SEI —" Z " NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)			
(Ph.D/URS-EE Jan. 2022)	·		
ELECTRONICS & COMMUNICATION	10005 sr. No		

Time: 1¼ Hours	Total Quest	tions: 100 Max	. Marks : 100
Roll No.	(in figure)		(in words)
Name :		Father's Name :	
Mother's Name :		Date of Examination :	-

(Signature of the candidate)

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(Signature of the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

- 1. All questions are compulsory.
- 2. The candidates must return the Question book-let as well as OMR answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along with answer key of all the A,B,C and D code will be got uploaded on the university website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet/Answer Key, the same may be brought to the notice of the Controller of Examinations in writing/through E-Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered.
- 5. The candidate MUST NOT do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question book-let itself. Answers MUST NOT be ticked in the Question book-let.
- 6. There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue <u>BALL POINT PEN</u> of good quality in the OMR Answer-Sheet.
- 8. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.



Question No.	Questions	inste n
1.	SCR stand for	્ન
	(1) Silicon Current Rectifier (2) Silicon Convert Rectifier	
	(3) Silicon Controlled Rectifier (4) None of these	
2.	TRAIC is	
12	(1) Unidirectional thyristor (2) Bidirectional thyristor	34 ⁶
-	(3) Tri-directional thyristor (4) None of these	
3.	Which statement is correct ?	.85
(R)	(1) SCR is three junction and four layers semiconductor device	1815
240 18	(2) SCR is two junction and four layers semiconductor device	•
	(3) SCR is three junction and two layers semiconductor device	
	(4) SCR is four junction and three layers semiconductor device	1
4.	The dv/dt protection of SCR is achieved by using	л н
	(1) RL circuit in series with SCR	
	(2) RC circuit across SCR	.01
pass	(3) L in series with SCR	
er in v	(4) RC circuit in series with SCR	set.
5.	Which component is required to increase the switching speed in SM	IPA ?
	(1) MOSFET (2) SCR	
	(3) Transistor (4) All of these	

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Question No.	Enclie Questions
6.	If all the poles of the system lie in the left half of s-plane then system is
	(1) Unstable routing (2) Marginally stable
	(3) Stable (4) None of these
7.	The step size of stepper motor with 10 rotor tooth is
	(1) 36° (2) 45° (1) 45° (2) 25° (2) 45° (2) 45° (2) (4) 26° (3) 25° (4) 26° (5)
8.	Transfer function is defined as
	(1) Linear and time variant system
	(2) Linear and invariant system
	(3) Non-linear and time variant system of out over at 108 (2)
	(4) Non-linear and time invariant system and the first
9.	. The main drawback of feedback system rectangle and an alone (b)
-	(1) Inaccuracy (2) Inefficiency
	(3) Insensitivity (4) Instability
10.	Which of the following statement is correct?
	(1) Proportional-Derivative (PD) controller is equivalent to high pass filter
	(2) For better performance, integral action is initiated before derivative action
P.	(3) A practical PID controller uses a high gain amplifier in the forward path
	(4) High proportional gain is an alternative to derivative actions

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Question No.	Questions	anitesi 1 July		
11.	A zero to 300 V voltmeter has a guaranteed accuracy of 1% full scale reading. The voltage measured by the instruments is 83 V. The percent limiting error is			
	(1) 0.67 (2) 2.63 (2) 2.63 (2) (2) (2)	1		
en en el	(3) 3.62 (4) 1.67	17.		
12.	Frequency can be measured by using	1		
	(1) Maxwell's bridge (2) Wein's bridge			
	(3) Schering bridge (4) None of these	3		
13.	A linear displacement transducer (such as digital) is g uses	enerally		
	(1) Gray Code (2) Binary code			
	(3) Excess 3 code (4) Octal code			
14.	Hall effect transducer is applicable for such type of meas like	urement		
SYRY L	(1) Power (2) Displacement	.81		
ndy.e	(3) Current (4) All of these			
15.	Which type of detector is used in ac bridges for audio frange?	equency		
	(1) AC voltmeter (2) CRO			
	(3) Headphone (4) Vibration galvanometer			

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Question No.	Questions
16.	Which of the following optical transducers used is an active transducer?
1.000	(1) Photo voltaic cell (2) Photo emission cell
	(3) Photo diode (4) Photo transistor
17.	A compensated wattmeter has its reading corrected for the error due to
	-(1) - Friction
	(2) Frequency
$[\cdot] \in \mathbb{N}$	(3) Power consumed due to load
	(4) Power consumed in potential coil
18.	A dual beam CRO has
* •	(1) Two horizontal amplifiers
	(2) Two trigger circuits
	(3) Two vertical amplifiers
inemo	(4) All the above
19.	A template matching is performed on an EEG signal with spike and wave by matched filter. Which of the following statements are true ?
Kati an	(1) Peaks in the filter response represent the presence of alpha wave
	 (2) Peaks in the filter response represent the presence of spike and wave complexes
	(3) Matched filter does not cause a lag in the output
	(4) None of these

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Question No.	Questions
20.	Internet of Things IoT is a network of
t er d	(1) Sensors (2) Controllers
	(3) Actuators (4) All the above
21.	$E \times H$ of microwave gives
	(1) Instantaneous power (2) Average power
	(3) Peak power (4) Reactive power
22.	In a dielectric medium
	(1) $\nabla \times H = J$ (2) $\nabla \times H = D$
	(3) $\nabla \times H = 0$ (4) $\nabla \times H = \rho_v$
23.	The velocity of electron in klystron is proportional to :
	(1) Square root of beam voltage
	(2) Electron charge
	(3) Electron mass
	(4) Square root of mass of the electron
24.	The output efficiency of reflex klystron is the ratio of :
	(1) Output RF power to input RF power
	(2) Output RF power to input DC power
	(3) Output DC power to input DC power
	(4) Output DC power to RF input power

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Question No.	Questions
25.	An EM field is said to be non-existent or not Maxwellian if it fails to satisfy Maxwell's equations and the wave equations derived from them. Which of the following fields in free space are not Maxwellian?
	(1) $H = \cos x \cos 10^6 t a_x$ (2) $E = 100 \cos wt a_x$
	(3) $D = e^{-10y} \sin (10^5 t - 10y) a_z$ (4) $B = 0.4 \sin 10^4 t a_z$
26.	S-matrix exists for a consect (1)
	(1) Two ports only (2) Three ports only
	(3) Multiport network (4) Four ports
27.	A 500 m lossless transmission line is terminated by a load that is located at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how many voltage maxima exist on the line ?
27.	at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how many voltage maxima exist on the line? $\pm 180^{\circ}$
27.	at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how many voltage maxima exist on the line? $\frac{90^{\circ}}{\pm 180^{\circ}}$
27.	at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how many voltage maxima exist on the line? $\pm 180^{\circ}$

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Question No.	Questions
28.	How many degenerate dominant modes exist in a rectangular resonant cavity for which $a = b = c$?
.	(1) 2 (2) 3 (2) 3 (2) (1) (1) (1) (1) (1)
	(3) 5 (4) ∞
29.	If a small single turn loop antenna has a radiation resistance of 0.04 Ω , how many turns are needed to produce a radiation resistance of 1 Ω ?
	(1) 150 (2) 50
н • Парт	(3) 25 (4) 5
30.	Magic Tee can produce
- Hereit	(1) Sum and difference of signals
ələnia	(2) Oscillations
4.000	(3) Only sum of signals
	(4) Only difference of signals
31.	In 8086 microprocessor, address range of memory is
	(1) $00000 H - CCCCC H$ (2) $00001 H - FFFFF H$
	(3) $00001 \text{ H} - \text{CCCCC H}$ (4) $00000 \text{ H} - \text{FFFFF H}$
32.	8086 microprocessor is designed to operate in how many modes?
	(1) Two (2) Four
	(3) Eight (4) Sixteen

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Code-A

Question No.	Questions
33.	Data pins of 16 bit ALU of 8086 is :
1	(1) AD_{16} to AD_1 (2) AD_{15} to AD_0
1,4	(3) AD_{15} to AD_{1} (4) AD_{16} to AD_{0}
34.	Pointer register of 8086 is :
04£. 02	(1) Base pointer (2) Index pointer
-	(3) Segment pointer (4) Stack segment pointer
35.	For TRAP FLAG (TF = 0) in 8086 :
	(1) Microprocessor will not execute the complete program in a single operation
	(2) Microprocessor will execute the program in single stepping mode
	(3) Microprocessor will execute the complete program in a single operation
	(4) Microprocessor will not execute the program in single stepping mode
36.	8051 is: et comment le cylor es rights are a require a stille ni . His
	(1) 16-bit microprocessor (2) 8-bit microcontroller
))	
)	 (3) 16-bit microcontroller (4) 8-bit microprocessor
37.	(1) 0 bit micromagon
37.	(3) 16-bit microcontroller (4) 8-bit microprocessor
37.	(3) 16-bit microcontroller (4) 8-bit microprocessor Microcontroller has:

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Question No.	Questions	1.9
38.	The Special Function registers of Microcontrollers exists in :	-
L .	(1) On chip ROM (2) On chip RAM	
1	(3) On chip EPROM (4) None (4)	
39.	The microprocessor can work as computer :	
	(1) With external digital parts	
age typ	(2) Without external digital parts	£1
)	(3) With ROM and RAM only	
	(4) None of the above	
1 40. (16)	The CPU of 8051 contains :	2. •
	(1) Register A and B (2) Does not contain A and B	
2. N	(3) Contains A register only (4) Contains B register only	
41.	A half wave rectifier is equivalent to : In the part of the stand of	ŀ.
	(1) Clamper circuit	
	(2) Clipper circuit	
	(3) Clamper circuit with negative bias	
	(4) Clipper circuit with positive bias	
42.	The operation of the BJT relies on	
	(1) Free electrons (2) Holes	1
	(3) Both (1) and (2) (4) None of the above	

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Questions Question No. The advantages of FET are 43. (1) It has better thermal stability (2) It predicts less noise (1) DODATE SECOND (3) It can be used at high frequency (4) All of the above A device with direct current coupled, high gain electronic voltage type 44. amplifier with one output and differential input is called _____ (2) Amplifier (1) Rectifier (4) Op-amp (3) Transformer An op-amp with negative feedback provides _____ output parameter. 45. (2) Dous not contain (2) Bandwidth (1) Gain (3) Input-output impedance (4) All the above What is the function of low pass filter in phase-locked loop? 46. Improves low frequency noise through the second second (1)Removes high frequency noise (2)Tracks the voltage changes in this that a monal of (2) (3)Changes the input frequency (4)Which characteristic of PLL is defined as the range of frequencies over 47. which PLL can acquire lock with the input signal? (2) Pull-in time Free-running state (1)Capture range (3) Lock-in range (4)

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Question No.	Questions
48.	A multivibrator that generates square wave of its own is called a :
	(1) Monostable multivibrator (2) Bistable multivibrator
	(3) Astable multivibrator (4) None of these
49.	Recommended frequency range of Harley oscillator is
	(1) 30 KHz-30 MHz (2) 1 KHz - 10 MHz
	(3) $2 \text{ Hz} - 3 \text{ MHz}$ (4) $0.5 \text{ KHz} - 40 \text{ MHz}$
50.	The Hartley oscillator is less preferred than due to Colpitts oscillator's performance in
	(1) All frequency region (2) Mid frequency region
2	(3) High frequency region (4) Low frequency region
51.	How can parallel data be taken out of a shift register simultaneously?
11	(1) Use the Q output of the first FF
	(2) Use the Q output of the last FF
	(3) Tie all of the Q outputs together
	(4) Use the Q output of each FF
52.	A logic circuit that accepts several data inputs and allows only one of them at a time to get through to the output is called
	(1) Multiplexer (2) De-multiplexer
	(3) Transmitter (4) Receiver

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Question No.	Questions	NO.
53.	 The logical sum of two or more logical product terms is called : (1) SOP (1) (2) POS (2) POS (3) OR operation (4) NAND operation (5) 	.48.
54.	 A finite state machine : (1) is same as that of abstract model of sequential circuit (2) consists of combinational logic circuits only (3) contains infinite number of memory devices 	.81
55.	 (4) does not exist in practice The memory technology which needs the least power is (1) ECL (2) MOS (3) CMOS (4) TTL 	00
56	 K-map is used to minimize the number of : (1) Flip-flops in digital circuits (2) Layout spaces in digital circuits for fabrication (3) Funtions of 3, 4, 5 or 6 variables (4) Registers in CPU 	
57.	Master-Slave flip-flop is also called : (1) Pulse triggered flip-flop (2) Latch (3) Level triggered flip-flop (4) Buffer	5. Paris

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Question No.	Another Questions	ha sakili sak					
58.	The resolution of 6-bit DAC will be nearly :						
nisbene top	(1) 4.6% (2) 3.2%						
	(3) 1.6% (4) 1.2%						
59.	Which type of device FPGA are ?	9 - F					
	(1) SLD (2) SROM						
	(3) EPROM (4) PLD	-					
60.	The difference between a PAL and a PLA is	-					
	(1) PALs and PLAs are the same thing						
а. Га	(2) The PAL has a programmable OR plane and a programm plane, while the PLA only has a programmable AND plane						
A.T.	(3) The PLA has a programmable OR plane and a programm plane, while the PAL only has a programmable AND plane						
	(4) The PAL has more possible product terms than the PLA	P					
61.	The diodes and capacitors in the circuit shown are ideal. The vacross the diode D1 is	voltage v(t					
	C Solution of the second						
	$\int d^{2}\nabla S S had A de C S \left[\frac{1}{1 + 1} + \frac{1}{2} + \frac$	× .					
	$\cos(\omega t) \operatorname{AC} \bigoplus^{+1} \qquad \qquad$						
oteristo		64.					
	(1) $\cos(\omega t)$ (2) $1 - \cos(\omega t)$						
	(1) $\cos(\omega t)$ (2) $1 - \cos(\omega t)$						
	(1) $\cos(\omega t)$ (3) $\sin(\omega t)$ (4) $1 - \sin(\omega t)$						

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Code-A

Question No.	a stant leng Questions
62.	In the circuit shown below, the knee current of the ideal Zener diod 10 mA. To maintain 5 V across RL, the minimum value of RL in Ω and minimum power rating of the Zener diode in mW, respectively are :
a î	$MOH_{(x)} = 100\Omega \begin{cases} I_{Load} \\ I0V = 10 \end{cases}$
	1. The $c_1 \mathbf{R} \ge c_2 \mathbf{V} = \sum_{\mathbf{Z}} \mathbf{V} = \mathbf{V}$ and $\mathbf{R} \in \mathbf{L} A$ is (1) I. I. and $\mathcal{P} \in A$ are the same thing (2) The Belt has a programmable (CR plane and s, programmable plane of the the Plane $\mathbf{V} = \mathbf{V} = \mathbf{V}$ as a programmable AND plane
JUA old	(1), 125 and 125 (3) 250 and 125 (4) 250 and 250
63.	 Consider a common-emitter current gain of 150 and a base curren 15 μA. If the transistor is biased in the forward active mode, the collect and emitter current will be: (1) 2.25 mA and 2.27 mA (2) 3.25 mA and 2.27 mA (3) 2.25 mA and 1.37 mA (4) 3.25 mA and 1.37 mA
64.	What is the drain current for a D-MOSFET having the characteric values I_{Dss} of 10 mA, Vgs (off) of — 4 V and I_{Dss} of $Vgs = + 2 V$? (1) 22.5 mA (1997) (2) 17.5 mA (3) 12.5 mA (1997) (4) (4) 2.5 mA

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Question No.	Questions				
65.	 Most of the linear ICs are based on the two-transistor differential amplifier because of its (1) input voltage dependent linear transfer characteristic (2) high voltage gain (3) high input resistance (4) high CMRR 				
66.	 A dc power supply has no-load voltage of 30 V, and a full-load voltage of 25 V at full-load current of 1 A. Its output resistance and load regulation, respectively are (1) 5 Ω and 20% (2) 25 Ω and 20% (3) 5 Ω and 16.7% (4) 25 Ω and 16.7% NPN transistor is not suitable for good analog switch because (1) IC - VCE characteristic curve pass directly through origin. (2) the device has very high input impedance (3) the device is asymmetrical with an offset voltage VCE off. (4) it has well defined transition frequency f_t. 				
68.	 (4) it has well defined transition frequency J_t. CMOS logic has the property of (1) increased capacitance and delay (2) decreased area (3) high noise margin (4) low static power dissipation 				

- A (3(2) .

