001821

Booklet Serial No.

**Test Booklet Series** 

### **TEST BOOKLET - 2022**

## ELECTRONICS AND COMMUNICATION LECTURER I

(11)



Time Allowed: Two Hours

Maximum Marks: 100

### INSTRUCTIONS

- IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
- 2. Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series Code A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Response Sheet. Any omission/discrepany will render the Response Sheet liable for rejection.
- 3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. DO NOT write anything else on the Test Booklet.
- 4. This Test booklet contains 100 items (questions). Each item comprises of four responses (answers). You will select the response which you want to mark on the Response sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose ONLY ONE response for each item.
- You have to mark all your responses ONLY on the separate Response Sheet provided. See directions in the Response Sheet.
- 6. All items carry equal marks.
- Before you proceed to mark in the Response sheet the response to various items in the Test Booklet you have to fill in some particulars in the Response Sheet as per instructions sent to you with your Admission Certificate.
- 8. After you have completed filling in all your responses on the Response Sheet and the examination has concluded, you should hand over to the Invigilator only the Response Sheet. You are permitted to take away with you the Test Booklet and Candidate's Copy of the Response Sheet.
- 9. Sheets for rough work are appended in the Test Booklet at the end.
- 10. Penalty for wrong answers:

#### THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY THE CANDIDATE.

- (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, 0.25 of the marks assigned to that question will be deducted as penalty.
- (ii) It a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above for that question.
- (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be no **penalty** for that question.

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO

11(A) (2)

1.	The	e voltage equivalent of temperatur	e(VT)	at room temperature in a P-N junction diode is
	(A)	2.6 mV	B)	26 mV
	C)	26V	D)	2.6V
2.		percent increase in the reverse C rise in the temperature.	saturat	ion current of the PN junction diode with a
	A)	7%	B)	12%
	C)	1%	D)	5%
3.		ipolar junction transistor has a current is 40 mA, the value of the er		applification factor $(\beta)$ of 100. If the collector turrent is,
	A)	20.4 mA	B)	40 mA
	C)	40.4 mA	D)	20 mA
4.	hie=	a common emitter amplifier, the 500 Ω at IC=3 mA. Assume RB=amplifier.	h parar = 220 K	meters of the transistor are given as, hfe=60, $\Omega$ and RC=5.1 K $\Omega$ . Find the voltage gain of
	A)	612	B)	-612
	C) .	306	D)	-306
5.	Con	sider the following statements:		
	Asse	ertion (A): In a common collecto	r ampl	ifier the output signal taken at the emitter
	term	inal almost follows the input sig	nal.	
	Reas	son (R): Common collector amp	lifier is	s called the emitter follower.
	The	correct answer is		
	A)	A and R are both correct and R	is the c	correct explanation of A
	B)	A and R are both correct and R	is NOT	the correct explanation of A
	C)	A is correct, but R is NOT corr	ect	· · · · · · · · · · · · · · · · · · ·
	D)	A is NOT correct, but R is corr	ect	
11(4	0		(3)	PTO

- 6. The conversion efficiency of Class-A and Class-B power amplifiers are, respectively,
  - A) 68.5% and 50%

- B) 78.5% and 50%
- C) 50% and 68.5%
- D) 50% and 78.5%
- 7. Consider the following statements:

Assertion (A): In a multistage amplifier, transformer coupling increases the overall gain.

Reason (R): In transformer coupling, efficient impedance matching is a critical requirement for maximum power transfer.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
- B) A and R are both correct and R is NOT the correct explanation of A
- C) A is correct, but R is NOT correct
- D) A is NOT correct, but R is correct
- 8. Find the correct match.
  - a) Phase Shift Oscillator
- 1. LC Oscillator
- b) Wien Bridge Oscillator
- 2. RC Oscillator
- c) Colpitts Oscillator
- 3. Lead-lag Network

The correct match is,

	a	b	c
A	1	2	3
В	1	3	2
C	3	1	2
D	2	3	1

- 9. In a class-C tuned amplifier, the output signal is obtained for,
  - A) The below 900 for a full input cycle
  - B) Less than a full cycle for a full input cycle
  - C) Less than half a cycle for a full input cycle
  - D) In between the half and full cycle for a full input cycle

