



**NATIONAL INSTITUTE OF TECHNICAL TEACHERS
TRAINING AND RESEARCH**
(DEEMED TO BE UNIVERSITY UNDER DISTINCT CATEGORY)
CHANDIGARH

Ph.D. Entrance Examination - January 2025

Subject / Branch / Department :	Information Management and Emerging Engineering
Roll No. :	
Candidate Name :	
Date of Examination :	

Maximum Marks: 25 (There is no negative marking)

- Notes:** (a) Only one option to be tick-marked out of the four options given as answer
 (b) The Candidate must put his/her signature with date at the bottom of each page
 (c) For any rough work, please use ONLY back-sides of pages which are left blank

Q1. VLSI technology uses _____ to form integrated circuit.	
(a)	transistors
(b)	Switches
(c)	diodes
(d)	buffers
Q2. As die size shrinks, the complexity of making the photomasks _____	
(a)	increases
(b)	Decreases
(c)	remains the same
(d)	cannot be determined
Q3. What is the design flow of VLSI system?	
	i. architecture design ii. market requirement iii. logic design iv. HDL coding
(a)	ii-i-iii-iv
(b)	iv-i-iii-ii
(c)	iii-ii-i-iv
(d)	i-ii-iii-iv

Q4. In CMOS logic circuit the n-MOS transistor acts as:

- (a) Load
- (b) Pull up network
- (c) Pull down network
- (d) Not used in CMOS circuits

Q5. Which of the following is correct about logic gates?

- (a) Logic gates have one or more input signals and only one output signal
- (b) Logic gates have only one input and output signal
- (c) Logic gates are analogous circuits
- (d) Logic gates have only one input and many output signals

Q6. Which of the following gates can have only one input?

- (a) OR gate
- (b) NOT gate
- (c) AND gate
- (d) NAND gate

Q7. Which input values will cause an AND logic gate to produce a HIGH output?

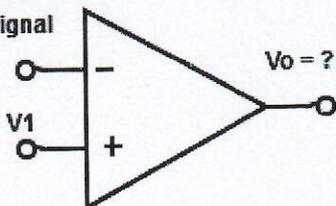
- (a) At least one input is HIGH
- (b) At least one input is LOW
- (c) All inputs are HIGH
- (d) All inputs are LOW

Q8. The expression of an EXOR gate is _____

- (a) $A'B+AB'$
- (b) $AB+A'B'$
- (c) $A+A.B$
- (d) $A'+B'$

Q9. Determine the output from the following circuit

V2 = input signal



- (a) 180° in phase with input signal
- (b) 180° out of phase with input signal

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(c)	Same as that of input signal
(d)	Output signal cannot be determined
Q10. Find the output voltage of an ideal op-amp. If V_1 and V_2 are the two input voltages	
(a)	$V_0 = V_1 - V_2$
(b)	$V_0 = A \times (V_1 - V_2)$
(c)	$V_0 = A \times (V_1 + V_2)$
(d)	$V_0 = V_1 \times V_2$
Q11. Which of the following is a differential type of amplifier:	
(a)	Isolation amplifier
(b)	Instrumentation amplifier
(c)	Negative feedback amplifier
(d)	FinFET
Q12. Which of the following is the smallest unit of data in a computer?	
(a)	Bit
(b)	KB
(c)	Nibble
(d)	Byte
Q13. Which of the following is the branch of Artificial Intelligence?	
(a)	Machine Learning
(b)	Cyber forensics
(c)	Full-Stack Developer
(d)	Network Design
Q14. Which of the following is not an application of artificial intelligence?	
(a)	Face recognition system
(b)	Chatbots
(c)	LIDAR
(d)	DBMS
Q15. Which of the following is not an IoT device?	
(a)	Table
(b)	Laptop
(c)	Arduino

(d)	Tablet
Q16. Which of the following is not a type of broadband internet connection?	
(a)	Satellite
(b)	DSL
(c)	Dial up
(d)	Cable
Q17. The directivity of an antenna array can be increased by adding more antenna elements, as a larger number of elements	
(a)	Increase the effective area of the antenna
(b)	Results in a better impedance matching
(c)	Improves the radiation efficiency
(d)	Allows more power to be transmitted by the antenna
Q18. Which of the following is the advantage of sampling rate conversion by converting the signal into analog signal?	
(a)	Less signal distortion
(b)	Quantization effects
(c)	New sampling rate can be arbitrarily selected
(d)	None of the mentioned
Q19. What would be the value of feedback voltage in a negative feedback amplifier with $A=100$; $\beta =0.03$ and input signal voltage = 40mv?	
(a)	0.03V
(b)	0.06V
(c)	0.09V
(d)	0.12V
Q20. For an ideal voltage amplifier circuit, what should be the value of input resistance	
(a)	Zero
(b)	Infinity
(c)	Unity
(d)	Unpredictable
Q21. A system has a gain of 80 db without feedback, if the negative feedback is 1/50th. What is the closed loop gain of the system in db with the addition of the negative feedback?	
(a)	34db
(b)	40db
(c)	30db

(d)	42db
Q22. In a receiver the input signal is 100 V, while the internal noise at the input is 10 V. With amplification the output signal is 2 V, while the output noise is 0.4 V. The noise figure of receiver is	
(a)	2
(b)	0.5
(c)	0.2
(d)	None of the mentioned
Q23. What is the full form of IIOT?	
(a)	Index Internet of Things
(b)	Incorporate Internet of Things
(c)	Industrial Internet of Things
(d)	Intense Internet of Things
Q24. What is the best choice of IC package used for experimental purpose?	
(a)	DIP package
(b)	Metal can package
(c)	Flat pack
(d)	Transistor pack
Q25. Which of the following is a combination of inverting and non-inverting amplifier?	
(a)	Differential amplifier with one op-amp
(b)	Differential amplifier with two op-amps
(c)	Differential amplifier with three op-amps
(d)	Differential amplifier with four op-amps

PHD Questions Answer Key (IMEE Department)

Question No.	Option
1.	a
2.	a
3.	a
4.	c
5.	a
6.	b
7.	c
8.	a
9.	b
10.	b
11.	b
12.	a
13.	a
14.	d
15.	a
16.	c
17.	a
18.	c
19.	d
20.	b
21.	a
22.	a
23.	c
24.	a
25.	a

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