

RGUCET 2022

M Tech in ECE

1	Which country will host the FIFA World Cup 2022 tournament?					
	a) France	b) Qatar	c) Brazil	d) Japan	B	Qatar
2	Which country will host the International Cricket Council (ICC) World Cup 2023?					
	a)England	b) Australia	c) India	d) South Africa	C	India
3	In which year, India launched Look East Policy?					
	a) 1986	b) 1992	c) 1996	d) 1994	B	1992
4	The capital city of Ukraine					
	a) Kyiv	b)Kharkiv	c) Odessa	d) Dnipro	A	Kyiv
5	Which is the largest state in North East, India?					
	a)Arunachal Pradesh	b) Assam	c) Nagaland	d) Tripura	A	Arunachal Pradesh
6	Which of the following is NOT a Crypto Currency?					
	a)Bitcoin	b)Ethereum	c) Tether	d)Doger	D	Doger
7	Which country is NOT connected with Arunachal Pradesh?					
	a)China	b) Myanmar	c) Bhutan	d)Bangladesh	D	Bangladesh
8	Where is Lengpui Airport?					
	a) Arunachal Pradesh	b) Mizoram	c) Assam	d) Nagaland	B	Mizoram
9	Where the Shirui Lily grows?					
	a) Tripura	b) Mizoram	c) Manipur	d) Nagaland	B	Manipur
10	Which of the following country is not a member of Quadrilateral Security Dialogue (QSD) or QUAD?					
	a) India	b)Australia	c) France	d) United State	C	France
11	Select the wrongly spelt word					
	a) expire	b) explicit	c) explode	d)exploite	D	exploite
12	In each of the following questions, choose the correctly spelt word.					
	a)Bouquete	b) Bouquet	c)) Boquet	d)Bouquette	B	Bouquet
13	One who damages public property					
	a) Cynosure	b) Demagogue	c) Epicure	d) Vandal	D	Vandal
14	My sister's marriage passed _____ peacefully.					
	a) away	b) by	c) off	d) out	C	off
15	Direct and Indirect Speech : Anil said, "Ali deserved the prize."					
	a) Anil says	b) Anil said	c) Anil said	d) Anil said that	D	Anil said that

	that Ali deserves the prize.	that Ali deserves the prize.	that Ali has deserved the prize.	Ali had deserved the prize.		Ali had deserved the prize.
16	Tsunamis are NOT caused by					
	a) Hurricanes	b) Earthquakes	c) Earthquakes	d) Volcanic eruptions	A	Hurricanes
17	The hottest planet in the solar system?					
	a) Mercury	b) Venus	c) Mars	d) Jupiter	B	Venus
18	Guwahati High Court is the judicature of					
	a) Assam	b) Nagaland	c) Arunachal Pradesh	d) All of the above	D	All of the above
19	Friction can be reduced by changing from					
	a) rolling to sliding	b) sliding to rolling	c) dynamic to static	d) potential energy to kinetic energy	B	sliding to rolling
20	Garampani sanctuary is located at					
	a) Gangtok, Sikkim	b) Kohima, Nagaland	c) Diphu, Assam	d) Junagarh, Gujarat	C	Diphu, Assam
21	Today is Varun's birthday. One year from today he will be twice as old as he was 12 years ago. How old is Varun today?					
	a) 20 years	b) 21 years	c) 22 years	d) 25 years	D	25
22	Joule is related to Energy in the same way as Pascal is related to _____?					
	a) Purity	b) Density	c) Pressure	d) Volume	C	Pressure
23	Museum is related to Curator in the same way as Prison is related to _____?					
	a) Warden	b) Jailor	c) Monitor	d) Manager	B	Jailor
24	A farmer built a fence around his square plot. He used 27 fence poles on each side of the square. How many poles did he need altogether?					
	a) 100	b) 101	c) 102	d) 104	D	104
25	A pineapple costs Rs. 7 each. A watermelon costs Rs. 5 each. X spends Rs. 38 on these fruits. The number of pineapples purchased is					
	a) 2	b) 3	c) 4	d) Data inadequate	C	4
26	The following hexadecimal number $(1E.43)_{16}$ is equivalent to					
	a) $(36.506)_8$	b) $(36.206)_8$	c) $(35.506)_8$	d) $(35.206)_8$	b)	$(36.206)_8$
27	How many bits are needed to store one BCD digit?					
	a) 1	b) 2	c) 3	d) 4	d)	4
28	In the toggle mode, a JK flip-flop has					
	a) J = 0, K = 1	b) J = 1, K = 1	c) J = 0, K = 0	d) J = 1, K = 0	b)	J = 1, K = 1
29	A full adder can be constructed from.....					
	a) 2 Full	b) 2 Full	c) 2 Half	d) 2 Full adder	c)	2 Half adder