10.		type of clipper that removes a small portion of the negative half-cycle of the inpegnal is,				
	A)	Unbiased negative clipper	B)	Biased negative clipper		
	C)	Biased positive clipper	D)	Unbiased positive clipper		
11.	Ide	ntify the wrong ideal characteris	stics of t	he operational amplifier.		
	(A)	Infinite voltage gain	B)	Infinite output resistance		
	C)	Infinite bandwidth	D)	Infinite CMRR		
12.		the circuit values of R1=1 KΩ ar olifier.	nd Rf=10	$K\Omega$ , find the gain of an inverting operational		
	A)	-1		B) 10		
	C)	1		D) -10		
13.	Whi	ich is not an application of an op	erationa	al amplifier-based comparator?		
	A)	Zero crossing detector	B)	Window detector		
	C)	Summer	D)	Phase Meter		
14.	Max	xwell's inductance capacitance b	oridge is	used for measuring,		
	A)	Capacitance	B)	Resistance		
	C)	Inductance	D)	Voltage		
15.	2000	Wattmeters connected to meas 0 W and 500 W respectively. Fin positive.	ure the	input to a balanced 3-phase circuit indicate wer factor of the circuit when both readings		
	A)	0.696	B)	0.969		
	C)	0.796	D)	0.979		
				等于。当他是一个本面,有人是		

16.		oil has an effective inductance of 0. value of inductance at low frequence		H at 1000 Hz and 0.110 H at 3000 Hz. Find			
	A)	0.201	B)	0.001			
	C)	0.011	D)	0.101			
17.	The	X-Y recorders are used to record,	P H				
17.	A)		riahl	e with respect to an independent variable			
	B)	The variation in one dependent va					
	C)	The variation in one dependent va					
		The variation in one dependent va					
	D)	The variation in one dependent va	ariao	Manager and American Manager and Manager a			
18.	Con	nsider the following statements:					
10.			eded	in a CRO if the frequency of the signal is			
	ASS	more than 10 MHz.	cucu	in a Cico if the nequency of the signal is			
	Rea	son (R): Post Deflection Accele energy.	ratio	n tubes (PDA) are used to increase the beam			
	The	correct answer is					
	A)	A and R are both correct and R is	the	correct explanation of A			
	B)	A and R are both correct and R is	NO	T the correct explanation of A			
	C).	C) A is correct, but R is NOT correct					
	D)	A is NOT correct, but R is correct	ct				
19.		e capacitive transducer works on the be caused by,	ne pri	nciple of change of capacitance which may			
	A)	Change in the overlapping area	B)	Change in the distance between the plates			
	C)	Change in dielectric constant	D)	Change in voltage			
		6m of					
20.	Inte	egrating a type of digital voltmeter					
	A)	Frequency to voltage converter	B)	Voltage to frequency converter			
	C)	Time to voltage converter	D)	Voltage to time converter			

21.	Au	tomatic sensitivity control by vary	ing th	e target voltage is possible in,		
	A)	Newvicon	B)	Vidicon		
	C)	Plumbicon	D)	Chalnicon		
22.	Wh	ich is not an element of pulse code	e mod	lulation transmitter?		
	1.	Low-pass filter				
	2.	Sampler				
43 3	3.	Phase Locked Loop				
	4.	Encoder				
	A)	2 and 3	B)	3 and 1		
	C)	3 only	D)	1 only		
23.		lamming code mechanism, the code resents,	word	1 'C' is given as, 'C=X·G'. In this equation, G		
	A)	Generator matrix	B)	Group matrix		
	C)	Governing matrix	D)	Global Matrix		
24.	Wha	at are the types of quantization erro	ors inv	volved in delta modulation?		
	A)	Angular distortion and granular r				
	B)	Slope overload distortion and sal		per noise		
	C)	Slope overload distortion and wh				
	D)	Slope overload distortion and gra				
25.	5. In the PSK detection process, an element designed to remove the double-frequency components of the product modulator output and pass the zero-frequency components is,					
	A)	Product modulator	B)	Low-pass filter		
	C)	Decision-making device	D)	Encoder		
1101						
11(A	)		(7)	[P.T.O.		