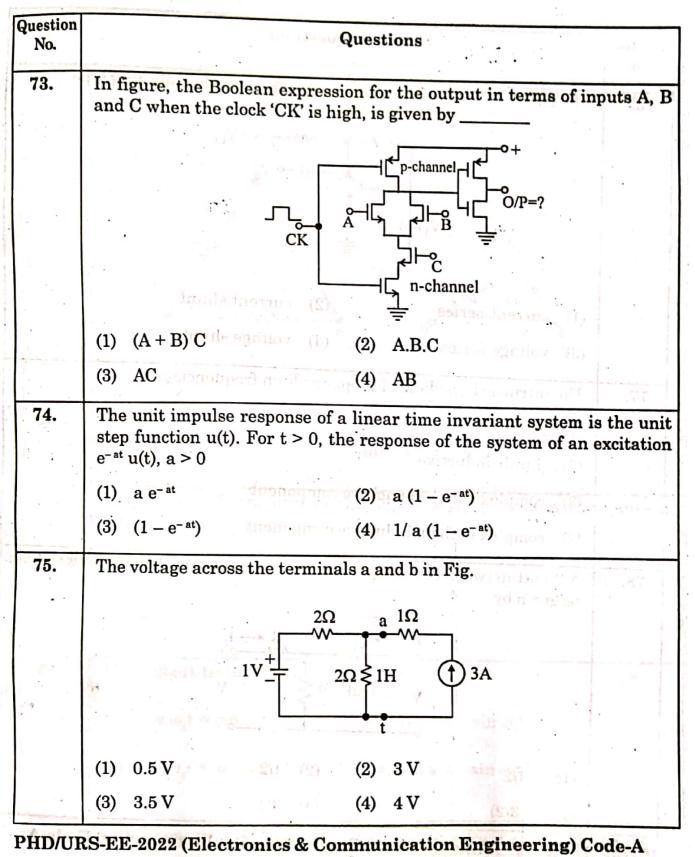
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ROURNES Question **Questions** No. In a transistor switch, the voltage change from base-to-emitter which is 169. adequate to accomplish the switching is only about 0.2 V 1.00 million million (2), 0.3 V anov trant (1) (1)(4) 0.5 V (3) 0.1 V Typical propagation delay of a CMOS gate ranges from 70. 25 to 150 ns. (2) 2 to 15 ns. (1)(4) 80 to 120 ns. 100 to 200 ns. (3)A silicon sample is uniformly doped with 1.0×10^6 phosphorous 71. atoms/cm³ and 2×10^6 boron atoms/cm³. If all the dopants are fully ionized, 1000000 the material is respectivels (1) n-type with carrier concentration of 10^6 cm (2) p-type with carrier concentration of 10^6 cm (3) p-type with carrier concentration of 2×10^{16} cm (4) T2 will get damaged and T1 will be safe B-1.1-0 The CMOS equivalent of the following n MOS gate (in figure) is 72. (draw the circuit) o stim device the very highlight unpedance Set voltatio VCE off (3), the device is asymptotical with at has well term qoo • B CMOS-intere has the -•C BIGO (2) (A + B) (B + C)(A + BC)'(1)AB + BC(4) AC + AB(3) PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-A (16)

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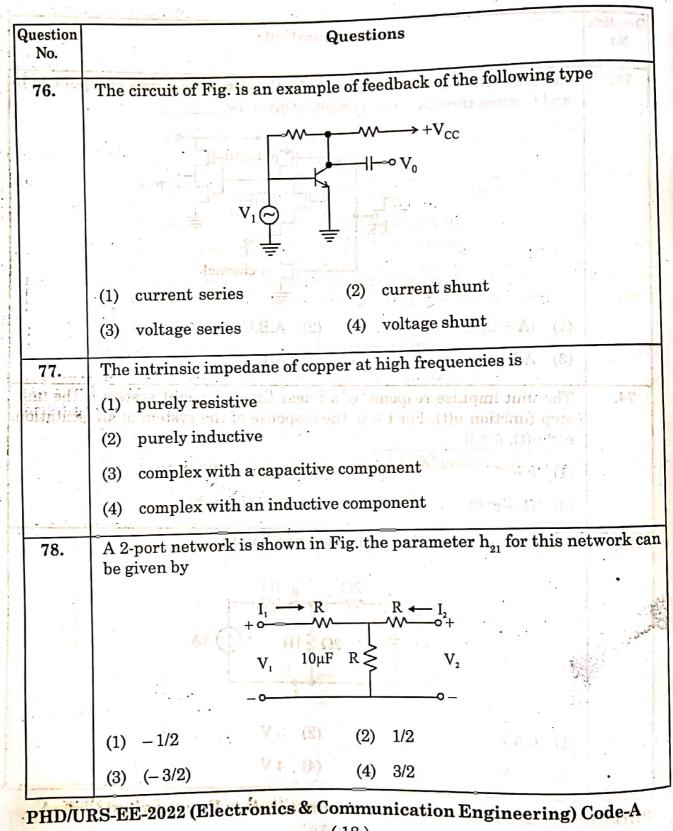


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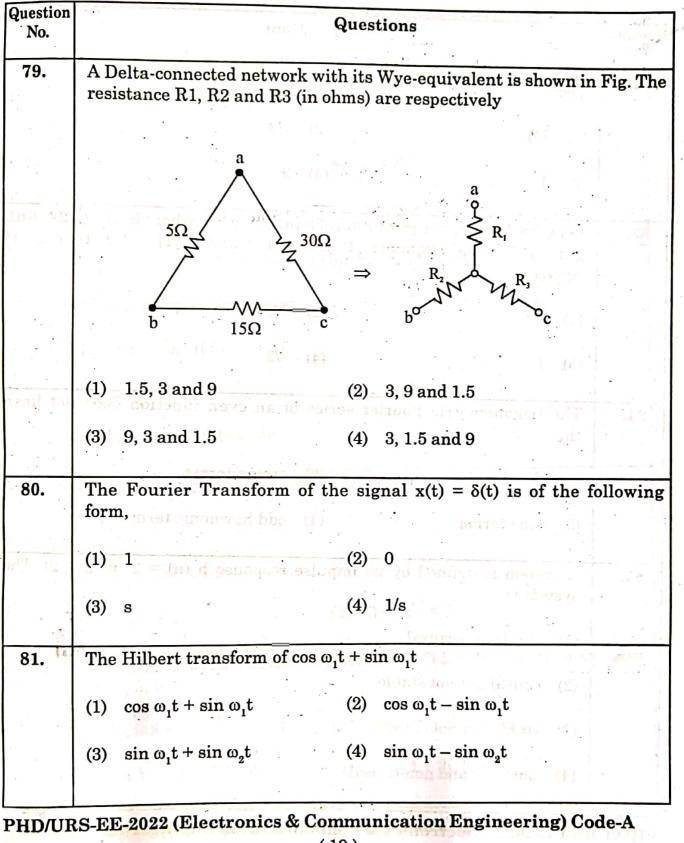
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Question No.	Questions
82.	The Fourier transform of a signal $H(j\omega) = (2 \cos \omega) (\sin 2\omega)/\omega$
	(1) 1/4 (2) 1/2
	(3) 1 (4) 2
83.	Let y [n] denote the convolution of h [n] and g [n], where $h(n) = (1/2)^n u(n)$ g(n) is a causal sequence. If y[0] = 1 = and y [1] = 1/2, then g [1]
•	(1) 0 (2) $1/2$
	(3) 1 (4) 3/2
	The trigonometric Fourier series of an even function does not have
84.	the 2 bru d.1.8 (4) 6.1 bru 6.9 (8)
en en la	(1) dc term (2) cosine terms
1	(3) sine terms (4) odd harmonic terms
85.	A system is defined by its impulse response h (n) = 2^n u (n - 2). The system is
	(1) _ stable and causal
	(2) causal but not stable $d_1 \odot trie = 1 \odot \log 1 \left[\frac{1}{2} \odot \frac{1}$
	(3) stable but not causal $J_{\mu}\omega \operatorname{rise} - J_{\mu}\omega \operatorname{rise} (1)$ $J_{\mu}\omega \operatorname{rise} (2)$
	(4) unstable and non-causal

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Question No.	Questions
86.	The first six points of the 8-point DFT of a real valued sequence are 5, $1 - j3$, $03 - 4j$, 0 and $3 + 4j$. The last two points of the DFT are respectively
·	(1) 0, $1 - j$ (2) 0, $1 + j(2, -1)$ (1) (1)
	(3) $1 + 3j$, 5 (4) $1 - 3j$, 5
87.	The Fourier series of a real periodic function has only
	(1) cosine terms if it is even $(a + b) = (b + b) = (b + b)$
and the last	
	(2) sine terms if it is even
	(3) Cosine terms if it is odd
- -	(4) sine terms if it is odd
88.	The ROC of z-transform of the discrete time sequence
1. •.	X (n) = $(1/3)^n - (1/2)^n u (-n-1)$
	(1) $1/3 < z < 1/2$ (2) $ z > 1/2$
	(3) $ z > 1/2$ (4) $3 < z < 2$
89.	The 4-point Discrete Fourier Transform (DFT) of a discrete time sequence
	{1, 0, 2, 3} is
- -	(1) $[0, -2 + 2j, 2, -2 - 2j]$ (2) $[2, 2 + 2j, 6, 2 - 2j]$
	(3) $[6, 1-3j, 2, 1+3j]$ (4) $[6, -1+3j, 0, -1-3j]$
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uestion No.	Questions
90. 90°	The input and output of a continuous time system are respectively denote by x (t) and y (t). Which of the following descriptions corresponds to
•	causal system (1) $y(t) = x(t-2) + x(t+2)$
	(2) $y(t) = (t + 5) y(t + 5)$
a.	$\alpha : (\alpha - i - \alpha - i) = \alpha + \alpha$
	(3) $y(t) = (t - 4)(t + 1)$ (4) $y(t) = (t - 4)(t + 1)$ (4) $y(t) = (t - 4)(t + 1)$ (5) $y(t) = (t - 4)(t + 1)$ (6) $y(t) = (t - 4)(t + 1)$ (7) $y(t) = (t - 4)(t + 1)$
	(4) $y(t) = (t + 5) x (t + 5)$
91.	In digital transmission, the modulation technique that requires minimum bandwidth is
	(1) Delta modulation (2) PCM (2) (C)
	(3) DPCM (4) PAM
92.	In Differential Pulse Code Modulation techniques, the decoding i performed by
-	(1) PLL (2) Accumulator
	(3) Sampler (1) (2) (4) Quantizer (1)
93.	The noise that affects PCM
anoups	(1) Transmission noise not and the provide large the second state of the second state
	(2) Quantizing noise
	(3) Transit noise
6	(4) Both (1) and (2) are correct

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estion No.	Questions	
94.	Matched filter may be optimally used only for	
	(1) Flicker (2) Transit time noise	
	(3) Gaussian noise (4) All of the above (1/2)	
95.	Regenerative repreaters are used for	•
	(1) Eliminating noise	•
	(2) Reconstruction of signals a been a pailed the reservoir as	112
1	(3) Transmission over long distances	۲.
	(4) All of the above	
96.	The technique that may be used to increase average informat bit is	ion pe
96.	The technique that may be used to increase average informat bit is	ion pe
96.	The technique that may be used to increase average informat bit is	ion pe
96. ອີແອັນຄ	The technique that may be used to increase average informat bit is (1) FSK I nowel have rady to add meaned exceeded add here add here and the add the second of the second	**
96.	The technique that may be used to increase average informat bit is (1) FSK 1 react because the second of the secon	**
96.	The technique that may be used to increase average informat bit is (1) FSK (2) ASK (3) Shannon-Fano algorithm	**
ាល ទំនាន	The technique that may be used to increase average informat bit is (1) FSK (2) ASK (3) Shannon-Fano algorithm (4) Digital modulation techniques	**

(23)

Code *

120 Questions Question No. The code in convolution coding is generated using 98. (1) EX-OR logic transit (2) 11 (2) AND logic and to have (4) mative representations are used for (3) OR logic off 2r Sameride (4) None of the above Parity check bit coding is used for 99. Error correction (1)Error detection (2)Error correction and detection 42 OF ROL (3)None of the above (4) In MSK, the difference between the higher and lower frequency 100. and an is Same as the bit rate (1)Half of the bit rate (2)Twice of the bit rate (3)Four time the bit rate (4)PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-A (24)

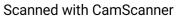
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19.10

Code-A

SET_"7" (DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO) (Ph.D/URS-EE Jan. 2022) Sr. No. 10006 ELECTRONICS & COMMUNICATION ENGINEERING Code Total Questions : 100 Max. Marks : 100 Time: 1¼ Hours (in words) Roll No. ______ (in figure)_____ Father's Name : Name : Mother's Name : _____ Date of Examination : _____ (Signature of the candidate) (Signature of the Invigilator) CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER. 1. All questions are compulsory. 2. The candidates must return the Question book-let as well as OMR

- answer-sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- Keeping in view the transparency of the examination system, carbonless OMR 3. Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- Question Booklet along with answer key of all the A,B,C and D code will be got 4: uploaded on the university website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet/Answer Key, the same may be brought to the notice of the Controller of Examinations in writing/through E-Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered.
- The candidate MUST NOT do any rough work or writing in the OMR Answer-5. Sheet. Rough work, if any, may be done in the question book-let itself. Answers MUST NOT be ticked in the Question book-let.
- There will be no negative marking. Each correct answer will be awarded 6. one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- Use only Black or Blue BALL POINT PEN of good quality in the OMR Answer-7. Sheet.
- BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD 8. ENSURE THAT THEY HAVE BEEN SUPPLIED CORRECT AND COMPLETE BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.