	adders	adders and 1 AND Gate	adder and 1 OR Gate	and 1 XOR Gate		and 1 OR Gate	
30	In a counter, maximum number of states possible with 4 flip flops is						
	a)15	b)16	c)3	d)4	b)	16	
31	A 32:1 Multiplexer will have how many select lines?						
	a) 3	b)4	c)5	d)32	c)	5	
32	Which of the following is not a combinational circuit?						
	a) Flip Flop	b) Shift Register	c) Counter	d)All of above	d)	All of above	
33	The interface between an analog signal and a digital processor is						
	a) D/A converter	b) A/D converter	c) Modulator	d) Demodulator	b)	A/D converter	
34	The speech signal is obtained after						
	a) Analog to digital conversion	b) Digital to analog conversion	c) Modulation	d) Quantization	b)	Digital to analog conversion	
35	Telegraph signals are examples of						
	a) Digital signals	b) Analog signals	c) Impulse signals	d) Pulse train	(a)	Digital signals	
36	DTFT is the representation of						
	a) Periodic Discrete time signals	b) Aperiodic Discrete time signals	c)Aperiodic continuous signals	d) Periodic continuous signals	b)	Aperiodic Discrete time signals	
37	The DFT is preferred for						
	1) Its ability to determine the frequency component of the signal 2) Removal of noise 3) Filter design 4) Quantization of signal						
	a) 1, 2 and 3 are correct	b) 1 and 2 are correct	c) 1 and 3 are correct	d) All the four are correct	c)	1 and 3 are correct	
38	The region of convergence of $x/(1+2x+x^2)$ is						
	a)0	b)1	c) Negative	d) Positive	b)	1	
39	For a system function H(s) to be stable						
	a) The zeros lie in left half of the s plane	b) The zeros lie in right half of the s plane	c) The poles lie in left half of the s plane	d) The poles lie in right half of the s plane	c)	The poles lie in left half of the s plane	
40	The factors that cause quantizing error in delta modulation are						
	a) Slope overload distortion	b) Granular noise	c) White noise	d) Both a and b are correct	d)	Both a and b are correct	
41	A semiconductor is formed by bonds.						
	a) Covalent	b)	c) Co-	d) None of the	a)	Covalent	

		Electrovalent	ordinate	above		
42	Which among the following is not an advantage of an open loop system?					
	a) Simplicity in construction & design	b) Easy maintenance	c) Rare problems of stability	d) Requirement of system recalibration from time to time	d)	Requirement of system recalibration from time to time
43	Which among the following represents an illustration of closed loop system?					
	a) Automatic washing machine	b) Automatic electric iron	c) Bread toaster	d) Electric hand drier	b)	Automatic electric iron
44	The output is said to be zero state response because _____ conditions are made equal to zero.					
	a)Initial	b)Final	c)Steady state	d)Impulse response	a)	Initial
45	Basically, poles of transfer function are the Laplace transform variable values which causes the transfer function to become _____.					
	a)Zero	b)Unity	c)Infinite	d)Average value	c)	Infinite
46	By equating the denominator of transfer function to zero, which among the following will be obtained?					
	a)Poles	b)Zeros	c)Both a and b	d)None of the above	a)	Poles
47	The output signal is feed back at the input side from the _____ point.					
	a)Summing	b)Differential	c)Take-off	d)All of the above	c)	Take-off
48	In a parallel combination, the direction of flow of signals through blocks in parallel must resemble to the main _____					
	a)Forward	b)Feedback	c)Opposite	d)Diagonal	a)	Forward
49	The steady-state error of a feedback control system with an acceleration input becomes finite in a					
	a)type 0 system	b)type 1 system	c)type 2 system	d) a and b	c)	type 2 system
50	For a type one system, the steady – state error due to step input is equal to					
	a)infinite.	b)zero.	c)0.25.	d)0.5	b)	zero.
51	A capacitor is charged by a constant current of 2 mA and results in a voltage increase of 12 V in a 10 sec interval. The value of capacitance is					
	a) 0.75 mF	b) 1.33 mF	c) 0.6 mF	d) 1.67 mF	d)	1.67 mF
52	A branch has 6 node and 9 branch. The independent loops are					