	A)	One	B)	Three
	C)	Two	D)	Four
27.		most popular frequency bands for sectively, are,	satelli	te communications for uplink and downlink,
1	A)	4 GHz (C-band) and 4 GHz	B)	6 GHz (C-band) and 4 GHz
	C)	6 GHz (C-band) and 6 GHz	D)	4 GHz (C-band) and 6 GHz
28.	Con	vert a binary number 110.001 to a	decin	nal number.
	A)	0.125	B) .	6.125
	C)	6	D)	61.25
29.	The	excess-3 code for 29 is given by,		
	A)	0101 1111	B)	0000 1100
	C)	0101 1100	D)	0101 0000
un.				
30.	Obt	ain the simplified Boolean equation	on for	the logic equation.
	Y=	$F(A, B, C, D) = \Sigma m (7, 9, 10, 11)$	, 12, 1	3, 14, 15).
	A)	Y = AB + AC + AD + B	B)	Y = AB + AC + ACD + BCD
	C)	Y=AB+AC+AD+BD	D)	Y = AB + AC + AD + BCD
31.	An	S-R flip-flop is designed by cross	-coup	ling the following logic gates.
•	1.	AND gates	2.	XOR gates
	3.	NOR gates	4.	NAND gates
	A)	3 only	B)	3 and 4 only
	(C)	1 and 2 only	D)	1,2 and 3

26. Find the Hamming weight of the binary block [1001].

34.	Whi	ich is not a logical operator in th	ne C prog	ramming language?		
	A)	&&	B)	<u> </u>		
	C)		D)			
35.		general format of 'scanf' funct				
	scar	of("control string", & variab	le 1, & v	variable2,);		
714	Wha	at is the meaning of ampersand	(&) sym	bol?		
	A)	To specify the variable name'	s address			
	B)	To specify the variable name's	s data			
	C) To specify the variable's name					
	D)	To specify the variable's value	e			
36.	Апа	ange the series of steps involve	d in the e	xecution of the C program.		
	1.	Creating the program	2.	Linking the program		
	3.	Compiling the program	4.	Executing the program		
	A)	1, 2, 3 and 4	B)	4, 3, 2 and 1	4364	
74	C)	1, 3, 2 and 4	D)	2, 1, 4 and 3		
11(A	1)		(9)		[P.T.O.	

The largest binary number that can be represented by 'n' cascaded flip-flops has a decimal

 $2^{n}+1$ 

 $2^{n+1/2}$ 

0.2 percent and 1 mV

0.2 percent and 100 mV

B)

D)

33. What is the percent resolution of a 9-bit D/A converter that uses a ladder network? If the full-scale output voltage of the converter is +5 V, what is the resolution in volts?

B)

D)

equivalent of,

2<sup>n</sup>

 $2^{n}-1$ 

0.2 percent and 10 mV

2 percent and 10 mV

A)

C)

A)

C)

37. Identify the error (if any) in the given 'for' statement in C language.

for (i=1; i <20 && sum < 100; ++i)

A) No error

- B) The statement should be ended with ":"
- C) '&&' should be replaced with '&' D)
- '+i' should be replaced with '++i'
- 38. Consider the array of strings, in Clanguage, as

char name [3] [25];

What is the meaning of '[3]'?

- A) A table containing 3 names
- A string containing 3 characters B)
- C)
  - An array containing 3 constants D) A pointer containing 3 variables
- 39. Consider the following statements:

Assertion (A): A band-pass filter is obtained by using a low-pass filter followed by a high-pass filter.

Reason (R): A band-pass filter attenuates all the frequencies below a lower cut-off frequency and above an upper cut-off frequency.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
- A and R are both correct and R is NOT the correct explanation of A B)
- C) A is correct, but R is NOT correct
- D) A is NOT correct, but R is correct
- A two-port network is symmetrical if the following condition is satisfied.

$$B)$$
  $A=B$ 

C) 
$$AD - BC = 0$$

- 41. For a two-port network, compute h parameters using the following data.
  - $V_1 = 25 \text{ V}$ ,  $I_1 = 1 \text{A}$ ,  $I_2 = 2 \text{A}$  When the output port is short-circuited.
  - 2.  $V_1 = 10 \text{ V}$ ,  $V_2 = 50 \text{ V}$ ,  $I_2 = 2A$  When the input port is open-circuited.
  - A)  $h_{11} = 25\Omega$ ,  $h_{12} = 0.2$ ,  $h_{21} = 2$ ,  $h_{22} = 0.4$   $\odot$
  - B)  $h_{11} = 25\Omega$ ,  $h_{12} = 0.02$ ,  $h_{21} = 2$ ,  $h_{22} = 0.04$  75
  - C)  $h_{11} = 25\Omega$ ,  $h_{12} = 0.2$ ,  $h_{21} = 2$ ,  $h_{22} = 0.0475$
  - D)  $h_{11} = 25\Omega$ ,  $h_{12} = 0.02$ ,  $h_{21} = 2$ ,  $h_{22} = 0.4$  (5)

