rounded off to two decimal places) is _____.** 

END OF THE QUESTION PAPER

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Graduate Aptitude Test in Engineering (GATE 2021)

Answer Keys and Marks for Subject/Paper: Instrumentation Engineering (IN)

Q. No.	Session	Question Type MCQ/MSQ/NAT	Section Name	Answer Key/Range	Marks	Negative Marks
1	1	MCQ	GA	**D**	1	1/3
2	1	MCQ	GA	**B**	1	1/3
3	1	MCQ	GA	**C**	1	1/3
4	1	MCQ	GA	**B**	1	1/3
5	1	MCQ	GA	**C**	1	1/3
6	1	MCQ	GA	**B**	2	2/3
7	1	MCQ	GA	**A**	2	2/3
8	1	MCQ	GA	**A**	2	2/3
9	1	MCQ	GA	**B**	2	2/3
10	1	MCQ	GA	**C**	2	2/3
1	1	MCQ	IN	**A**	1	1/3
2	1	MCQ	IN	**C**	1	1/3
3	1	MCQ	IN	**A**	1	1/3
4	1	MCQ	IN	**C**	1	1/3
5	1	MCQ	IN	**D**	1	1/3
6	1	MCQ	IN	**C**	1	1/3
7	1	MCQ	IN	**A**	1	1/3
8	1	MCQ	IN	**B**	1	1/3
9	1	MSQ	IN	**A; B**	1	0
10	1	MSQ	IN	**A; D**	1	0
11	1	MSQ	IN	**A; C**	1	0

GATE 2021 Answer Key for Instrumentation Engineering (IN)

Q. No.	Session	Question Type MCQ/MSQ/NAT	Section Name	Answer Key/Range	Marks	Negative Marks
12	1	NAT	IN	0.24 to 0.26	1	0
13	1	NAT	IN	-1 to -1	1	0
14	1	NAT	IN	1 to 1	1	0
15	1	NAT	IN	10 to 10	1	0
16	1	NAT	IN	0.2 to 0.2	1	0
17	1	NAT	IN	4.9 to 5.1	1	0
18	1	NAT	IN	1000.25 to 1000.25	1	0
19	1	NAT	IN	1333 to 1360	1	0
20	1	NAT	IN	10 to 10	1	0
21	1	NAT	IN	15.0 to 15.5	1	0
22	1	NAT	IN	650 to 650	1	0
23	1	NAT	IN	100 to 100	1	0
24	1	NAT	IN	0 to 0	1	0
25	1	NAT	IN	4 to 4	1	0
26	1	MCQ	IN	B	2	2/3
27	1	MCQ	IN	B	2	2/3
28	1	MCQ	IN	A	2	2/3
29	1	MCQ	IN	A	2	2/3
30	1	MCQ	IN	C	2	2/3
31	1	MCQ	IN	C	2	2/3
32	1	MCQ	IN	D	2	2/3
33	1	MCQ	IN	B	2	2/3
34	1	MCQ	IN	D	2	2/3

GATE 2021 Answer Key for Instrumentation Engineering (IN)

Q. No.	Session	Question Type MCQ/MSQ/NAT	Section Name	Answer Key/Range	Marks	Negative Marks
35	1	MCQ	IN	B	2	2/3
36	1	MCQ	IN	B	2	2/3
37	1	NAT	IN	0.45 to 0.55	2	0
38	1	NAT	IN	4 to 4	2	0
39	1	NAT	IN	2.7 to 2.9	2	0
40	1	NAT	IN	10 to 10	2	0
41	1	NAT	IN	30 to 30	2	0
42	1	NAT	IN	39 to 40	2	0
43	1	NAT	IN	0.3 to 0.35	2	0
44	1	NAT	IN	10 to 10	2	0
45	1	NAT	IN	0.95 to 1.05	2	0
46	1	NAT	IN	1 to 1	2	0
47	1	NAT	IN	1.0 to 1.1	2	0
48	1	NAT	IN	1 to 1	2	0
49	1	NAT	IN	0 to 0	2	0
50	1	NAT	IN	111 to 111	2	0
51	1	NAT	IN	4.9 to 5.1	2	0
52	1	NAT	IN	99 to 99	2	0
53	1	NAT	IN	2.45 to 2.55	2	0
54	1	NAT	IN	120 to 120	2	0
55	1	NAT	IN	1.30 to 1.35	2	0