Question No.	Questions
1.	A half wave rectifier is equivalent to :
•	(1) Clamper circuit
	(2) Clipper circuit
	(3) Clamper circuit with negative bias
	(4) 'Clipper circuit with positive bias
2.	The operation of the BJT relies on
	(1) Free electrons (2) Holes
	(3) Both (1) and (2) (4) None of the above
3.	 The advantages of FET are
	(4) All of the above
4.	A device with direct current coupled, high gain electronic voltage type amplifier with one output and differential input is called
	(1) Rectifier (2) Amplifier
	(3) Transformer (4) Op-amp
5.	An op-amp with negative feedback provides output parameter.
	(1) Gain (2) Bandwidth
	(3) Input-output impedance (4) All the above

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B

(1)

8-shoD4

Question No.	Questions					
6.	What is the function of low pass filter in phase-locked loop?					
	(1) Improves low frequency noise					
	(2) Removes high frequency noise					
4	(3) Tracks the voltage changes					
	(4) Changes the input frequency					
7.	Which characteristic of PLL is defined as the range of frequencies over which PLL can acquire lock with the input signal?					
	(1) Free-running state (2) Pull-in time					
	(3) Lock-in range (4) Capture range					
8.	A multivibrator that generates square wave of its own is called a :					
-	(1) Monostable multivibrator (2) Bistable multivibrator					
	(3) Astable multivibrator (4) None of these					
9.	Recommended frequency range of Harley oscillator is					
	(1) 30 KHz–30 MHz (2) 1 KHz – 10 MHz					
	(3) $2 \text{ Hz} - 3 \text{ MHz}$ (4) $0.5 \text{ KHz} - 40 \text{ MHz}$					
10.	The Hartley oscillator is less preferred than due to Colpitts oscillator performance in					
.75 ⁴ · T	(1) All frequency region (2) Mid frequency region					
	(3) High frequency region (4) Low frequency region					

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B

(2)

Question No.	Questions
11.	$E \times H$ of microwave gives
in onn	(1) Instantaneous power (2) Average power
	(3) Peak power (4) Reactive power
12.	In a dielectric medium
	(1) $\nabla \times H = J$ (2) $\nabla \times H = D$
	(3) $\nabla \times H = 0$ (4) $\nabla \times H = \rho_v$
13.	The velocity of electron in klystron is proportional to :
	(1) Square root of beam voltage
ism work	(2) Electron charge
	(3) Electron mass
	(4) Square root of mass of the electron
14.	The output efficiency of reflex klystron is the ratio of :
	(1) Output RF power to input RF power
	(2) Output RF power to input DC power
	(3) Output DC power to input DC power
	(4) Output DC power to RF input power

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B

(3)

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5 9-	

Question No.	on Questions An EM field is said to be non-existent or not Maxwellian if it fails to satisfy Maxwell's equations and the wave equations derived from them. Which of the following fields in free space are not Maxwellian? (1) H = cos x cos 10 ⁶ t a _x (2) E = 100 cos wt a _x		
15.			
	(3) $D = e^{-10y} \sin (10^5 t - 10y) a_z$ (4) $B = 0.4 \sin 10^4 t a_z$		
16.	S-matrix exists for (1) Two ports only (2) Three ports only		
	(3) Multiport network (4) Four ports		
17.	A 500 m lossless transmission line is terminated by a load that is located at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how many voltage maxima exist on the line ?		
	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		
	(3) 5 (4) 3		

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B

Question No.	Questions				
18.	How many degenerate dominant modes exist in a rectangular resonant cavity for which $a = b = c$?				
	(3) 5 0 0 0 0 0 0 0 0 0				
19.	If a small single turn loop antenna has a radiation resistance of 0.04 Ω , how many turns are needed to produce a radiation resistance of 1 Ω ?				
	(1) 150 (2) 50				
1 20	(3) 25 (4) 5 80000 1,000 (0)				
20.	Magic Tee can produce				
	(1) Sum and difference of signals				
A907.37	(2) Oscillations				
	(3) Only sum of signals				
	(4) Only difference of signals				
21.	SCR stand for				
	(1) Silicon Current Rectifier (2) Silicon Convert Rectifier				
	(3) Silicon Controlled Rectifier (4) None of these				
22.	TRAIC is				
	(1) Unidirectional thyristor (2) Bidirectional thyristor				
	(3) Tri-directional thyristor (4) None of these				
· · · · · · · · · · · · · · · · · · ·	insting Engineering) Code-B				

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B

(5)

Question No.	Questions
23.	Which statement is correct?
	(1) SCR is three junction and four layers semiconductor device
	(2) SCR is two junction and four layers semiconductor device
	(3) SCR is three junction and two layers semiconductor device
Ω 10.01. 10.13	(4) SCR is four junction and three layers semiconductor device
24.	The dv/dt protection of SCR is achieved by using
	(1) RL circuit in series with SCR
	(2) RC circuit across SCR
	(3) L in series with SCR
	(4) RC circuit in series with SCR
25.	Which component is required to increase the switching speed in SMPA?
	(1) MOSFET (2) SCR
1	(3) Transistor (4) All of these
26.	If all the poles of the system lie in the left half of s-plane then system is
	(1) Unstable (2) Marginally stable
	(3) Stable (4) None of these
27.	The step size of stepper motor with 10 rotor tooth is
	(1) 36° (2) 45°
ах 1	(3) 25° (4) 26°

(6)

Question No.	Questions
28.	Transfer function is defined as
	(1) Linear and time variant system
	(2) Linear and invariant system
	(3) Non-linear and time variant system
16. I ¹	(4) Non-linear and time invariant system
29.	The main drawback of feedback system
	(1) Inaccuracy (2) Inefficiency
	(3) Insensitivity (4) Instability
30.	Which of the following statement is correct?
	(1) Proportional-Derivative (PD) controller is equivalent to high pass filter
	(2) For better performance, integral action is initiated before derivative action
	(3) A practical PID controller uses a high gain amplifier in the forward path
	(4) High proportional gain is an alternative to derivative actions
31.	In digital transmission, the modulation technique that requires minimum bandwidth is
	(1) Delta modulation (2) PCM
	(3) DPCM (4) PAM
32.	In Differential Pulse Code Modulation techniques, the decoding is performed by
	(1) PLL (2) Accumulator
1	(3) Sampler (4) Quantizer

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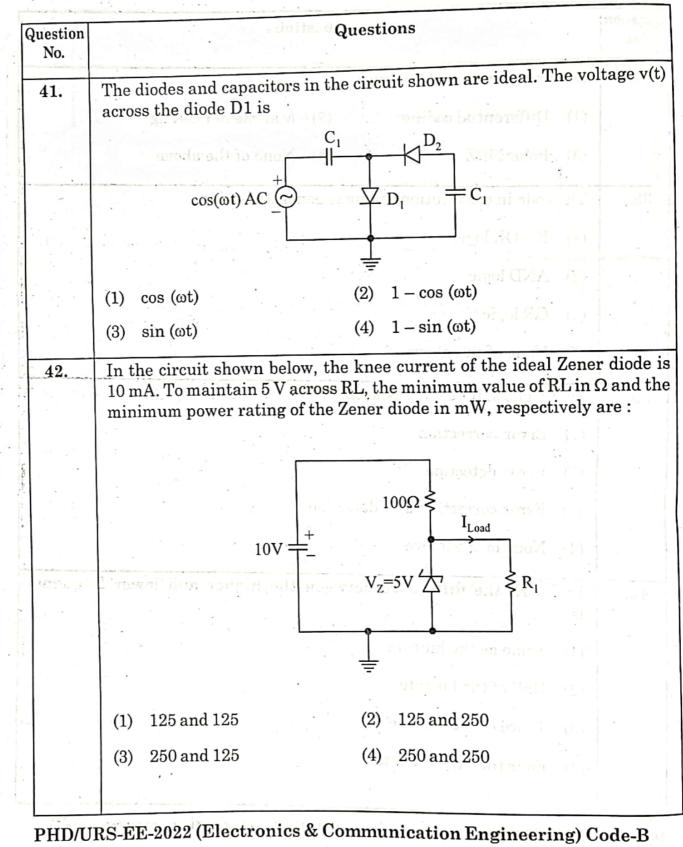
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Question No.	Questions	
33.	The noise that affects PCM	13.
	(1) Transmission noise	÷., .
	(2) Quantizing noise	
	(3) Transit noise analyze inclusive i and they month in A. (b)	
	(4) Both (1) and (2) are correct	11 S
34.	Matched filter may be optimally used only for	2
	(1) Flicker (2) Transit time noise	
ang drin	(3) Gaussian noise (4) All of the above	
35.	Regenerative repreaters are used for	
VIIEVIVE	(1) Eliminating noise	
newig) :	(2) Reconstruction of signals	
	(3) Transmission over long distances	
P 11	(4) All of the above	
36.	The technique that may be used to increase average informat bit is	ion per
	(1) FSK	
r mithir	(2) ASK	
	(3) Shannon-Fano algorithm	
÷	(4) Digital modulation techniques	<i>2</i> -2

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B
(8)

Question No.	Questions		
37.	ISI may be removed by using		
	(1) Differential coding (2) Manchester coding		
	(3) Polar NRZ (4) None of the above		
38.	The code in convolution coding is generated using		
	(1) EX-OR logic		
	(2) AND logic		
	(3) OR logic (10) BOS - 1 (10) (10) BOS (1)		
i phoifi	(4) None of the above		
39.	Parity check bit coding is used for		
	(1) Error correction		
	(2) Error detection		
	(3) Error correction and detection		
	(4) None of the above		
40.	In MSK, the difference between the higher and lower frequency is		
in St.	(1) Same as the bit rate		
	(2) Half of the bit rate		
	(3) Twice of the bit rate		
	(4) Four time the bit rate		

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B (9)



M-sho

(10)

Question No.	Questions					
43.	Consider a common-emitter current gain of 150 and a base current of 15μ A. If the transistor is biased in the forward active mode, the collector and emitter current will be :					
6	(1) 2.25 mA and 2.27 mA (2) 3.25 mA and 2.27 mA					
	(3) 2.25 mA and 1.37 mA (4) 3.25 mA and 1.37 mA					
44.	What is the drain current for a D-MOSFET having the characteristic values I_{Dss} of 10 mA, Vgs (off) of — 4 V and I_{Dss} of Vgs = + 2 V?					
	(1) 22.5 mA (2) 17.5 mA					
((3) 12·5 mA (4) 2·5 mA					
45.	Most of the linear ICs are based on the two-transistor differential amplifier because of its					
	(1) input voltage dependent linear transfer characteristic					
÷	(2) high voltage gain					
	(3) high input resistance					
	(4) high CMRR					
46.	A dc power supply has no-load voltage of 30 V, and a full-load voltage of 25 V at full-load current of 1 A. Its output resistance and load regulation, respectively are					
	(1) 5Ω and 20% (2) 25Ω and 20%					
414	(3) 5Ω and 16.7% (4) 25Ω and 16.7%					

PHD/URS-EE-2022 (Electronics & Communication Engineering)

(11)

Code-B

uestion No.	Questions					
47.	NPN transistor is not suitable for good analog switch because					
st parties	(1) $IC - VCE$ characteristic curve pass directly through origin.					
	(2) the device has very high input impedance					
1	(3) the device is asymmetrical with an offset voltage VCE off.					
	(4) it has well defined transition frequency f_i .					
48.	CMOS logic has the property of					
	(1) increased capacitance and delay					
	(2) decreased area					
	(3) high noise margin					
al infinite	(4) low static power dissipation					
49.	In a transistor switch, the voltage change from base-to-emitter which adequate to accomplish the switching is only about					
	(1) $0.2 V$ (2) $0.3 V$					
1. Q.	(3) 0.1 V (4) 0.5 V					
50.	Typical propagation delay of a CMOS gate ranges from					
	(1) $2 \text{ to } 15 \text{ ns.}$ (2) $25 \text{ to } 150 \text{ ns.}$					
n se ha	(3) 100 to 200 ns. (4) 80 to 120 ns.					
51.	In 8086 microprocessor, address range of memory is					
i.	(1) $00000 \text{ H} - \text{CCCCC H}$ (2) $00001 \text{ H} - \text{FFFFF H}$					
e V	(3) 00001 H – CCCCC H (4) 00000 H – FFFFF H RS-EE-2022 (Electronics & Communication Engineering) Code-B (12)					

Question No.	Questions				
52.	8086 microprocessor is designed to operate in how many modes ?				
	(1) Two ynorceal (1) (2) Four reast ON fellman (1)				
	(3) Eight (4) Sixteen (1) (C)				
53.	Data pins of 16 bit ALU of 8086 is : a man and a more a large detail and a more and a more a m				
•	(1) AD_{16} to AD_1 and a C (2) AD_{15} to AD_0 and (1)				
	(3) AD_{15} to AD_1 (4) AD_{16} to AD_0 distance (8)				
54.	Pointer register of 8086 is :				
	(1) Base pointer (2) Index pointer				
	(3) Segment pointer (4) Stack segment pointer				
55.	For TRAP FLAG (TF = 0) in 8086 : 100 MAN bras MODULA (1)				
	(1) Microprocessor will not execute the complete program in a single operation				
	(2) Microprocessor will execute the program in single stepping mode				
	(3) Microprocessor will execute the complete program in a single operation				
neroson buzino	(4) Microprocessor will not execute the program in single stepping mode				
56.	8051 is: an ⁵ 01 to multi-the main in policy parts (1)				
	(1) 16-bit microprocessor (2) 8-bit microcontroller				
	(3) 16-bit microcontroller (4) 8-bit microprocessor				