- The Z-parameters of a two-port network are,  $Z_{11} = 10 \Omega$ ,  $Z_{12} = Z_{21} = 5\Omega$ , and  $Z_{22} = 20\Omega$ . Find the equivalent T-network.
  - A)  $Z_1 = 15\Omega$ ,  $Z_2 = 15\Omega$ ,  $Z_3 = 15\Omega$  B)  $Z_1 = 5\Omega$ ,  $Z_2 = 15\Omega$ ,  $Z_3 = 15\Omega$
  - C)  $Z_1 = 15\Omega$ ,  $Z_2 = 5\Omega$ ,  $Z_3 = 15\Omega$  D)  $Z_1 = 5\Omega$ ,  $Z_2 = 5\Omega$ ,  $Z_3 = 15\Omega$
- A T-type attenuator is a symmetrical network and also a/an,
  - Balanced network A)
- Unbalanced network B)
- Reciprocal network C)
- D) Non-reciprocal network
- 44. Consider the following statements:
  - Assertion (A): A wide variety of extruded aluminum heat sinks are commercially available to increase heat transfer capability.
  - Reason (R): The heat generated within the power device must be transferred from the device to a cooling medium to maintain the operating junction temperature within the specified range.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
- A and R are both correct and R is NOT the correct explanation of A B)
- C) A is correct, but R is NOT correct
- A is NOT correct, but R is correct D)
- 45. What are the ways used to turn on a Thyristor?
  - 1. Light
  - 2. High voltage
  - 3. Gate current
  - 4. Sound
  - 1, 2, and 3 A)

B) 4 and 3

1, 4 and 2 C)

1, 4 and 3 D)

-					AND THE RESERVE AND ADDRESS OF THE PARTY OF	
	A)	Forward current		B)	Holding current	
	C)	Reverse current		D)	ON current	
47.	The	classification of ph	ase-control co	nvert	ers is given in the list.	
	a.	Semi converter-	1. One-qu	uadrai	nt converter	
	b.	Full converter-	2. Four-q	uadra	nt converter	
	c.	Dual converter-	3. Two-qu	uadrai	nt converter	
	The	correct match is,				
	A B C D	a     b     c       1     2     3       1     3     2       3     2     1       2     3     1				
48.	resis	stance is $10\Omega$ . The c	irculating ind	luctan	ed from a 120 V, 60 Hz supplice is 40 mH; delay angles are current of converter 1.	
48.	resis	stance is $10\Omega$ . The c	irculating ind	luctan	ce is 40 mH; delay angles are	
48.	resis α2 =	stance is $10\Omega$ . The c = $120^{\circ}$ . Calculate th	irculating ind	luctan ating	ce is 40 mH; delay angles are current of converter 1.	
49.	resis α2 = A) C) The resis is 20	stance is 10Ω. The content is 10Ω. The content is 120°. Calculate the 2.25 A 4.25 A input voltage to a stance is 5Ω and the	single-phase of load inductant	B) D)  cyclocace is 4 and as s	ce is 40 mH; delay angles are current of converter 1.  13.25 A  11.25 A  converter is 120 V (rms), 60  40 mH. The frequency of the emi converters such that 0 ≤	$e \alpha l = 60^{\circ}$ Hz. The output vol
	resis α2 = A) C) The resis is 20	stance is $10\Omega$ . The converted at the stance is $10\Omega$ . Calculate the 2.25 A 4.25 A sinput voltage to a stance is $5\Omega$ and the $0$ Hz. If the converted	single-phase of load inductant	B) D)  cyclocace is 4 and as s	ce is 40 mH; delay angles are current of converter 1.  13.25 A  11.25 A  converter is 120 V (rms), 60  40 mH. The frequency of the emi converters such that 0 ≤	$e \alpha 1 = 60^{\circ}$ Hz. The output vo
	resis $\alpha 2 =$ A) C) The resis is 20 dela A)	stance is $10\Omega$ . The content of the stance is $10\Omega$ . The content of the stance is $10\Omega$ . The content of the stance is $10\Omega$ and the converte of the stance is $10\Omega$ . If the converte of the stance is $10\Omega$ , determined in the stance is $10\Omega$ .	single-phase of load inductant	B) D)  cyclocace is 4 as as a value	ce is 40 mH; delay angles are current of converter 1.  13.25 A  11.25 A  converter is 120 V (rms), 60 mH. The frequency of the emi converters such that 0 ≤ e of output voltage.	$e \alpha 1 = 60^{\circ}$ Hz. The output vo
	resis α2 = A) C) The resis is 20 dela A) C) In th	stance is $10\Omega$ . The control of the stance is $10\Omega$ . The control of the stance is $10\Omega$ . The control of the control of the converte by angle is $10\Omega$ , determined by $10\Omega$ . If the converte by angle is $10\Omega$ , determined by $10\Omega$ .	single-phase of load inductanters are operated training the rms	B) D) cyclocace is 4 as s s value B) D)	ce is 40 mH; delay angles are current of converter 1.  13.25 A  11.25 A  converter is 120 V (rms), 60 mH. The frequency of the emi converters such that $0 \le 0$ of output voltage.  53 V	Hz. The output vo $\alpha \le \pi$ . and
49.	resis α2 = A) C) The resis is 20 dela A) C) In th	stance is $10\Omega$ . The content of the stance is $10\Omega$ . The content of the stance is $10\Omega$ . The content of the stance is $10\Omega$ and the order of the stance is $10\Omega$ .	single-phase of load inductanters are operated training the rms	B) D) cyclocace is 4 as s s value B) D)	ce is 40 mH; delay angles are current of converter 1.  13.25 A  11.25 A  converter is 120 V (rms), 60  40 mH. The frequency of the emi converters such that $0 \le 0$ cof output voltage.  53 V  83 V	Hz. The output vol $\alpha \le \pi$ . and
49.	resis $\alpha 2 =$ A) C) The resis is 20 dela A) C) In the and	stance is $10\Omega$ . The control of the stance is $10\Omega$ . The control of the stance is $10\Omega$ . The control of the stance is $10\Omega$ and the converte by angle is $10\Omega$ , determined by $10\Omega$ . If the converte by angle is $10\Omega$ , determined by $10\Omega$ .	single-phase of load inductanters are operated training the rms	B) D) cyclocace is 4 ed as sevalue B) D)	ce is 40 mH; delay angles are current of converter 1.  13.25 A  11.25 A  converter is 120 V (rms), 60 mH. The frequency of the emi converters such that 0 \le cof output voltage.  53 V  83 V	Hz. The output vol $\alpha \le \pi$ . and