	a)3	b)4	c)5	d)6	B	4
53	A silicon pn junction at $T = 300$ K has $N_d = 10^{14} \text{ cm}^{-3}$ and $N_a = 10^{17} \text{ cm}^{-3}$. The built-in voltage is					
	a) 0.63 V	b) 0.93 V	c) 0.026 V	d) 0.038 V	B	0.93 V
54	In a uniformly doped GaAs junction at $T = 300$ K, at zero bias, only 20% of the total space charge region is to be in the p-region. The built in potential barrier is $V = 1.20$ V. The majority carrier concentration in n-region is					
	a) $1 * 10^{16} \text{ cm}^{-3}$	b) $1 * 10^{22} \text{ cm}^{-3}$	c) $4 * 10^{16} \text{ cm}^{-3}$	d) $4 * 10^{22} \text{ cm}^{-3}$	C	$4 * 10^{16} \text{ cm}^{-3}$
55	An abrupt silicon pn junction at zero bias and $T = 300$ K has dopant concentration of $N_a = 10^{17} \text{ cm}^{-3}$ and $N_d = 5 * 10^{15} \text{ cm}^{-3}$. The Fermi level on n - side is					
	a) 0.1 eV	b) 0.2 eV	c) 0.3 eV	d) 0.4 eV	C	0.3 eV
56	An pn junction diode is operating in reverse bias region. The applied reverse voltage, at which the ideal reverse current reaches 90% of its reverse saturation current, is					
	a) 59.6 mV	b) 4.8 mV	c) 2.7 mV	d) 42.3 mV	A	59.6 mV
57	For an n -channel MOSFET biased in the saturation region, the parameters are $K_n = 0.5 \text{ mA V}^{-2}$, $V_{TN} = 0.8 \text{ V}$ and $I = 0.01 \text{ V}^{-1}$, and $I_{DQ} = 0.75 \text{ mA}$. The value of g_m and r_o are					
	a) 0.68 mS, 603 kW	b) 1.22 mS, 133 kW	c) 1.22 mS, 603 kW	d) 0.68 mS, 133 kW	C	1.22 mS, 603 kW
58	For the circuit shown in fig. below the input resistance is					
	a) 38 kW	b) 17 kW	c) 25 kW	d) 47 kW	B	17 kW
59	A Mealy system produces a 1 output if the input has been 0 for at least two consecutive clocks followed immediately by two or more consecutive 1's. The minimum state for this system is					
	a)4	b)5	c)8	d)9	A	4
60	The diode logic circuit of fig. is a					