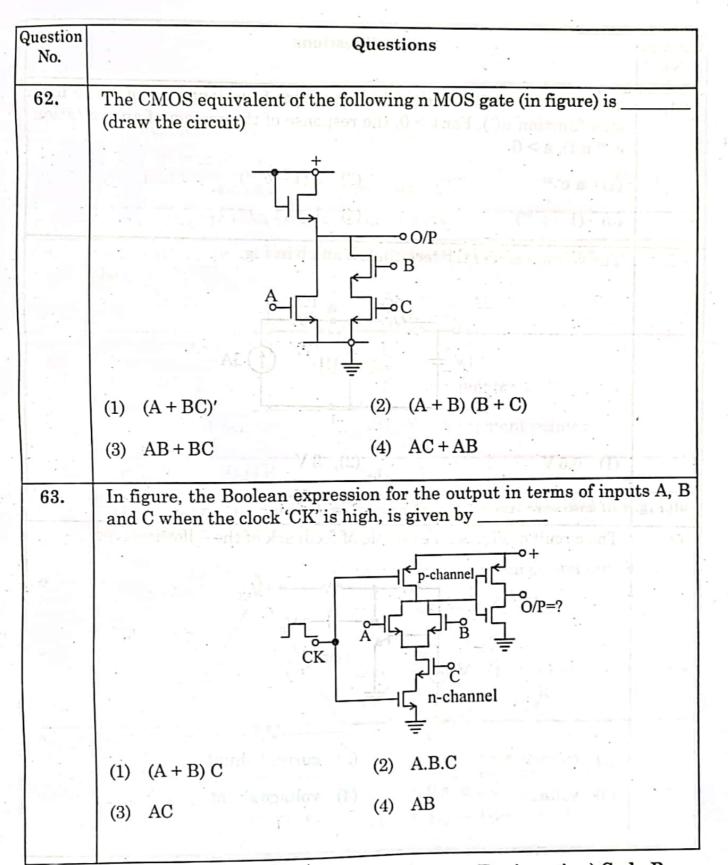
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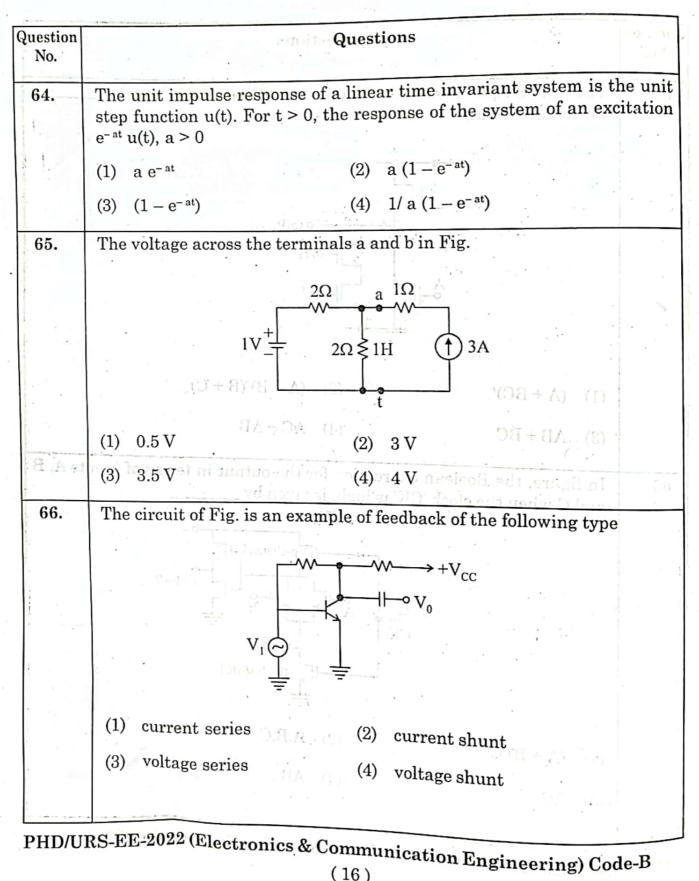
Code-B

Question No.	Questions
57.	Microcontroller has : (1) Parallel I/O interface (2) Memory
	(3) (1) and (2) (4) (4) None (2)
58.	The Special Function registers of Microcontrollers exists in :
•	(1) On chip ROM (1) (2) (2) On chip RAM (1) (1)
	(3) On chip EPROM (A) (4) None (1A of (3)) (4)
59.	The microprocessor can work as computer : ?. To not algor retained
	(1) With external digital parts
	(2) Without external digital parts
oligais	(3) With ROM and RAM only (2 - 11) DAUT GAT Paol
60.	The CPU of 8051 contains :
ana amplo	(1) Register A and B (2) Does not contain A and B
	(3) Contains A register only (4) Contains B register only
61.	A silicon sample is uniformly doped with 1.0×10^6 phosphorou atoms/cm ³ and 2×10^6 boron atoms/cm ³ . If all the dopants are fully ionized the material is
	(1) n-type with carrier concentration of 10^6 cm
	(2) p-type with carrier concentration of 10^6 cm
	(3) p-type with carrier concentration of 2×10^{16} cm
	(4) T2 will get damaged and T1 will be safe

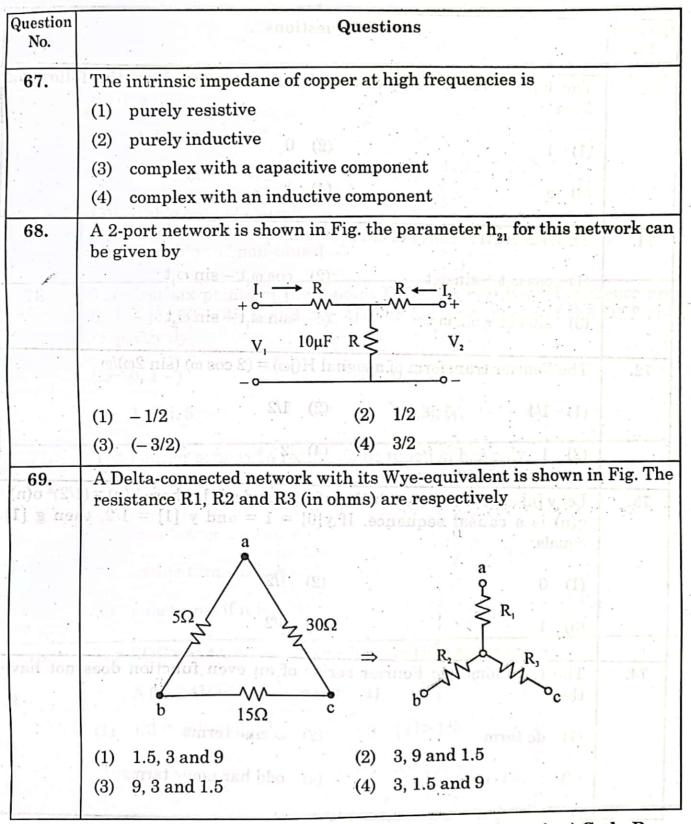
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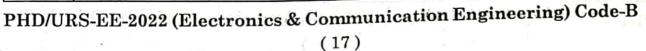


PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B (15)



(16)





Question No.	Questions				
70.	The Fourier Transform of the signal $x(t) = \delta(t)$ is of the following form,				
	(1) 1 (2) 0				
	(3) s (4) 1/s				
71.	The Hilbert transform of $\cos \omega_1 t + \sin \omega_1 t$				
na na marina da seria da seria Seria da seria da seri	(1) $\cos \omega_1 t + \sin \omega_1 t$ (2) $\cos \omega_1 t - \sin \omega_1 t$				
4 • ¹	(3) $\sin \omega_1 t + \sin \omega_2 t$ (4) $\sin \omega_1 t - \sin \omega_2 t$				
72.	The Fourier transform of a signal $H(j\omega) = (2 \cos \omega) (\sin 2\omega)/\omega$				
	(1) 1/4 (2) 1/2				
and a second	(3) 1 (4) 2				
73.	Let y [n] denote the convolution of h [n] and g [n], where h(n) = $(1/2)^n u(n)$ g(n) is a causal sequence. If y[0] = 1 = and y [1] = $1/2$, then g [1] equals (1) 0 (2) $1/2$ (3) 1 (4) $3/2$				
74.	The trigonometric Fourier series of an even function does not have the (1) dc term (2) cosine terms				
	(3) sine terms (4) odd harmonic terms				

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B (18)

Question No.	Questions
75.	 A system is defined by its impulse response h (n) = 2ⁿ u (n - 2). The system is (1) stable and causal (2) causal but not stable (3) stable but not causal
i ci els	(4) unstable and non-causal
76.	The first six points of the 8-point DFT of a real valued sequence are 5, $1 - j3$, $03 - 4j$, 0 and $3 + 4j$. The last two points of the DFT are respectively
	(1) $0, 1-j$ (2) $0, 1+j$ (3) $1+3j, 5$ (4) $1-3j, 5$
77.	 The Fourier series of a real periodic function has only (1) cosine terms if it is even (2) sine terms if it is even (3) cosine terms if it is odd (4) sine terms if it is odd
78.	The ROC of z-transform of the discrete time sequence $X (n) = (1/3)^n - (1/2)^n u (-n-1)$ (1) $1/3 < z < 1/2$ (2) $ z > 1/2$ (3) $ z > 1/2$ (4) $3 < z < 2$

PHD/URS-EE-2022 (Electronics & Communication Engineerin (19)

Code-B

uestion No.	Questions				
79.	The 4-point Discrete Fourier Transform (DFT) of a discrete time sequence $\{1, 0, 2, 3\}$ is				
1	(1) $[0, -2 + 2j, 2, -2 - 2j]$ (2) $[2, 2 + 2j, 6, 2 - 2j]$				
1	(3) $[6, 1-3j, 2, 1+3j]$ (4) $[6, -1+3j, 0, -1-3j]$				
80.	The input and output of a continuous time system are respectively denoted by x (t) and y (t). Which of the following descriptions corresponds to a				
ers are FT are	causal system (1) $y(t) = x(t-2) + x(t+2)$				
1.1.	(2) $y(t) = (t + 5) x (t + 5)$				
	(3) $y(t) = (t - 4) (t + 1) (t + 1)$ (1)				
	(4) $y(t) = (t + 5) x (t + 5)$ observed last a to solve remuel and $(t + 5) x (t + 5) = (t + 5) x (t + 5)$				
81.	A zero to 300 V voltmeter has a guaranteed accuracy of 1% full scal reading. The voltage measured by the instruments is 83 V. The percen limiting error is				
	(1) 0.67 (2) 2.63				
	(3) 3.62 (4) 1.67				
82.	Frequency can be measured by using				
1.1	(1) Maxwell's bridge (2) Wein's bridge				
	(3) Schering bridge (4) None of these				

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B (20)

Question No.	and leave Questions				
83.	A linear displacement transducer (such as digital) is generally uses (1) Gray Code (2) Binary code (3) Excess 3 code (4) Octal code				
84.	Hall effect transducer is applicable for such type of measurement like (1) Power (2) Displacement (3) Current (4) All of these				
85.	Which type of detector is used in ac bridges for audio frequency range ?(1) AC voltmeter(2) CRO(3) Headphone(4) Vibration galvanometer				
86.	Which of the following optical transducers used is an active transducer?(1) Photo voltaic cell(2) Photo emission cell(3) Photo diode(4) Photo transistor				
87.	 A compensated wattmeter has its reading corrected for the error due to (1) Friction (2) Frequency (3) Power consumed due to load (4) Power consumed in potential coil 				

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B (21)

Question No.	Questions					
88.	A dual beam CRO has					
1.1	(1) Two horizontal amplifiers					
	(2) Two trigger circuits					
	(3) Two vertical amplifiers					
n ann an a	(4) All the above					
89.	A template matching is performed on an EEG signal with spike and way by matched filter. Which of the following statements are true ? (1) Peaks in the filter response represent the presence of alph					
vəcən bə	 wave (2) Peaks in the filter response represent the presence of spike and wave complexes (3) Matched filter does not cause a lag in the output (4) None of these 					
90.	Internet of Things IoT is a network of (1) Sensors (2) Controllers (3) Actuators (4) All the above					
91.	How can parallel data be taken out of a shift register simultaneously?					
а. 1	(1) Use the Q output of the first FF					
	(2) Use the Q output of the last FF					
	(3) Tie all of the Q outputs together					
	(4) Use the Q output of each FF					

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B (22)

Code-B

Question No.	LUIAGTIAND				
92.	A logic circuit that accepts several data inputs and allows only them at a time to get through to the output is called(1) Multiplexer(2) De-multiplexer(3) Transmitter(4) Receiver				
93.	The logical sum of two or more logical product terms is called :(1) SOP(2) POS				
	(3) OR operation (4) NAND operation	1818			
94.	 A finite state machine : (1) is same as that of abstract model of sequential circuit (2) consists of combinational logic circuits only (3) contains infinite number of memory devices (4) does not exist in practice 	.09			
95.	The memory technology which needs the least power is				
	 (1) ECL (3) CMOS (4) TTL 				
Civita and Civita Civita Civita and Civita a	 K-map is used to minimize the number of : (1) Flip-flops in digital circuits (2) Layout spaces in digital circuits for fabrication (3) Funtions of 3, 4, 5 or 6 variables (4) Registers in CPU 				

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B (23)

E-ofie-B

Question Questions No. 97. Master-Slave flip-flop is also called : me to get through to the output is called (1)Pulse triggered flip-flop Description (descer.) (2)Latch (L) Receive (3) Level triggered flip-flop ann et l'étérer nore legrent product remme is culied (4) Buffer 98. The resolution of 6-bit DAC will be nearly : 4.6% (1)3.2%(2)(4) 1.2% (3)1.6% 99. Which type of device FPGA are? SLD (1)(2)SROM EPROM (3)(4) PLD The difference between a PAL and a PLA is 100. PALs and PLAs are the same thing (1)The PAL has a programmable OR plane and a programmable AND (2)plane, while the PLA only has a programmable AND plane The PLA has a programmable OR plane and a programmable AND (3)plane, while the PAL only has a progammable AND plane The PAL has more possible product terms than the PLA (4)

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-B (24)

Code-B

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Question No.	Questions
1.	A zero to 300 V voltmeter has a guaranteed accuracy of 1% full scale reading. The voltage measured by the instruments is 83 V. The percent limiting error is
	(1) 0.67 (2) 2.63
	(3) 3.62 (4) 1.67
2.	Frequency can be measured by using
	(1) Maxwell's bridge (2) Wein's bridge
	(3) Schering bridge (4) None of these
3.	A linear displacement transducer (such as digital) is generally uses
• •	(1) Gray Code (2) Binary code
	(3) Excess 3 code (4) Octal code
4.	Hall effect transducer is applicable for such type of measurement like
	(1) Power (2) Displacement
	(3) Current (4) All of these
5.	Which type of detector is used in ac bridges for audio frequency range?
	(1) AC voltmeter (2) CRO
· · ·	(3) Headphone (4) Vibration galvanometer