51.			FH and 00H respectively. After the execution e the contents of registers A and B?
	A) F0H, F0H	B)	00Н, 00Н
	C) 00H, FFH	D)	FFH, 00H
52.	Identify the register addressing mo	ode instr	uction of the 8085 microprocessor.
	A) IN 80H	B)	OUT 90H
	C) ADDB	D)	ADI 16H
53.	Find the correct match.		
	a) INR B - 1. Machine contr	ol instru	ection
	b) ANAB- 2. Arithmetic inst	ruction	
	c) HLT- 3. Logical instruc	tion	
	The correct match is,		
	a     b     c       A     1     2     3       B     1     3     2       C     2     1     3       D     2     3     1		
54.	Consider the following statements		
	Assertion (A): Direct Memory Accordata transfer.	cess is a	data transfer technique used for high-speed
	Reason (R): In conventional data instruction needs to		r, data transfer is relatively slow because each ned and executed.
	The correct answer is	487	
	A) A and R are both correct and	R is the	correct explanation of A
	B) A and R are both correct and	R is NO	T the correct explanation of A
	C) A is correct, but R is NOT co	rrect	
100	D) A is NOT correct but R is co	rrect	

(13)

11(A)

[P.T.O.

- 55. How many address lines are required to interface a 4 KB memory to an 8085 microprocessor?
  - A) 10

B) 12

C) 14

- D) 16
- 56. Identify the incorrect statement related to the stack pointer of the 8085 microprocessor.
  - A) The stack pointer contains the address of the top of the stack memory
  - B) The stack pointer is a 16-bit register
  - C) The stack pointer points to a memory location in R/W memory
  - D) The stack pointer maintains the sequence of execution of the instructions
- 57. The interrupts and their call locations of the 8085 microprocessor are listed. Find the correct match.
  - a) RST 6.5 -
- 1. 002CH
- b) RST 7.5 -
- 2. 003CH
- c) RST 5.5 -
- 3. 0034H

The correct match is.

	a	b	c
A	1	2	3
В	1	3	2
C	3	2	1
D	3	1	2

- 58. The special function registers of the 8051 microcontrollers and their representations are listed. Find the correct match.
  - a. Control Register-
- 1. TL 1
- b. Timer Register-
- 2. SBUF
- c. Serial Data Buffer-
- 3. TCON