	a) AND	b) NAND	c) OR	d) NOR	c	OR
61	In an 8085 microprocessor, the instruction CMP B has been executed while the contents of accumulator is less than that of register B. As a result carry flag and zero flag will be respectively					
	a) set, reset	b) reset, reset	c) reset, set	d) set, set	D	set, set
62	The Laplace transform of a function $f(t)$ is					
	a) $\int_0^{\infty} f(t)e^{-st}$	b) $\int_0^{\infty} f(t)e^{st}$	c) $\int_{-\infty}^0 f(t)e^{st}$	d) $\int_{-\infty}^0 f(t)e^{-st}$	A	$\int_0^{\infty} f(t)e^{-st}$
63	When is current in phase with the voltage?					
	a) When $XL > XC$	b) When $XL < XC$	c) When $XL = XC$	d) When $XC = \text{infinity}$	c	When $XL = XC$
64	State space analysis is applicable even if the initial conditions are _____					
	a) Zero	b) Non-zero	c) Equal	d) Not equal	b	Non-zero
65	Conventional control theory is applicable to _____ systems					
	a) SISO	b) MIMO	c) Time varying	d) Non-linear	a	SISO
66	For an LTI discrete system to be stable, the square sum of the impulse response should be					
	a) Integral multiple of 2π	b) Infinity	c) Finite	d) Zero	c	Finite
67	What is the duration of the unit sample response of a digital filter?					
	a) Finite	b) Infinite	c) Impulse (very small)	d) Zero	b	Infinite
68	If $h_{lp}(n)$ denotes the impulse response of a low pass filter with frequency response $H_{lp}(\omega)$, then what is the frequency response of the high pass filter in terms of $H_{lp}(\omega)$?					
	a) $H_{lp}(\omega - \pi/2)$	b) $H_{lp}(\omega + \pi/2)$	c) $H_{lp}(\omega - \pi)$	d) $H_{lp}(\omega + \pi)$	c	$H_{lp}(\omega - \pi)$
69	CMOS technology is used in developing					

	a) microprocessors	b) microcontrollers	c) digital logic circuits	d) all of the mentioned	D	all of the mentioned
70	P-well is created on					
	a) p substrate	b) n substrate	c) p & n substrate	d) none of the mentioned	B	n substrate
71	Photoresist layer is formed using					
	a) high sensitive polymer	b) light sensitive polymer	c) polysilicon	d) silicon di oxide	b	light sensitive polymer
72	When the source of light is not sun light then the photo voltaic cell is used as _____					
	a) Photo diode	b) Photo voltaic cell	c) Photo detector	d) Photo transmitter	C	Photo detector
73	The region where the electrons and holes diffused across the junction is called _____					
	a) Depletion Junction	b) Depletion region	c) Depletion space	d) Depletion boundary	B	Depletion region
74	Solar cells are made from bulk materials that are cut into wafer of _____ thickness.					
	a) 120-180 μ m	b) 120-220 μ m	c) 180-220 μ m	d) 180-240 μ m	D	180-240 μ m
75	Choose the correct statement(s) i) The gate circuit impedance of MOSFET is higher than that of a BJT ii) The gate circuit impedance of MOSFET is lower than that of a BJT iii) The MOSFET has higher switching losses than that of a BJT iv) The MOSFET has lower switching losses than that of a BJT					
	a) Both i & ii	b) Both ii & iv	c) Both i & iv	d) Only ii	C	Both i & iv

76	Calculate the value of C_{eq} .		
<p>The circuit diagram shows a network of capacitors. A 2.5 μF capacitor is connected in parallel with a series combination of a 1.5 μF capacitor and a 2 μF capacitor. This parallel combination is then connected in series with a 1 μF capacitor. The equivalent capacitance is labeled C_{eq}.</p>			