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-C

Question No.	Questions
6.	Which of the following optical transducers used is an active transducer
	(1) Photo voltaic cell (2) Photo emission cell
	(3) Photo diode (4) Photo transistor
7.	A compensated wattmeter has its reading corrected for the error due to
	(1) Friction
	(2) Frequency
· ·	(3) Power consumed due to load
	(4) Power consumed in potential coil
8.	A dual beam CRO has
	(1) Two horizontal amplifiers
	(2) Two trigger circuits
n 1	(3) Two vertical amplifiers
70 (4 1°) ((4) All the above
9.	A template matching is performed on an EEG signal with spike and wave by matched filter. Which of the following statements are true ?
	(1) Peaks in the filter response represent the presence of alpha wave
	 (2) Peaks in the filter response represent the presence of spike and wave complexes
	(3) Matched filter does not cause a lag in the output
	(4) None of these

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Question No.	Questions
10.	Internet of Things IoT is a network of
	(1) Sensors (2) Controllers
	(3) Actuators (4) All the above
11.	In digital transmission, the modulation technique that requires minimum bandwidth is
	(1) Delta modulation (2) PCM
	(3) DPCM (4) PAM
12.	In Differential Pulse Code Modulation techniques, the decoding is performed by
	(1) PLL (2) Accumulator
	(3) Sampler (4) Quantizer
13.	The noise that affects PCM
	(1) Transmission noise
	(2) Quantizing noise
	(3) Transit noise
	(4) Both (1) and (2) are correct
14.	Matched filter may be optimally used only for
	(1) Flicker (2) Transit time noise
	(3) Gaussian noise (4) All of the above

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-C

(3)

2

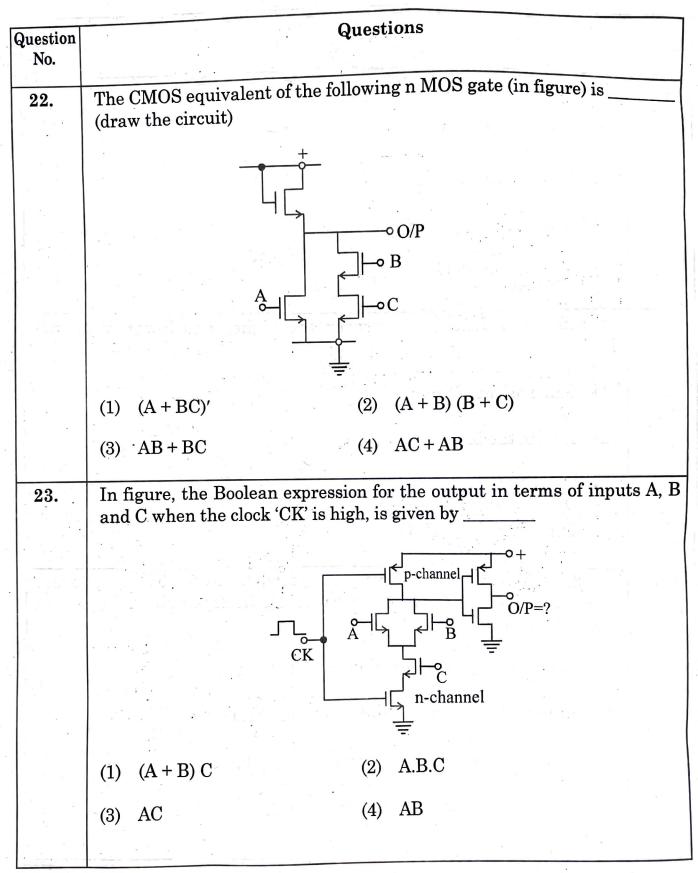
Question No.	Questions
15.	Regenerative repreaters are used for
	(1) Eliminating noise
	(2) Reconstruction of signals
	(3) Transmission over long distances
8	(4) All of the above
10	The technique that may be used to increase average information per
16.	bit is
	(1) FSK
	(2) ASK
	(3) Shannon-Fano algorithm
	(4) Digital modulation techniques
17.	ISI may be removed by using
×	(1) Differential coding (2) Manchester coding
	(3) Polar NRZ (4) None of the above
18.	The code in convolution coding is generated using
	(1) EX-OR logic
	(2) AND logic
	(3) OR logic
	(4) None of the above

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(4)

Question No.	Questions
-	
19.	Parity check bit coding is used for
	(1) Error correction
	(2) Error detection
	(3) Error correction and detection
ř.	(3) Error correction and detection
	(4) None of the above
ar 1 a	
20.	In MSK the difference between the higher and lower frequency
20.	In MSK, the difference between the higher and lower frequency is
	(1) Same as the bit rate
	(2) Half of the bit rate
	(3) Twice of the bit rate
	(4) Four time the bit rate
21.	A silicon sample is uniformly doped with 1.0×10^6 phosphorous
	atoms/cm ³ and 2×10^6 boron atoms/cm ³ . If all the dopants are fully ionize
	the material is
	6106
	(1) n-type with carrier concentration of 10^6 cm
	C 106
5.	(2) p-type with carrier concentration of 10^6 cm
	(3) p-type with carrier concentration of 2×10^{16} cm
	(4) T2 will get damaged and T1 will be safe

(5)



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(6)

Question	
Question No.	Questions
24.	The unit impulse response of a linear time invariant system is the unit step function $u(t)$. For $t > 0$, the response of the system of an excitation $e^{-at} u(t)$, $a > 0$
	(1) $a e^{-at}$ (2) $a (1 - e^{-at})$ (3) $(1 - e^{-at})$ (4) $1/a (1 - e^{-at})$
	(3) $(1 - e^{-at})$ (4) $1/a (1 - e^{-at})$
25.	The voltage across the terminals a and b in Fig.
	$\begin{array}{c} 2\Omega & a & 1\Omega \\ \hline & & & & \\ & & & & \\ & & & & \\ & & & &$
	$1V_{-T}^{+ }$ $2\Omega \gtrless 1H$ (1) $3A$
	(1) $0.5 V$ (2) $3 V$
n na ser se angel para a se 1	(3) $3.5 V$ (4) $4 V$
26.	The circuit of Fig. is an example of feedback of the following type
	$ \downarrow \downarrow $
	$\mathbf{V}_{1} \boldsymbol{\Theta}$
1. +	
	(1) current series (2) current shunt
	(3) voltage series (4) voltage shunt

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-C

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Question No.	Questions
27.	The intrinsic impedane of copper at high frequencies is
k a ser i gadi ta al Ziz	(1) purely resistive
	(2) purely inductive
	(3) complex with a capacitive component
	(4) complex with an inductive component
28.	A 2-port network is shown in Fig. the parameter \mathbf{h}_{21} for this network of be given by
	$I_{1} \longrightarrow R \qquad R \leftarrow I_{2}$ $+ \circ \qquad $
	$V_1 10\mu F R \geq V_2$
	(1) - 1/2 (2) 1/2
	(3) $(-3/2)$ (4) $3/2$
29.	A Delta-connected network with its Wye-equivalent is shown in Fig. T resistance R1, R2 and R3 (in ohms) are respectively
	a
	$5\Omega \left\langle \begin{array}{c} & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & $
	$\Rightarrow R_2 R_3$
	b b b c b c
	(1) 1.5, 3 and 9 (2) 3, 9 and 1.5
	(3) 9, 3 and 1.5 (4) 3, 1.5 and 9

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Question No.	Questions
30.	The Fourier Transform of the signal $x(t) = \delta(t)$ is of the following form,
	(1) 1 (2) 0
	(3) s (4) 1/s
31.	How can parallel data be taken out of a shift register simultaneously?
	(1) Use the Q output of the first FF
	(2) Use the Q output of the last FF
	(3) Tie all of the Q outputs together
and the second	(4) Use the Q output of each FF
32.	A logic circuit that accepts several data inputs and allows only one of them at a time to get through to the output is called
	(1) Multiplexer (2) De-multiplexer
	(3) Transmitter (4) Receiver
33.	The logical sum of two or more logical product terms is called :
	(1) SOP (2) POS
	(3) OR operation (4) NAND operation
34.	A finite state machine :
1999 - J	(1) is same as that of abstract model of sequential circuit
	(2) consists of combinational logic circuits only
	(3) contains infinite number of memory devices
	(4) does not exist in practice

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-C

Question No.	Questions
35.	The memory technology which needs the least power is
a e e e e e e e e e e e e e e e e e e e	(1) ECL (2) MOS
	(3) CMOS (4) TTL
36.	K-map is used to minimize the number of :
	(1) Flip-flops in digital circuits
	(2) Layout spaces in digital circuits for fabrication
	(3) Funtions of 3, 4, 5 or 6 variables
	(4) Registers in CPU
37.	Master-Slave flip-flop is also called :
 	(1) Pulse triggered flip-flop
	(2) Latch
an a	(3) Level triggered flip-flop
	(4) Buffer
38.	The resolution of 6-bit DAC will be nearly :
	(1) 4.6% (2) 3.2%
	(3) 1.6% (4) 1.2%
39.	Which type of device FPGA are ?
	(1) SLD (2) SROM
	(3) EPROM (4) PLD

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(10)

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Questio No.	n Questions
40.	The difference between a PAL and a PLA is
- 3± ⁻⁵ 	(1) PALs and PLAs are the same thing
	(2) The PAL has a programmable OR plane and a programmable AND plane, while the PLA only has a programmable AND plane
	(3) The PLA has a programmable OR plane and a programmable AND plane, while the PAL only has a progammable AND plane
	(4) The PAL has more possible product terms than the PLA
41.	In 8086 microprocessor, address range of memory is
- 11 1	(1) $00000 H - CCCCC H$ (2) $00001 H - FFFFF H$
	(3) $00001 \text{ H} - \text{CCCCC H}$ (4) $00000 \text{ H} - \text{FFFFF H}$
42.	8086 microprocessor is designed to operate in how many modes?
	(1) Two (2) Four
	(3) Eight (4) Sixteen
43.	Data pins of 16 bit ALU of 8086 is :
	(1) AD_{16} to AD_1 (2) AD_{15} to AD_0
	(3) AD_{15} to AD_1 (4) AD_{16} to AD_0
44.	Pointer register of 8086 is :
	(1) Base pointer (2) Index pointer
	(3) Segment pointer (4) Stack segment pointer

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-C (11)

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Question No.	Questions
45.	For TRAP FLAG (TF = 0) in 8086 :
	(1) Microprocessor will not execute the complete program in a singl operation
i den da. Li	(2) Microprocessor will execute the program in single stepping mode
	(3) Microprocessor will execute the complete program in a singl operation
	(4) Microprocessor will not execute the program in single steppin mode
46.	8051 is :
	(1) 16-bit microprocessor (2) 8-bit microcontroller
	(3) 16-bit microcontroller (4) 8-bit microprocessor
47.	Microcontroller has :
	(1) Parallel I/O interface (2) Memory
	(3) (1) and (2) (4) None
48.	The Special Function registers of Microcontrollers exists in :
а 	(1) On chip ROM (2) On chip RAM
	(3) On chip EPROM (4) None
49.	The microprocessor can work as computer :
	(1) With external digital parts
	(2) Without external digital parts
	(3) With ROM and RAM only
	4) None of the above

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uestion No.	Questions
50.	The CPU of 8051 contains :
	(1) Register A and B (2) Does not contain A and B
	(3) Contains A register only (4) Contains B register only
51.	$E \times H$ of microwave gives
	(1) Instantaneous power (2) Average power
	(3) Peak power (4) Reactive power
52.	In a dielectric medium
,	(1) $\nabla \times \mathbf{H} = \mathbf{J}$ (2) $\nabla \times \mathbf{H} = \mathbf{D}$
	(3) $\nabla \times \mathbf{H} = 0$ (4) $\nabla \times \mathbf{H} = \rho_{v}$
53.	The velocity of electron in klystron is proportional to :
	(1) Square root of beam voltage
	(2) Electron charge
•	(3) Electron mass
·	(4) Square root of mass of the electron
54.	The output efficiency of reflex klystron is the ratio of :
	(1) Output RF power to input RF power
	(2) Output RF power to input DC power
	(3) Output DC power to input DC power
	(4) Output DC power to RF input power

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(13)

Question		
No.	i test or not Maxwellian in	
55.	An EM field is said to be non-existent or not Maxwellian if fails to satisfy Maxwell's equations and the wave equations derive from them. Which of the following fields in free space are n	
	Maxwellian?	
	(1) $H = \cos x \cos 10^6 t a_x$ (2) $E = 100 \cos wt a_x$	
	(3) $D = e^{-10y} \sin (10^5 t - 10y) a_z$ (4) $B = 0.4 \sin 10^4 t a_z$	
56.	S-matrix exists for	
	(1) Two ports only (2) Three ports only	
	(3) Multiport network (4) Four ports	
57.	A 500 m lossless transmission line is terminated by a load that is locat at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how many voltage maxima exist on the line ?	
57.	at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how ma	
57.	at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how may voltage maxima exist on the line ?	
57.	at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how may voltage maxima exist on the line? $\pm 180^{\circ}$	
57.	at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how may voltage maxima exist on the line ? $\frac{90^{\circ}}{\pm 180^{\circ}} \frac{90^{\circ}}{0^{\circ}}$	
57.	at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how may voltage maxima exist on the line ? $\pm 180^{\circ}$	
57.	at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how ma voltage maxima exist on the line ? $\frac{90^{\circ}}{\pm 180^{\circ}} = 100^{\circ}$	

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-C (14)

vestion No.	Questions	
58.	How many degenerate dominant modes exist in cavity for which $a = b = c$?	a rectangular resonant
	(1) 2 (2) 3	
	(3) 5 (4) ∞	
59.	If a small single turn loop antenna has a radiat how many turns are needed to produce a radiati	ion resistance of 0.04Ω ion resistance of 1Ω ?
	(1) 150 (2) 50	
	(3) 25	
60.	Magic Tee can produce	
	(1) Sum and difference of signals	
	(2) Oscillations	
	(3) Only sum of signals	
	(4) Only difference of signals	
61.	A half wave rectifier is equivalent to :	
	(1) Clamper circuit	
	(2) Clipper circuit	
	(3) Clamper circuit with negative bias	
	(4) Clipper circuit with positive bias	

