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Number of Pages in this Booklet · 28	Number of	Quest	ions in	this	Bool	rks : alet ·	100
 Instructions for the Candidates Write your Seat No. and OMR Sheet No. in the space provided on the top of this page. This paper consists of 100 objective type questions. Each question will carry <i>two</i> marks. <i>All</i> questions of Paper II will be compulsory. At the commencement of examination, the question booklet will be given to the student. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as follows: (i) To have access to the Question Booklet, tear off the paper seal on the edge of this cover page. Do not accept a booklet without sticker-seal or open booklet. (ii) Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to missing pages/questions or questions repeated or not in serial order or any other discrepancy should not be accepted and correct booklet will be replaced nor any extra time will be given. The same may please be noted. (iii) After this verification is over, the OMR Sheet Number should be entered on this Test Booklet. 4. Each question has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item. Example : where (B) is the correct response. WRONG METHODS MC (C) (A) (C) (A) (C) (D) Solutions such method will be responsible for their loss. WRONG METHODS Sheet given inside the Booklet condy. If you mark at any place other than in the circle in the OMR Sheet, it will not be evaluated. Read instructions given inside carefully. Rough Work is to be done at the end of this booklet. Hour responses to the items are to be indicated in the OMR Sheet given inside the Booklet condy. If you mark at any place other than in the circle in the OMR Sheet, it will not be evaluated. Read instructions given inside carefully. Rough Work is to be done at the end of th	 परीक्षार्थांनी आ आपणांस दिलेल् सदर प्रश्नपत्रिके प्रश्नपत्रिकेतील परीक्ष सुरू इ 5 मिनिटांमध्ये : (i) प्रश्न (ii) पहिल् (ii) पहिल् (iii) पहिल् (iii) पहिल् (iii) वरी (iiii) वरी (iiii) वरी (iiii) वरी (iiii) वरी काळ/निळा क उदा. : जर (B) प्रत्येक प्रश्नास त्यातील योः काळ/निळा क उदा. : जर (B) प्रश्नपत्रिके तिहिलिली उत्तेर हिलिहिलेही जर्सर ह आ प्रश्नपत्रिकेच्या 8. जर आपण ओ: क्रमांक, फोन नं अथवा असभ्य अपनीक्ष संपल्या- प्ररीक्ष संपल्या- परीक्षा संपल्या- परीक्षा संपल्या- परीक्षा संपल्या- परीक्षा संपल्या- 	विद्यारथ्यान पत्ना आसन 1 या उत्तरपत्रिके हेत 100 बहुग सर्व प्रश्न सो बात्यावर ति मापण सदर प्रग्न मति उघडण् । सील उघडण् या पत्नि सदोष प्र दुसरी प्रश्नमां प्र नेती सदोष प्र दुसरी प्रश्नमां प्र नेती सदोष प्र दुसरी प्रश्नमां प्र नेती सदोष प्र दुसरी प्रश्नमां तर्स च बेळवी ग लप्र प्रगणे - र स् अप् त्या पद्धती वा त्यांना ओळ्य बदार असतीत एया जा तर क् ि ि (क्) हो वी जो स् किंवा ओत् मार्वेचाल्पत त ये ब्राल्य	साठी महत्त्वा क्रमांक या पृष चा क्रमांक त्याग पर्यायी प्रश्न अ डविणे अनिवार ाद्यार्थ्याला प्रश् रत्यार्थ्याला प्रश् रत्यार्थ्याला प्रश्नाचं यासाठी प्रश्नपत्रिक नम्पूद केत्यार् प्रकृण प्रश्नाचं न असलेली/प्रश् रत्रका मागवून घ वाढवून मिळ्णा रत्रकेचा मत्य 1 प्रतकेचा नंबर 1 , (C) आणि (1) ा रकाना र असेल तर. (परक नये, कारप् वत नाही. त्या त. ((((((((((((((((((च्या सूचन जवरील वग जवरील वा खाली लिहा हेत. प्रत्येव रान पत्रिका रान पत्रिका पत्र वा तीव्या 5 यावी. त्यानं पत्ति याचि पत्ति याचि पत्ति याचि पत्र पाहिः लिहावा. D) अशी च खाली दर्भ पद्धती वा <u>ETHOD</u> त. ावरच कच्च टिकाणाव्या कोणतीही गाँचा अवल् पत्र. उत्तरपा	ता त्वा कोप क प्रश्नास क प्रश्नास विली ज बाबी अव तेले सील र नये. पर्यताव्हन पडताव्हन मिनिटात तर प्रश्नपा कि प्रयान तर मिनिटान तर मिनिटान तर पड (Dig र एड (Dig र उड (Dig र ठ ठ ठ ठ ठ ठ ठ ठ ठ ठ ठ ठ ठ ठ ठ ठ ठ ठ	न्यात लिह दोन गुण गाई ल. सु एव तपासु उपडावे. सी ए एक प्रूण प्रदावी. सलेली किं च पर्यवेक्ष त्रेका बदल त्रचार्थ्यांनी च प्रश्न प्रवारी किं प्रसाण पं उत्तरे दि प्रमाणे itized) ¹ कसान झाल रावातीत. रावो. हा ली आढळ् प्र विद्यार्थ्या के सकांक डे	ग्रवा. तसे आहेत. य रुवातीच्य न पहाव्यात ज पहाव्यात ज पहाव्यात पषिठ्या पुष्ठे तसेम् पुष्ठे तसेम् पुष्ठे तसेम् वा इतर का त्वा इतर क्विमण् हतर क्विमण् त्वा , आसा ून आल्या ् ला परीक्षे र परत कर
 you outside the Examination Hall. You are, however, allowed to carry the Test Booklet and duplicate copy of OMR Sheet on conclusion of examination. Use only Blue/Black Ball point pen. Use of any calculator or log table etc. is prohibited 	जापरपक्ष आह. नेण्यास विद्याध्य 10. फक्त निळ्या वि 11. कॅलक्युलेटर वि	तजाज, अरगपा ाँना परवानगी वा काळ्या ब वा लॉग टेबल	अहे. आहे. ॉल पेनचाच वा 1 वापरण्यास पर	जारः उत्तरपा पर करावाः वानगी नाही	ાત્રમાં ગાણ :	আপ সব সা	ાત્પ્લાભરાભ
2. There is no negative marking for incorrect answers.	12. चुकीच्या उत्तरा	नाठी गुण कपा	त केली जाणार	नाही.			