The correct match is,

	a	ь	С
A	1	2	3
В	3	1	2
С	3	2	1
D	2	3	1

1110	on emp program memory (Non	1) 01 0	3051 microcontrollers is,
A)	128 Kbytes	B)	8 Kbytes
C)	4 Kbytes	D)	2 Kbytes
		addres	ssable I/O ports are available in the 8051
A)	1	B)	2
C)	3	D)	4
Ider	ntify the addressing mode of the	3051 n	nicrocontroller instruction - ADD A, #100.
A)	Immediate addressing mode	B)	Register addressing mode
C)	Indirect addressing mode	D)	Indexed addressing mode
			8-bit internal data RAM address addressed R <sub>1</sub> .
A)	\$ R <sub>1</sub>	B)	#R <sub>i</sub>
C)	@R <sub>i</sub>	D)	&R <sub>i</sub>
Iden	tify the flow control service provide	ded by	the respective layer/layers in the OSI model.
1.	Data Link Layer	2.	Network Layer
3.	Presentation Layer	4.	Transport Layer
A)	2, 3 and 4 only	B)	2 and 3 only
C)	1 and 4 only	D)	1, 2 and 3 only
Find	a protocol that is not defined by the	e transp	port layer in TCP/IP model from the given list.
A)	Transmission Control Protocol	(TCP)	
B)	Internet working Protocol (IP)		
C)	User Datagram Protocol (UDP)		
D)	Stream Control Transmission P	rotoco	ol ((SCTP)
)		(15)	IP.T.O.
	A) C) Howmic A) C) Idea A) C) In 8 indi A) C) Idea A C) Find A) C) Find C) D)	A) 128 Kbytes C) 4 Kbytes How many 8-bit bidirectional bit a microcontrollers? A) 1 C) 3 Identify the addressing mode of the 8 A) Immediate addressing mode C) Indirect addressing mode In 8051 programming, how to represend indirectly using one of the registers If A) \$ R <sub>i</sub> C) @ R <sub>i</sub> Identify the flow control service provided in the service provided in the service provided in the properties of the service provided in the service provide	A) 128 Kbytes B) C) 4 Kbytes D)  How many 8-bit bidirectional bit address microcontrollers? A) 1 B) C) 3 D)  Identify the addressing mode of the 8051 mandle addressing mode B) C) Indirect addressing mode B) C) Indirect addressing mode B) In 8051 programming, how to represent 8 indirectly using one of the registers R <sub>0</sub> or F A) \$ R <sub>1</sub> B) C) @ R <sub>1</sub> D)  Identify the flow control service provided by 1. Data Link Layer 2. 3. Presentation Layer 4. A) 2, 3 and 4 only B) C) 1 and 4 only D)  Find a protocol that is not defined by the transpant A) Transmission Control Protocol (TCP) B) Internet working Protocol (UDP) C) User Datagram Protocol (UDP) D) Stream Control Transmission Protocol

(15)

11(A)

65. Find the error, if any, in the IPv4 addresses 75.45.301.14. Each number needs to be less than or equal to 255 (301 is outside this range) A) B) In the second number, 45 is not permitted C) There must be five numbers (only four numbers are there) D) There must be a leading zero in the fourth number as 014. 66. Which firewall uses a filtering table to decide which packets must be discarded? Client firewall Network firewall B) Proxy firewall Packet filter firewall C) D) 67. Find the class of the IP address 14.23.120.8. A) The first byte is between 0 and 127; the class is B B) The first byte is between 0 and 127; the class is A C) The second byte is between 0 and 127; the class is E D) The second byte is between 0 and 127; the class is C **68.** Consider the following statements: The semiconductor injection laser diode is preferred over the LED in Assertion (A): optical fiber communication. Injection laser diodes are suitable for optical fiber communication Reason (R): systems requiring bandwidths greater than approximately 200 MHz The correct answer is A) A and R are both correct and R is the correct explanation of A A and R are both correct and R is NOT the correct explanation of A B) C) A is correct, but R is NOT correct A is NOT correct, but R is correct D) 69. Identify the band of the wavelengths (1460 to 1530 nm) that are in between the C-band and E-band. Short band (S-band) Original band (O-band) A) B)

Long band (L-band)

D)

Ultra-long band (U-band)