	a) 3.5 mF	b) 2.4 mF	c) 1.2 mF	d)) 2.6 mF	C	1.2 mF
77	In the circuit of the fig. below the value of the voltage source E is					
	a) -16 V	b) -6V	c) 4V	d) 16V	A	-16V
78	Two coils of 2H inductance are connected in series and are also magnetically coupled to each other the coefficient of coupling being 0.1. The total inductance of the combination can be					
	a) 2 H	b) 2. 3H	c) 4H	d) 4.4H	D	4.4H
79	The minimum number of 2-input NAND gates required to implement a 2-input XOR gate is					
	a) 4	b) 5	c) 6	d) 7	A	4
80	The number of comparators required in a 3-bit comparator type ADC is					
	a) 2	b)3	c)7	d)8	C	7
81	The number of comparators in 4-bit flash ADC is					
	a) 4	b) 5	c)15	d) 16	C	15
82	The resolution of a 4-bit counting ADC is 0.5 Volts. For an analog input of 6.6 Volts, the digital output of the ADC will be					
	a)1011	b)1101	c)1100	d)1110	D	1110
83	The output Y of a 2-bit comparator is logic 1 whenever the 2-bit input A is greater than the 2-bit input B. The number of combinations for which the output is logic 1, is					
	a) 4	b)6	c)8	d) 10	C	6
84	Which one of the following processes is preferred to from the gate dielectric (SiO_2) of MOSFETs?					
	a) Sputtering	b) Molecular Beam Epitaxy	c) Wet Oxidation	d) Dry Oxidation	D	Dry Oxidation
85	In MOSFET fabrication, the channel length is defined during the process of					
	a) Isolation Oxide Growth	b) Channel Stop implantation	c) Polysilicon gate patterning	d) Lithography step leading to the contact pads	C	Polysilicon gate patterning
86	The Ebers-Moll model of a BJT is valid					
	a)only in active	b) only in active and saturation	c) only in active and	d)in active, saturation and	D	in active, saturation and

	mode	modes	cut-off modes	cut-off modes.		cut-off modes.
87	An increase in the base recombination of a BJT will increase					
	a) the common emitter dc current gain β	b) the breakdown voltage BV_{ceo}	c) the unity gain cut off frequency f_T	d) the trans-conductance g_m	B	b) the breakdown voltage BV_{ceo}
88	In an 8085 microprocessor, the shift registers which store the result of an addition and the overflow bit are, respectively.					
	a) A & B	b) A & F	c) C & A	d) B & F	B	A & F
89	In an 8085 microprocessor, which one of the following instructions changes the content of the accumulator?					
	a) MOV B, M	b) PCHL	c) RNZ	d) SBI BEH	D	SBI BEH
90	An instruction used to set the carry flag in a computer can be classified as					
	a) Data Transfer	b) arithmetic	c) logical	d) program control	C	logical
91	The total number of memory accesses involved (inclusive of the op-code fetch) when an 8085 processor executes, the instruction LDA 2003 is					
	a) 1	b) 2	c) 3	d) 4	D	4
92	In a microprocessor, the register which holds the address of the next instruction to be fetched is					
	a) Accumulator	b) Program Counter	c) Stack Pointer	d) Instruction Register	B	Program Counter
93	Which of the following analog modulation scheme requires the minimum transmitted power and minimum channel bandwidth?					
	a) VSB	b) DSB-SC	c) SSB	d) AM	C	SSB
94	An AM signal is detected using an envelope detector. The carrier frequency and modulating signal frequency are 1 MHz and 2 KHz respectively. An appropriate value for the time constant of the envelope detector is					
	a) 500 μ sec	b) 20 μ sec	c) 10 μ sec	d) 50 μ sec	B	20 μ sec
95	The trigonometric Fourier series of an even function of time does not have the					
	a) DC term	b) Cosine Term	c) Sine Term	d) odd harmonic term	C	Sine term
96	The Fourier Series of an odd periodic function, contains only					
	a) Even harmonic	b) Cosine Term	c) Sine Term	d) Odd Harmonic	C	Sine Term
97	To obtain very high input and output impedances in a feedback					

	Amplifier, the mostly used is					
	a) Voltage Series	b) Current Series	c) Voltage Shunt	d) Current Shunt	B	Current Series
98	Crossover distortion behavior is characteristic of					
	a) class A output stage	b) class B output stage	c) class AB output stage	d) common base output stage	B	class B output stage
99	A class-A transformer couple power Amplifier is required to deliver a power rating of the transistor should not be less than.					
	a) 5W	b) 10W	c) 20 W	d) 40W	B	10 W
100	A network has 7 nodes and 5 independent loops. The number of branches in the network is					
	a)13	b)12	c)11	d)10	C	11