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	Questions				
Question No.					
	The operation of the BJT relies on				
62.	 (1) Free electrons (2) Holes (3) Both (1) and (2) (4) None of the above 				
63.	The advantages of FET are				
	(1) It has better thermal stability				
	(2) It predicts less noise				
	(3) It can be used at high frequency				
	(4) All of the above				
64.	A device with direct current coupled, high gain electronic voltage t amplifier with one output and differential input is called				
	(1) Rectifier (2) Amplifier				
	(3) Transformer (4) Op-amp				
65.	An op-amp with negative feedback provides output parameter				
	(1) Gain (2) Bandwidth				
	(3) Input-output impedance (4) All the above				
66.	What is the function of low pass filter in phase-locked loop?				
	(1) Improves low frequency noise				
	(2) Removes high frequency noise				
	(3) Tracks the voltage changes				
	(4) Changes the input frequency				

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Question	Questions			
No.				
67.	Which characteristic of PLL is defined as the range of frequencies ove which PLL can acquire lock with the input signal ?			
	(1) Free-running state (2) Pull-in time			
	(3) Lock-in range (4) Capture range			
68.	A multivibrator that generates square wave of its own is called a :			
	(1) Monostable multivibrator (2) Bistable multivibrator			
n bu shan Thu shan Thu shan	(3) Astable multivibrator (4) None of these			
69.	Recommended frequency range of Harley oscillator is			
	(1) $30 \text{ KHz} - 30 \text{ MHz}$ (2) $1 \text{ KHz} - 10 \text{ MHz}$			
· · · ·	(3) $2 \text{ Hz} - 3 \text{ MHz}$ (4) $0.5 \text{ KHz} - 40 \text{ MHz}$			
· ·				
70.	The Hartley oscillator is less preferred than due to Colpitts oscillator's performance in			
	(1) All frequency region (2) Mid frequency region			
	(3) High frequency region (4) Low frequency region			

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-C (17)

Questions Question No. The diodes and capacitors in the circuit shown are ideal. The voltage v(t)71. across the diode D1 is $\cos(\omega t) AC$ $Z D_1$ C_1 $1 - \cos(\omega t)$ (1) $\cos(\omega t)$ (2) $\sin(\omega t)$ (4) $1 - \sin(\omega t)$ (3)72. In the circuit shown below, the knee current of the ideal Zener diode is 10 mA. To maintain 5 V across RL, the minimum value of RL in Ω and the minimum power rating of the Zener diode in mW, respectively are: 100Ω ≶ I_{Load} 10V = $V_z = 5V$ ξR_1 (1)125 and 125 (2)125 and 250250 and 125 (3)250 and 250(4)

Code-C

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Question No.	Questions	
73.	Consider a common-emitter current gain of 150 and a base current of 15 μ A. If the transistor is biased in the forward active mode, the collector and emitter current will be :	
	(1) 2.25 mA and 2.27 mA (2) 3.25 mA and 2.27 mA	
	(3) 2.25 mA and 1.37 mA (4) 3.25 mA and 1.37 mA	
74.	What is the drain current for a D-MOSFET having the characteristic values I_{Dss} of 10 mA, Vgs (off) of — 4 V and I_{Dss} of Vgs = + 2 V?	
	(1) 22.5 mA (2) 17.5 mA	
	(3) 12.5 mA (4) 2.5 mA	
75.	Most of the linear ICs are based on the two-transistor differential amplifier because of its	
	(1) input voltage dependent linear transfer characteristic	
	(2) high voltage gain	
	(3) high input resistance	
	(4) high CMRR	
76.	A dc power supply has no-load voltage of 30 V, and a full-load voltage of 25 V at full-load current of 1 A. Its output resistance and load regulation respectively are	
	(1) 5Ω and 20% (2) 25Ω and 20%	
а. В.	(3) 5Ω and 16.7% (4) 25Ω and 16.7%	

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Question No.			
77.	NPN transistor is not suitable for good analog switch because		
	(1) $IC - VCE$ characteristic curve pass directly through origin.		
- 	(2) the device has very high input impedance		
· · ·	(3) the device is asymmetrical with an offset voltage VCE off.		
1	(4) it has well defined transition frequency f_t .		
78.	CMOS logic has the property of		
,	(1) increased capacitance and delay		
	(2) decreased area(3) high noise margin		
a linta	(4) low static power dissipation		
9.	In a transistor switch, the voltage change from base-to-emitter which adequate to accomplish the switching is only about		
	(1) $0.2 V$ (2) $0.3 V$		
	(3) $0.1 V$ (4) $0.5 V$		
80.	Typical propagation delay of a CMOS gate ranges from		
	(1) $2 \text{ to } 15 \text{ ns.}$ (2) $25 \text{ to } 150 \text{ ns.}$		
1 - 11+20 - 1 1	(3) $100 \text{ to } 200 \text{ ns.}$ (4) $80 \text{ to } 120 \text{ ns.}$		
81.	SCR stand for (1) Silicon C		
	 (1) Silicon Current Rectifier (2) Silicon Convert Rectifier 		
	(3) Silicon Controlled Rectifier (4) None of these		
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(20)

Question No.	Questions			
82.	TRAIC is			
	(1) Unidirectional thyristor (2) Bidirectional thyristor			
	(3) Tri-directional thyristor (4) None of these			
83.	Which statement is correct ?			
	(1) SCR is three junction and four layers semiconductor device			
	(2) SCR is two junction and four layers semiconductor device			
	(3) SCR is three junction and two layers semiconductor device			
an panan	(4) SCR is four junction and three layers semiconductor device			
84.	The dv/dt protection of SCR is achieved by using			
	(1) RL circuit in series with SCR			
	(2) RC circuit across SCR			
	(3) L in series with SCR			
	(4) RC circuit in series with SCR			
85.	Which component is required to increase the switching speed in SMPA?			
	(1) MOSFET (2) SCR			
5 8 8 - 9	(3) Transistor (4) All of these			
86.	If all the poles of the system lie in the left half of s-plane then system is			
	(1) Unstable (2) Marginally stable			
	(3) Stable (4) None of these			

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(21)

Question	Code-C
No.	Questions
87.	The step size of stepper motor with 10 rotor tooth is
	(1) 36° (2) 45°
	(3) 25° (4) 26°
88.	Transfer function is defined as
	(1) Linear and time variant system
	(2) Linear and invariant system
	(3) Non-linear and time variant system
	(4) Non-linear and time invariant system
89.	The main drawback of feedback system
	(1) Inaccuracy (2) Inefficiency
	(3) Insensitivity (4) Instability
90.	Which of the following statement is correct ?
	(1) Proportional-Derivative (PD) controller is equivalent to high pas- filter
	(2) For better performance, integral action is initiated before derivative action
	(3) A practical PID controller uses a high gain amplifier in the forward path
	(4) High proportional gain is an alternative to derivative actions
91.	The Hilbert transform of $\cos \omega_1 t + \sin \omega_1 t$
-	(1) $\cos \omega_1 t + \sin \omega_1 t$ (2) $\cos \omega_1 t - \sin \omega_1 t$
	(3) $\sin \omega_1 t + \sin \omega_2 t$ (4) $\sin \omega_1 t - \sin \omega_2 t$

(22)

Code-C

Question No.	Questions
92.	The Fourier transform of a signal $H(j\omega) = (2 \cos \omega) (\sin 2\omega)/\omega$
	(1) 1/4 (2) 1/2
	(3) 1 (4) 2
93.	Let y [n] denote the convolution of h [n] and g [n], where $h(n) = (1/2)^n u(n)$, g(n) is a causal sequence. If y[0] = 1 = and y [1] = 1/2, then g [1] equals
An and a second s	(1) 0 (2) 1/2
	(3) 1 (4) 3/2
94.	The trigonometric Fourier series of an even function does not have the(1) dc term(2) cosine terms(3) sine terms(4) odd harmonic terms
95.	 A system is defined by its impulse response h (n) = 2ⁿ u (n - 2). The system is (1) stable and causal (2) causal but not stable (3) stable but not causal (4) unstable and non-causal
96.	The first six points of the 8-point DFT of a real valued sequence are $5, 1 - j3, 03 - 4j, 0$ and $3 + 4j$. The last two points of the DFT arerespectively(1) $0, 1-j$ (2) $0, 1+j$ (3) $1+3j, 5$ (4) $1-3j, 5$

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-C (23)

Code-C

Question No.	Questions
97.	The Fourier series of a real periodic function has only
43 (3) 1	(1) cosine terms if it is even
	(2) sine terms if it is even
	(3) cosine terms if it is odd
	(4) sine terms if it is odd
98.	The ROC of z-transform of the discrete time sequence
a contraction and the second second	X (n) = $(1/3)^n - (1/2)^n u (-n-1)$
	(1) $1/3 < z < 1/2$ (2) $ z > 1/2$
	(3) $ z > 1/2$ (4) $3 < z < 2$
99.	The 4-point Discrete Fourier Transform (DFT) of a discrete time sequence $\{1, 0, 2, 3\}$ is
	(1) $[0, -2 + 2j, 2, -2 - 2j]$ (2) $[2, 2 + 2j, 6, 2 - 2j]$
	(3) $[6, 1-3j, 2, 1+3j]$ (4) $[6, -1+3j, 0, -1-3j]$
100.	The input and output of a continuous time system are respectively denoted by x (t) and y (t). Which of the following descriptions corresponds to a causal system
2010017	(1) $y(t) = x(t-2) + x(t+2)$
	(2) $y(t) = (t + 5) x (t + 5)$
	(3) $y(t) = (t - 4) (t + 1)$
	(4) $y(t) = (t + 5) x (t + 5)$

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-C

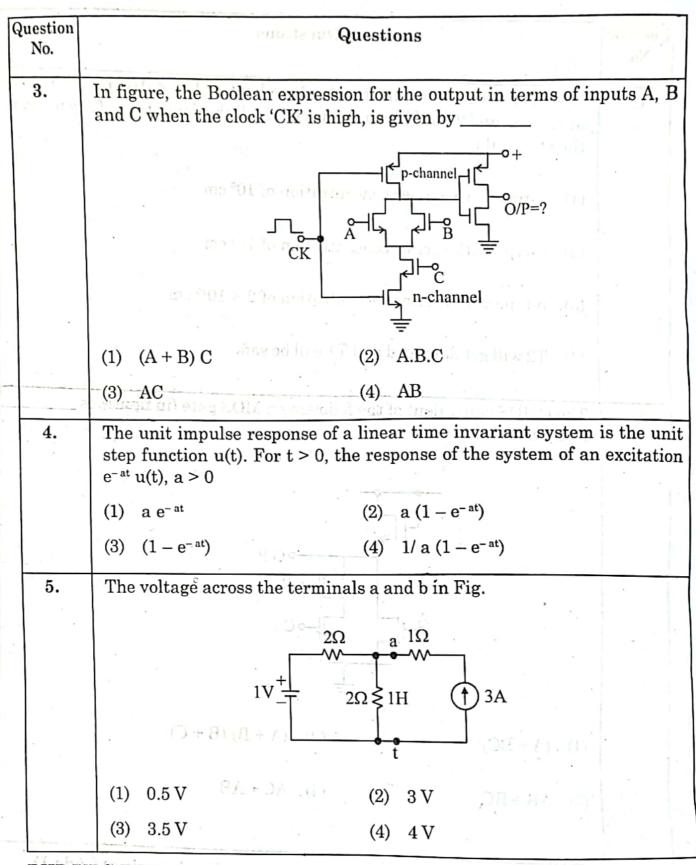
SET-"Z" BOOKLET BEFORE TIME OR UNTI	
RONICS & COMMUNIC ENGINEERING	ATION Sr. No. 10012
Total Questions : 100	Max. Marks : 100
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	COOKLET BEFORE TIME OR UNTER DOOKLET BEFORE TIME OR UNTER DOURS-EE Jan. 2022 RONICS & COMMUNICA ENGINEERING Total Questions : 100 in figure)Father's Na Date of Exa (Signeric Concerned Defore Leave the of Unfair-means / mis-beltion book lator concerned before Leave to fundair-means / mis-beltion to lodging of an FIR with addate will not be evaluated parency of the examination andidate so that a copy of O th answer key of all the A, Hy website after the conduct of parency in the Question Book th answer key of all the A, Hy website after the conduct of parency in the Question Book th answer key of all the A, Hy website after the conduct of parency in the Question Book e of the Controller of Examination in any case, will be considered T do any rough work or write may be done in the question he Question book-let. E marking. Each correct and a trasing, overwriting and will be treated as incorrect D and the Controller of good quarts T HE QUESTIONS, THE C

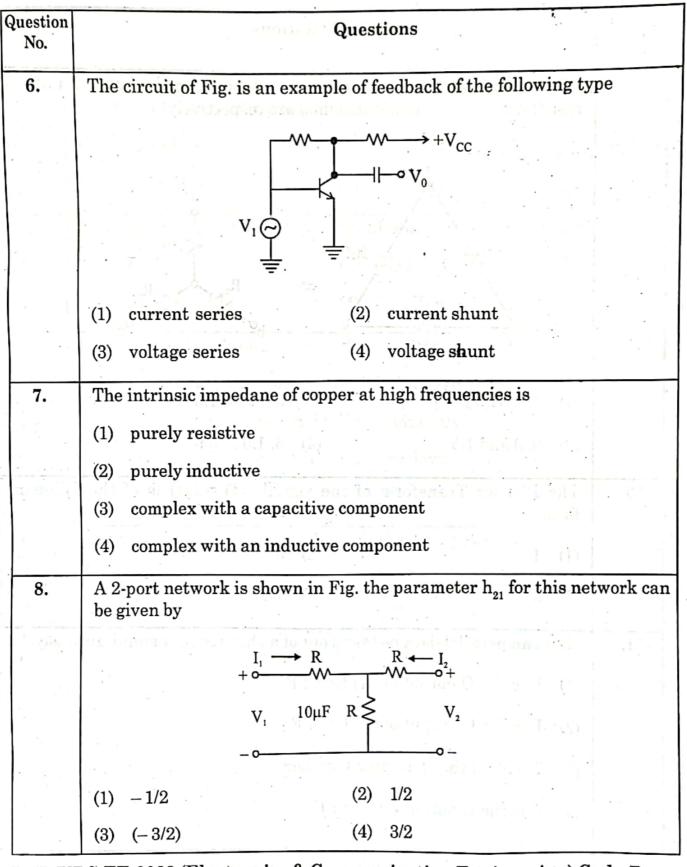
BOOK-LET. COMPLAINTS, IF ANY, REGARDING MISPRINTING ETC. WILL NOT BE ENTERTAINED 30 MINUTES AFTER STARTING OF THE EXAMINATION.