70.	Whi	ch is not an advantage of optical f	ibers?	Section of the sectio
	A)	Long Distance Transmission	B)	Large Information Capacity
	C)	Immunity to Electrical Interference	eD)	Worst Safety
71.		sider a multimode fiber that has a contract th		efractive index of 1.480 and a core-cladding. Find the numerical aperture.
A.,	A)	0.825	B)	0.296
	C)	0.796	D)	0.962
72.	inde mm	$x n_i = 1.480$ , the core-cladding inc	dex dit	For which the index profile $\alpha=2.0$ , the core fference $\Delta=0.01$ , and the core radius $a=25$ is $R=1.0$ cm, what percentage of the modes and
	A)	42%	B)	84%
	C)	21%	D)	13%
73.	Whi	ch is/are not the LED configuration	on(s)	being used for fiber optics?
	1.	Surface emitters		
×	2.	Edge emitters		
	3.	Half-power emitters		
	4.	Full-power emitters		
	A)	2 and 3	B)	3 and 4
	C)	3 only	D)	1 and 4
74.		notodiode is constructed of GaAs, at is the cutoff wavelength of this		h have bandgap energy of 1.43 eV at 300 K.
	A)	369 nm	B)	689 nm
	C)	869 nm	D)	669 nm
75.	of 9			um efficiency of 65 percent at a wavelength er produces a multiplied photocurrent of 10
	A)	42	B)	43
	C)	44	D)	45
11(4	4)		(17)	[P.T.O.

76.	Ide tas	entify the signal assignment statem k "a gets the value of b when 10 na	ent, in	n behavioral VHDL modeling, to perform the conds have elapsed".
	A)		B)	a <= b before 10 ns;
	C)	a <= b elapsed 10 ns;	D)	a <= b get 10 ns;
77.	As	imple IF statement using VHDL is	giver	ostopas at vest algebraiche eithe est vest ann a Le griffe eithean (Color eithean agus an agus an ag
	IF(	x<10)		
	a=b		13	
	EN	DIF;		
	The	e errors in the statement/program i	s/are,	
	1.	'THEN' keyword is missing in 'I	F (x<	10)′
	2.	":" is missing in "a = b"		
	3.	'ELSE' is missing 'IF (x<10)'		
	4.	Colon ':' is missing in 'IF (x<10	)′	
	A)	3 only	B)	2 and 3 only
	(C)	1 and 2 only	D)	1, 2 and 3
78.	Con	sider the following statements:		
	Ass	ertion (A): FPGA devices use onl switches.	ooard	RAM to store the value of programmable
	Rea	son (R): The switches are used	to for	m the signal interconnections.
	The	correct answer is		
	A)	A and R are both correct and R is	the c	orrect explanation of A
	B)	A and R are both correct and R is	TOM	the correct explanation of A
	C)	A is correct, but R is NOT correct	t	
	D)	A is NOT correct, but R is correct	t	
79.	The	objects that are used to connect en	tities	to form models in VHDL
	A)		B)	Constants
	C)	Signals	D)	Integers
11(A	)		(18)	

(18)

- 80. Find the correct match.
  - a) CPLD-
- 1. EEPROM
- b) GAL-
- 2. Logic cell
- c) FPGA-
- 3. Macrocell

The correct match is,

	a	ь	С
A	1	2	3
В	1	3	2
С	3	1	2
D	3	2	1

**81.** Consider the following statements:

Assertion (A): The AND plane consists of a programmable interconnect along with AND gates.

Reason (R): The OR plane consists of a programmable interconnect along with OR gates.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
- B) A and R are both correct and R is NOT the correct explanation of A
- C) A is correct, but R is NOT correct
- D) A is NOT correct, but R is correct
- 82. Identify the causal systems from the given list.
  - 1. y(n)=ax(n)

2. y(n)=n x(n)

3. y(n)=x(2n)

4. y(n)=x(-n)

A) 3 and 4 only

B) 2 and 3 only

C) 1 and 2 only

- D) 1 and 3 only
- 83. If an energy signal is finite, then the average power of the signal is,
  - A) One

B) Zero

C) Finite

D) Infinite

Find the IDFT of $Y(k) = \{1, 0, 1, 0\}.$						
A) $y(n)=\{0.5, 0, 0, 0\}$	B)	$y(n)=\{0,0,0.5,0\}$				
C) $y(n)=\{0.5,0,0.5,0\}$	D)	$y(n)=\{0, 0, 0.5, 0.5\}$				
Consider the following statements:						
	A) $y(n)=\{0.5, 0, 0, 0\}$ C) $y(n)=\{0.5, 0, 0.5, 0\}$	A) $y(n)=\{0.5, 0, 0, 0\}$ B) C) $y(n)=\{0.5, 0, 0.5, 0\}$ D)				

Assertion (A): In FIR filter design, a triangular window is not a good choice.