Question Questions No. A silicon sample is uniformly doped with 1.0×10^6 phosphorous 1. $atoms/cm^3$ and 2×10^6 boron $atoms/cm^3$. If all the dopants are fully ionized, the material is n-type with carrier concentration of 10⁶ cm (1)p-type with carrier concentration of 10⁶ cm (2)p-type with carrier concentration of 2×10^{16} cm (3)(4) T2 will get damaged and T1 will be safe The CMOS equivalent of the following n MOS gate (in figure) is _ 2. (draw the circuit) • O/P -• B ъC (2) (A + B) (B + C)(1) (A + BC)'(4) AC + AB(3) AB + BC

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(1)





(3)

Question No.	Questions	na raji W
9.	A Delta-connected network with its Wye-equivalent is shown in Fig. The resistance R1, R2 and R3 (in ohms) are respectively	
	5Ω Σ Σ Σ Σ Σ Σ Σ Σ	
	b b b b b b b b b b	•
	(1) 1.5, 3 and 9 (2) 3, 9 and 1.5	7.
	(3) 9, 3 and 1.5 (4) 3, 1.5 and 9	
10.	The Fourier Transform of the signal $x(t) = \delta(t)$ is of the form,	following
	(1) 1 (2) (2) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	
en drever	(3) s (4) 1/s	
11.	How can parallel data be taken out of a shift register simultar	eously?
•	(1) Use the Q output of the first FF	
	(2) Use the Q output of the last FF	
	(3) Tie all of the Q outputs together	
	(4) Use the Q output of each FF	

(4)

Question No.	Questions	
12.	A logic circuit that accepts several data inputs and allows only one of them at a time to get through to the output is called	
	(1) Multiplexer (2) De-multiplexer	
	(3) Transmitter (4) Receiver	
13.	The logical sum of two or more logical product terms is called :	
	(1) SOP (2) POS	
	(3) OR operation (4) NAND operation	
14.	A finite state machine :	
	(1) is same as that of abstract model of sequential circuit	
	(2) consists of combinational logic circuits only	
	(3) contains infinite number of memory devices	
	(4) does not exist in practice	
15.	The memory technology which needs the least power is	
di sida	(1) ECL (2) MOS	
Lastria	(3) CMOS (4) TTL	
16.	K-map is used to minimize the number of :	
	(1) Flip-flops in digital circuits	
·	(2) Layout spaces in digital circuits for fabrication	
	(3) Funtions of 3, 4, 5 or 6 variables	
	(4) Registers in CPU	

(5)

plane, while the PLA only has a programmable AND plane	Question No.	Questions
 (2) Latch (3) Level triggered flip-flop (4) Buffer 18. The resolution of 6-bit DAC will be nearly: (1) 4.6% (2) 3.2% (3) 1.6% (4) 1.2% 19. Which type of device FPGA are ? (1) SLD (2) SROM (3) EPROM (4) PLD 20. The difference between a PAL and a PLA is (1) PALs and PLAs are the same thing (2) The PAL has a programmable OR plane and a programmable Applane, while the PLA only has a programmable AND plane (3) The PLA has a programmable OR plane and a programmable Applane, while the PAL only has a programmable AND plane (4) The PAL has more possible product terms than the PLA 21. In 8086 microprocessor, address range of memory is (1) 00000 H – CCCCC H (2) 00001 H – FFFFF H 	17.	Master-Slave flip-flop is also called :
 (3) Level triggered flip-flop (4) Buffer 18. The resolution of 6-bit DAC will be nearly: (1) 4.6% (2) 3.2% (3) 1.6% (4) 1.2% 19. Which type of device FPGA are ? (1) SLD (2) SROM (3) EPROM (4) PLD 20. The difference between a PAL and a PLA is (1) PALs and PLAs are the same thing (2) The PAL has a programmable OR plane and a programmable A plane, while the PLA only has a programmable AND plane (3) The PLA has a programmable OR plane and a programmable A plane, while the PAL only has a programmable AND plane (4) The PAL has more possible product terms than the PLA 21. In 8086 microprocessor, address range of memory is (1) 00000 H - CCCCC H (2) 00001 H - FFFFF H 		(1) Pulse triggered flip-flop
(4) Buffer 18. The resolution of 6-bit DAC will be nearly : (1) 4.6% (2) 3.2% (3) 1.6% (4) 1.2% 19. Which type of device FPGA are ? (1) SLD (2) SROM (3) EPROM (4) PLD 20. The difference between a PAL and a PLA is (1) PALs and PLAs are the same thing (2) The PAL has a programmable OR plane and a programmable A plane, while the PLA only has a programmable AND plane (3) The PLA has a programmable OR plane and a programmable A plane, while the PAL only has a programmable AND plane (4) The PAL has more possible product terms than the PLA 21. In 8086 microprocessor, address range of memory is (1) 00000 H - CCCCC H (2) 00001 H - FFFFF H		(2) Latch
 (4) Buffer 18. The resolution of 6-bit DAC will be nearly: (1) 4.6% (2) 3.2% (3) 1.6% (4) 1.2% 19. Which type of device FPGA are ? (1) SLD (2) SROM (3) EPROM (4) PLD 20. The difference between a PAL and a PLA is (1) PALs and PLAs are the same thing (2) The PAL has a programmable OR plane and a programmable A plane, while the PLA only has a programmable AND plane (3) The PLA has a programmable OR plane and a programmable A plane, while the PAL only has a programmable AND plane (4) The PAL has more possible product terms than the PLA 21. In 8086 microprocessor, address range of memory is (1) 00000 H - CCCCC H (2) 00001 H - FFFFF H 		
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 (1) SLD (2) SROM (3) EPROM (4) PLD 20. The difference between a PAL and a PLA is (1) PALs and PLAs are the same thing (2) The PAL has a programmable OR plane and a programmable A plane, while the PLA only has a programmable AND plane (3) The PLA has a programmable OR plane and a programmable A plane, while the PAL only has a programmable AND plane (4) The PAL has more possible product terms than the PLA 21. In 8086 microprocessor, address range of memory is (1) 00000 H - CCCCCH (2) 00001 H - FFFFF H 		(3) 1.6% (4) 1.2%
 (3) EPROM (4) PLD 20. The difference between a PAL and a PLA is PALs and PLAs are the same thing The PAL has a programmable OR plane and a programmable A plane, while the PLA only has a programmable AND plane (3) The PLA has a programmable OR plane and a programmable A plane, while the PAL only has a programmable AND plane (4) The PAL has more possible product terms than the PLA 21. In 8086 microprocessor, address range of memory is 00000 H - CCCCC H 00000 H - FFFFF H 	19.	
 20. The difference between a PAL and a PLA is PALs and PLAs are the same thing The PAL has a programmable OR plane and a programmable A plane, while the PLA only has a programmable AND plane The PLA has a programmable OR plane and a programmable A plane, while the PAL only has a programmable AND plane The PAL has more possible product terms than the PLA 21. In 8086 microprocessor, address range of memory is 00000 H - CCCCC H 00000 H - FFFFF H 		(1) SLD (2) SROM
 (1) PALs and PLAs are the same thing (2) The PAL has a programmable OR plane and a programmable A plane, while the PLA only has a programmable AND plane (3) The PLA has a programmable OR plane and a programmable A plane, while the PAL only has a programmable AND plane (4) The PAL has more possible product terms than the PLA 21. In 8086 microprocessor, address range of memory is (1) 00000 H-CCCCCH (2) 00001 H-FFFFF H 		(3) EPROM (4) PLD
 (2) The PAL has a programmable OR plane and a programmable A plane, while the PLA only has a programmable AND plane (3) The PLA has a programmable OR plane and a programmable A plane, while the PAL only has a programmable AND plane (4) The PAL has more possible product terms than the PLA 21. In 8086 microprocessor, address range of memory is (1) 00000 H - CCCCCH (2) 00001 H - FFFFF H 	20.	The difference between a PAL and a PLA is
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plane, while the PAL only has a progammable AND plane (4) The PAL has more possible product terms than the PLA 21. In 8086 microprocessor, address range of memory is (1) 00000 H - CCCCCH (2) 00001 H - FFFFF H		
 21. In 8086 microprocessor, address range of memory is (1) 00000 H - CCCCC H (2) 00001 H - FFFFF H 		
(1) $00000 \text{ H} - \text{CCCCC H}$ (2) $00001 \text{ H} - \text{FFFFF H}$	•	(4) The PAL has more possible product terms than the PLA
	21.	In 8086 microprocessor, address range of memory is
(3) $00001 \text{ H} - \text{CCCCC H}$ (4) $00000 \text{ H} - \text{FFFFF H}$		(1) $00000 \text{ H} - \text{CCCCC H}$ (2) $00001 \text{ H} - \text{FFFFF H}$
		(3) $00001 \text{ H} - \text{CCCCC H}$ (4) $00000 \text{ H} - \text{FFFFF H}$

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(6)

Question No.	1 Questions	
22.	8086 microprocessor is designed to operate in how many modes ?	
	(1) Two (2) Four	
	(3) Eight (4) Sixteen	
23.	Data pins of 16 bit ALU of 8086 is :	
a. • 1	(1) AD_{16} to AD_{1} (2) AD_{15} to AD_{0}	
	(3) AD_{15} to AD_1 (4) AD_{16} to AD_0	
24.	Pointer register of 8086 is :	
	(1) Base pointer (2) Index pointer	
	(3) Segment pointer (4) Stack segment pointer	
25.	For TRAP FLAG (TF = 0) in 8086 :	
	(1) Microprocessor will not execute the complete program in a single operation	
	(2) Microprocessor will execute the program in single stepping mode	
	(3) Microprocessor will execute the complete program in a single operation	
n <mark>din</mark> jahr	 (4) Microprocessor will not execute the program in single stepping mode 	
26.	8051 is:	
	(1) 16-bit microprocessor (2) 8-bit microcontroller	
	(3) 16-bit microcontroller (4) 8-bit microprocessor	

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(7)

Question No.	Questions	ino tetus i M
27.	Microcontroller has :	· 21
	(1) Parallel I/O interface (2) Memory	
	(3) (1) and (2) (4) None	
28.	The Special Function registers of Microcontrollers exists in :	
	(1) On chip ROM (2) On chip RAM	
	(3) On chip EPROM (4) None	
29.	The microprocessor can work as computer :	. 12
	(1) With external digital parts	
	(2) Without external digital parts	
	(3) With ROM and RAM only	
a 1260	(4) None of the above	
30.	The CPU of 8051 contains :	
and and a	(1) Register A and B (2) Does not contain A and B	-
	(3) Contains A register only (4) Contains B register only	
31.	A zero to 300 V voltmeter has a guaranteed accuracy of 1% reading. The voltage measured by the instruments is 83 V. Th limiting error is	
	(1) 0.67 (2) 2.63	
	(3) 3.62 (4) 1.67	

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(8)

Question No.	Questions	
32.	Frequency can be measured by using	
	(1) Maxwell's bridge (2) Wein's bridge	
×.	(3) Schering bridge (4) None of these	
33.	A linear displacement transducer (such as digital) is generally uses	
	(1) Gray Code (2) Binary code	
	(3) Excess 3 code (4) Octal code	
34.	Hall effect transducer is applicable for such type of measurement like	
in a web me	(1) Power (2) Displacement	
	(3) Current (4) All of these	
(q141)	many set in a second with provide the	
35.	Which type of detector is used in ac bridges for audio frequency range?	
	(1) AC voltmeter (2) CRO	
	(3) Headphone (4) Vibration galvanometer	
36.	Which of the following optical transducers used is an active transducer a	
	(1) Photo voltaic cell (2) Photo emission cell	
99 - 1 1	(3) Photo diode (4) Photo transistor	

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Question No.	Questions	
37.	A compensated wattmeter has its reading corrected for the error due to	
	(1) Friction	
	(2) Frequency	
	(3) Power consumed due to load	
et nji oku	(4) Power consumed in potential coil	
38.	A dual beam CRO has	
	(1) Two horizontal amplifiers	
-	(2) Two trigger circuits	
i Marris	(3) Two vertical amplifiers	
	(4) All the above	
39.	A template matching is performed on an EEG signal with spike and wave by matched filter. Which of the following statements are true ?	
	 Peaks in the filter response represent the presence of alpha wave 	
	(2) Peaks in the filter response represent the presence of spike and wave complexes	
	(3) Matched filter does not cause a lag in the output	
	(4) None of these	
40.		
40.	(4) None of these	

Ceda-D.

Question No.	Questions	
41.	In digital transmission, the modulation technique that requires minimum bandwidth is	
	(1) Delta modulation (2) PCM	
	(3) DPCM (4) PAM	
42.	In Differential Pulse Code Modulation techniques, the decoding is performed by	
1	(1) PLL (2) Accumulator	
	(3) Sampler (4) Quantizer	
43.	The noise that affects PCM	
•	(1) Transmission noise	
	(2) Quantizing noise	
	(3) Transit noise	
,	(4) Both (1) and (2) are correct	
44.	Matched filter may be optimally used only for	
	(1) Flicker (2) Transit time noise	
	(3) Gaussian noise (4) All of the above	
45.	Regenerative repreaters are used for	
	(1) Eliminating noise	
	(2) Reconstruction of signals	
	(3) Transmission over long distances	
	(4) All of the above	

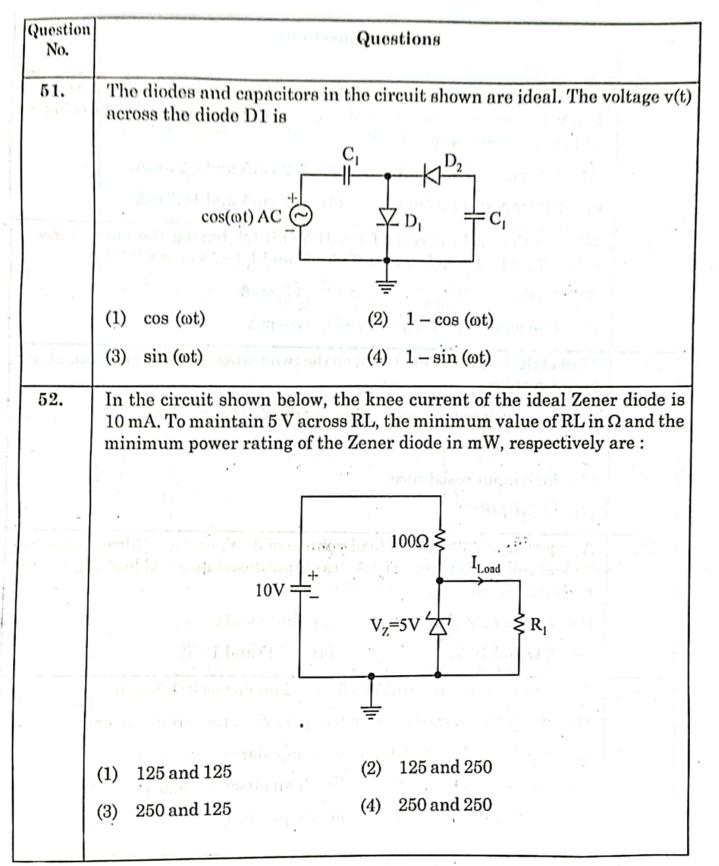
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(11)

Question No.	Questions					
46.	 The technique that may be used to increase average information per bit is (1) FSK (2) ASK (3) Shannon-Fano algorithm 					
s a para	(4) Digital modulation techniques					
47.	 ISI may be removed by using (1) Differential coding (2) Manchester coding (3) Polar NRZ (4) None of the above 					
48.	 The code in convolution coding is generated using (1) EX-OR logic (2) AND logic (3) OR logic (4) None of the above 					
49.	 Parity check bit coding is used for (1) Error correction (2) Error detection (3) Error correction and detection (4) None of the above 					
50.	 In MSK, the difference between the higher and lower frequency is (1) Same as the bit rate (2) Half of the bit rate (3) Twice of the bit rate (4) Four time the bit rate 					

G-al-6D

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-D (12)



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Question No.	Questions
53.	 Consider a common-emitter current gain of 150 and a base current of 15 μA. If the transistor is biased in the forward active mode, the collector and emitter current will be: (1) 2.25 mA and 2.27 mA (2) 3.25 mA and 2.27 mA (3) 2.25 mA and 1.37 mA (4) 3.25 mA and 1.37 mA
54.	What is the drain current for a D-MOSFET having the characteristic values I_{Dss} of 10 mA, Vgs (off) of — 4 V and I_{Dss} of Vgs = + 2 V ?(1) 22.5 mA(2) 17.5 mA(3) 12.5 mA(4) 2.5 mA
55.	Most of the linear ICs are based on the two-transistor differential amplifier because of its (1) input voltage dependent linear transfer characteristic (2) high voltage gain (3) high input resistance (4) high CMRR
56.	 A dc power supply has no-load voltage of 30 V, and a full-load voltage of 25 V at full-load current of 1 A. Its output resistance and load regulation respectively are (1) 5 Ω and 20% (2) 25 Ω and 20% (3) 5 Ω and 16.7% (4) 25 Ω and 16.7%
57.	 NPN transistor is not suitable for good analog switch because (1) IC - VCE characteristic curve pass directly through origin. (2) the device has very high input impedance (3) the device is asymmetrical with an offset voltage VCE off. (4) it has well defined transition frequency f_t.

(14)

Question No.	Questions					
58.	CMOS logic has the property of					
	(1) increased capacitance and delay					
	(2) decreased area					
	(3) high noise margin					
die wa	(4) low static power dissipation					
59.	In a transistor switch, the voltage change from base-to-emitter which is adequate to accomplish the switching is only about					
	(1) 0.2 V (2) 0.3 V					
	(3) 0.1 V (4) 0.5 V					
60.	Typical propagation delay of a CMOS gate ranges from					
•	(1) 2 to 15 ns. (2) 25 to 150 ns.					
	(3) 100 to 200 ns. (4) 80 to 120 ns.					
61.	The Hilbert transform of $\cos \omega_1 t + \sin \omega_1 t$					
	(1) $\cos \omega_1 t + \sin \omega_1 t$ (2) $\cos \omega_1 t - \sin \omega_1 t$					
narna Fint	(3) $\sin \omega_1 t + \sin \omega_2 t$ (4) $\sin \omega_1 t - \sin \omega_2 t$					
62.	The Fourier transform of a signal $H(j\omega) = (2 \cos \omega) (\sin 2\omega)/\omega$					
	(1) 1/4 (2) 1/2					
	(3) 1 (4) 2					

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-D (15)

Question No.	Questions Let y [n] denote the convolution of h [n] and g [n], where $h(n) = (1/2)^n u(n)$, g(n) is a causal sequence. If y[0] = 1 = and y [1] = 1/2, then g [1] equals				
63.					
	(1) 0 (2) 1/2				
	(3) 1 (4) 3/2				
64.	The trigonometric Fourier series of an even function does not have				
d salar	the dealed a media pedia of the state are to				
	(1) dc term (2) cosine terms				
	(3) sine terms (4) odd harmonic terms				
65.	A system is defined by its impulse response h (n) = 2^n u (n - 2). The system is				
	(1) stable and causal (2)				
	(2) causal but not stable				
	(3) stable but not causal				
	(4) unstable and non-causal				
	The first six points of the 8-point DFT of a real valued sequence ar 5, $1 - j3$, $03 - 4j$, 0 and $3 + 4j$. The last two points of the DFT are respectively				
1					
	1) $0, 1-j$ 3) $1+3j, 5$ (2) $0, 1+j$ (4) $1-3j, 5$				

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Question No.	Questions				
67.	The Fourier series of a real periodic function has only				
	(1) cosine terms if it is even				
	(2) sine terms if it is even				
	(3) cosine terms if it is odd				
	(4) sine terms if it is odd				
68.	The ROC of z-transform of the discrete time sequence				
	X (n) = $(1/3)^n - (1/2)^n u (-n-1)$				
1.1	(1) $1/3 < \mathbf{z} < 1/2$ (2) $ \mathbf{z} > 1/2$				
	(3) z > 1/2 (4) $3 < z < 2$				
69.	The 4-point Discrete Fourier Transform (DFT) of a discrete time sequence {1, 0, 2, 3} is				
	(1) $[0, -2 + 2j, 2, -2 - 2j]$ (2) $[2, 2 + 2j, 6, 2 - 2j]$				
	(3) $[6, 1-3j, 2, 1+3j]$ (4) $[6, -1+3j, 0, -1-3j]$				
70.	The input and output of a continuous time system are respectively denoted by x (t) and y (t). Which of the following descriptions corresponds to a causal system				
	(1) $y(t) = x(t-2) + x(t+2)$				
1 0	(2) $y(t) = (t + 5) x (t + 5)$				
	(3) $y(t) = (t - 4) (t + 1)$				
	(1) $y(t) = x(t-2) + x(t+2)$ (2) $y(t) = (t+5) x(t+5)$ (3) $y(t) = (t-4) (t+1)$ (4) $y(t) = (t+5) x(t+5)$				

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-D

(17)

uestion No.	Questions					
71.	SCR stand for					
× .	(1) Silicon Current Rectifier (2) Silicon Convert Rectifier					
	(3) Silicon Controlled Rectifier (4) None of these					
72.	TRAIC is					
	(1) Unidirectional thyristor (2) Bidirectional thyristor					
	(3) Tri-directional thyristor (4) None of these					
73.	Which statement is correct?					
	(1) SCR is three junction and four layers semiconductor device					
	(2) SCR is two junction and four layers semiconductor device					
MUSTI PAR	(3) SCR is three junction and two layers semiconductor device					
	(4) SCR is four junction and three layers semiconductor device					
74.	The dv/dt protection of SCR is achieved by using					
and the second second second	(1) RL circuit in series with SCR					
	(2) RC circuit across SCR					
	(3) L in series with SCR					
	(4) RC circuit in series with SCR					
75.	Which component is required to increase the switching speed in SMPA					
	(1) MOSFET (2) SCR					
	(3) Transistor (4) All of these					

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PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-D (18)

Question No.	Questions If all the poles of the system lie in the left half of s-plane then system is					
76.						
	(1) Unstable (2) Marginally stable					
	(3) Stable (4) None of these					
77.	The step size of stepper motor with 10 rotor tooth is					
	(1) 36° (2) 45°					
	(3) 25° (4) 26°					
78.	Transfer function is defined as					
	(1) Linear and time variant system					
	(2) Linear and invariant system					
	(3) Non-linear and time variant system					
•	(4) Non-linear and time invariant system					
79.	The main drawback of feedback system					
	(1) Inaccuracy (2) Inefficiency					
	(3) Insensitivity (4) Instability					
80.	Which of the following statement is correct ?					
	(1) Proportional-Derivative (PD) controller is equivalent to high pass filter					
	(2) For better performance, integral action is initiated before derivative action					
1 1	(3) A practical PID controller uses a high gain amplifier in the forward path					
-	(4) High proportional gain is an alternative to derivative actions					

101.1

(19)

C-RO

Code-D

Question No.	1001470-131 212	
81.	E×H of microwave gives	67
	(1) Instantaneous power (2) Average power	
	-(3) – Peak power (4) Reactive power	57
82.	In a dielectric medium	
	(1) $\nabla \times \mathbf{H} = \mathbf{J}$ (2) $\nabla \times \mathbf{H} = \mathbf{D}$	
	(3) $\nabla \times H = 0$ (4) $\nabla \times H = \rho_{v}$	87
83.	The velocity of electron in klystron is proportional to :	
	(1) Square root of beam voltage	
	(2) Electron charge	
	(3) Electron mass	79
Tell.	(4) Square root of mass of the electron	
34. 7	The output efficiency of reflex klystron is the ratio of :	Эe
	1) Output RF power to input RF power	
	2) Output RF power to input DC power	
(i	3) Output DC power to input DC power	
(4	4) Output DC power to RF input power	
1	이 것 같은 아파가 것 않으면 다양한 사람이 많이 많이 많이 있는 것이 있는 것이 나는 것 같이 있다.	

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-D

(20)

Question Questions No. An EM field is said to be non-existent or not Maxwellian if it 85. fails to satisfy Maxwell's equations and the wave equations derived from them. Which of the following fields in free space are not Maxwellian? $H = \cos x \cos 10^6 t a_x$ (2) $E = 100 \cos wt a_x$ (1)(3) $D = e^{-10y} \sin (10^5 t - 10y) a_z$ (4) $B = 0.4 \sin 10^4 t a_z$ S-matrix exists for 86. Two ports only (1)(2) Three ports only (3) Multiport network (4) Four ports A 500 m lossless transmission line is terminated by a load that is located 87. at P on the Smith chart of Figure given below. If $\lambda = 150$ m, how many voltage maxima exist on the line? 90° $\pm 180^{\circ}$ 0° - 150° -'90° (2) - 6(1)7 (4) 3 (3)5

PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-D (21)

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Question No.	Questions	adit.			
88.	How many degenerate dominant modes exist in a rectangular reactive for which $a = b = c$? (1) 2 (2) 3 (3) 5 (4) ∞				
89.	If a small single turn loop antenna has a radiation resistance of 0 how many turns are needed to produce a radiation resistance of 1	.04 Ω Ω ?			
	(1) 150 (2) 50 (3) 25 (4) 5				
90.	Magic Tee can produce	r Agt			
000 800) LUNITE VI	 Sum and difference of signals Oscillations Only sum of signals Only difference of signals 	.18			
	 A half wave rectifier is equivalent to : (1) Clamper circuit (2) Clipper circuit (3) Clamper circuit with negative bias (4) Clipper circuit with positive bias 				

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Question No.	Questions
92.	The operation of the BJT relies on
	(1) Free electrons (2) Holes
	(3) Both (1) and (2) (4) None of the above
.93.	The advantages of FET are
	(1) It has better thermal stability
	(2) It predicts less noise
· · · ·	(3) It can be used at high frequency
	(4) All of the above
94.	A device with direct current coupled, high gain electronic voltage type amplifier with one output and differential input is called
	(1) Rectifier (2) Amplifier
	(3) Transformer (4) Op-amp
95.	An op-amp with negative feedback provides output parameter.
	(1) Gain (2) Bandwidth
o panio L	(3) Input-output impedance (4) All the above
96.	What is the function of low pass filter in phase-locked loop ?
	(1) Improves low frequency noise
	(2) Removes high frequency noise
н. 1	(3) Tracks the voltage changes
	(4) Changes the input frequency

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PHD/URS-EE-2022 (Electronics & Communication Engineering) Code-D (23)

Question No.	Questions Which characteristic of PLL is defined as the range of frequenc which PLL can acquire lock with the input signal ?				
97.					
	(1) Free-running state (2) Pull-in time				
	(3) Lock-in range (4) Capture range	1			
	a server a server a ways of its own is called a				
98.	A multivibrator that generates square wave of its own is called a	•			
	(1) Monostable multivibrator (2) Bistable multivibrator				
	(3) Astable multivibrator (4) None of these				
	fulficities and a function Notes Sector and a function of the				
99.	Recommended frequency range of Harley oscillator is				
	[[] [] Amplifier				
. "	(1) $30 \text{ KHz} = 30 \text{ MHz}$ (2) $1 \text{ KHz} = 10 \text{ MHz}$				
.'19*07**	(3) $2 \text{ Hz} - 3 \text{ MHz}$ (4) $0.5 \text{ KHz} - 40 \text{ MHz}$	н <u>5</u> .			
	and when the second				
100.	The Hartley oscillator is less preferred than due to Colpitts oscillator performance in				
	hand in the function of the pass filter in pass-locked loop?				
- ¹ .	(1) All frequency region (2) Mid frequency region				
	(3) High frequency region (4) Low frequency region				
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	s construction of the state of the state of the				

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	3	2	1	4
7	1	4	4	4
8	2	3	3	1
9	4	1	2	4
10	4	3	4	2
11	3	1	1	4
12	2	2	2	1
13	1	1	4	1
14	4	2	3	1
15	3	2	4	3
16	1	3	3	3
17	4	3	1	1
18	3	3 2	1	3
19	2	4	2	4
20	4	1	2	2
21	1	3	2	4
22	2	2	1	1
23	1	1	1	2
24	2	2	2	1
25	2	4	3	3
26	3	3	4	2
27	3	1	4	3
28	2	2	1	2
29	4	4	4	1
30	1	4	2	1
31	4	1	4	3
32	1	2	1	2
33	2	4	1	1
34	1	3	1	4
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36	2	3	3	1
37	3	1	1	4
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┢	61	1	2	2	1
┢	62	1	1	3	3
┢	63	1	1	4	1
┝	64	3	2	4	3
\vdash	65	4	3	4	2
┝	66	2	4	2	2
\vdash	67	3	4	4	1
\vdash	68	4	1	3	3
	69	4	4	1	4
	70	2	2	3	3
	71	2	1	1	3
	72	1	3	1	2
	73	1	1	1	1
L	74	2	3	3	2
	75	3	2	4	4
L	76	4	2	2	3
L	77	4	1	3	1
	78	1	3	4	2
L	79	4	4	4	4
	80	2	3	2	4
	81	1	3	3	1
	82	3	2	2	2
	83	1	1	1	1
	84	3	4	2	2
Γ	85	2	3	4	2
	86	2	1	3	3
	87	1	4	1	3
	88	3	3	2	2
	89	4	2	4	4
\vdash	90	3	4	4	
	91	1	4	1	1
	92	2	1	3	2
	93	4	1		
	55	4	1	1	4

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4	3		4
3	2	2	4
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