Reason (R): In FIR filters designed using a triangular window, the transition from pass band to stop band is not sharp.

The correct answer is

- A and R are both correct and R is the correct explanation of A
- A and R are both correct and R is NOT the correct explanation of A B)
- C) A is correct, but R is NOT correct
- D) A is NOT correct, but R is correct
- Which is not a design technique for designing the linear phase FIR filters? 86.
  - Fourier series method A)
- B) Window method
- - Bilinear transformation method D) Frequency sampling method
- **87.** Consider the following statements:

Assertion (A): The Fourier transform of a discrete-time signal is a continuous function of " $\omega$ " and hence it is not processed by a digital system.

Reason (R): The drawback of the Fourier transform is overcome by using a discrete Fourier transform.

The correct answer is

- A and R are both correct and R is the correct explanation of A A)
- B) A and R are both correct and R is NOT the correct explanation of A
- C) A is correct, but R is NOT correct
- A is NOT correct, but R is correct D)
- 88. Identify the multiple access schemes that can be accommodated by cellular technologybased networks from the given list.
  - 1. **FDMA**

TDMA 2.

3. SDMA 4. **MDMA** 

A) 2, 3 and 4 only

2 and 3 only B)

1 and 2 only C)

1, 2 and 3 only D)

89.	cell	ular telephone system that use and control channels, com	ises two 25 l	cHz simplex channels to provide full duplex of channels available per cell if a system
		s 12 cell reuse.		
	A)	120	B)	60
	C)	90	D)	30
90.	In C	DMA-based cellular netwo	orks, the near	r-far effect may appear due to,
	A)	Distant users	B)	Imperfect orthogonality between codes
	C)	Interfering signals	D)	Orthogonal codes
91.	In B	luetooth, per channel bandy	width is,	
	A)	2.4 GHz	B)	1 MHz
	C)	1.4 MHz	D)	2 GHz
92.	the			s leave the earth's surface and travel towards turned to the earth. These radio signals are
	A)	Sky waves	B)	Ground waves
	C)	EM waves	D)	Directional waves
93.	The	function of control channe	ls is to carry	the following between the mobile and BS.
	A)	User speech		
	B)	Signalling and synchroniz	ing comman	ds
	C)	Signalling and asynchroni	zing comma	nds
	D)	Signalling and user speech	h	
94.	Ider	ntify the highest level of err	or detection	and correction coding scheme in GPRS.
	A)	CS-4	B)	CS-3
	C)	CS-2	D)	CS-1
95.	Are	flex klystron is operated at	5 GHz with	dc beam voltage 350 V, repeller spacing 0.5
		for $N = 3$ (3/4) mode. Calcu		
	A)	5.948 Hz	·B)	5.948 kHz
	C)	5.948 MHz	D)	5.948 GHz
11(A	<b>(</b> ).		(21)	[P.T.O.

96.			THE RESERVE OF THE PARTY OF THE PARTY.		Hz under a beam voltage of $10  kV$ a is $25  \Omega$ and the interaction length i	
		the output power g		cuance	is 23 \frac{1}{2} and the interaction length i	s 20 cm,
	A)	.33.85 dB		B)	53.85 dB	
	(C)	43.85dB		D)	63.85 dB	

97. A 1 Kw, 3 GHz radar uses a single antenna with a gain of 30 dB. The receiver has a noise bandwidth of 1 kHz and a noise factor of 5 dB. A target of an echoing area of 10 m2 at a range of 10 nautical miles is to be detected. Calculate the minimum S/N.

54.3 dB

B) 45.3dB

35.3dB C)

D) 53.3 dB

98. In PLC, a ladder diagram is used as a,

Programming facility

B) Storage facility

C) Communication facility

Networking facility D)

99. The video carrying picture and sync information signal consists of,

The video signal 2. The audio signal

3. The synchronizing pulses

The blanking pulses 4.

2, 3 and 4 A)

B) 1, 2, 3 and 4

(C) 1, 2 and 3 D) 1, 3 and 4

100. The luminance signal (Y) and chrominance signals (I and Q) with their bandwidths in the NTSC system are given below.

Find the correct match.

a) Y - 1.0.5 MHz

b) I - 2. 4.2 MHz

c) Q - 3. 1.3 MHz.

The correct match is,

Contract of	HILL WATER		
	а	ь	c
A	1	2	3
В	1	3	2
C	2	1	3
D	2	3	1

# **ROUGH WORK**

11(A) (23) [P.T.O.

## **ROUGH WORK**

11(A) (24)