Electronic Science Paper II

Time Allowed : 120 Minutes] [Maximum Marks : 200 Note : This Paper contains Hundred (100) multiple choice questions. Each question carrying Two (2) marks. Attempt All questions.

1.	In the semiconductors, what is the	2. In semiconductor manufacturing, what does the term <i>wafer</i> refer to?
	role of a <i>doping</i> ?	(A) A thin slice of single-crystal semiconductor material
	(A) It increases the bandgap of the	(B) The metallic layer on top of a semiconductor device
	semiconductor material	(C) The insulation material between different
	(B) It introduces impurities to	semiconductor layers
	modify the electrical properties	(D) The encapsulation material used in semiconductor
	of the material	packaging 3. In a Zener diode, what is the
	(C) It enhances the thermal	primary role of the depletion region?
	conductivity of the	(A) To increase the forward bias current
	semiconductor	(B) To provide mechanical support to the diode
	(D) It decreases the resistivity of	(C) To enhance the reverse breakdown voltage
	the semoconductor material	(D) To reduce the capacitance of the diode





- 4. How does an LCD pixel control the passage of light to create different colors ?
 - (A) By changing the pixel's size
 - (B) By altering the liquid crystal alignment
 - (C) By adjusting the backlight intensity
 - (D) By using a color filter
- 5. What is the primary role of barrier layers in quantum well devices ?
 - (A) To increase carrier concentration
 - (B) To enhance thermal conductivity
 - (C) To confine charge carriers in one dimension
 - (D) To reduce the overall device size

6. In the I-V curve of a solar cell, what does the open-circuit voltage (V_{oc}) represent ?

- (A) The maximum voltage the cellcan generate under illumination
- (B) The voltage when the cell is not exposed to light
- (C) The voltage when the current is zero
- (D) The voltage when the cell is at maximum power point
- 7. What is the significance of the "quantum Hall effect" observed in graphene ?
 - (A) It indicates the presence of a bandgap in graphene
 - (B) It demonstrates the unique behavior of charge carriers in graphene
 - (C) It signifies the low thermal conductivity of graphene
 - (D) It is unrelated to the electronic properties of graphene





- 8. What is the unique structural feature of a carbon nanotube that contributes to its exceptional strength ?
 - (A) Planar hexagonal lattice
 - (B) Rolling vector
 - (C) Quasi-one-dimensional structure
 - (D) Hexagonal Closed Packed Structure
- 9. What are potential applications of ZnO in the field of optoelectronics?
 - (A) Photovoltaic cells and lightemitting diodes (LEDs)
 - (B) Quantum computing devices
 - (C) Superconductors and magnetic storage
 - (D) Gas sensors and fuel cells

10. What is the primary advantage of LED technology over traditional incandescent lighting ?

- (A) Higher power consumption
- (B) Longer lifespan
- (C) Limited color options
- (D) Lower efficiency
- In X-ray Diffractometers, line intensities depend on and kind of atomic reflection centres in each set of plates.
 - (A) Number
 - (B) Position
 - (C) Length
 - (D) Distance between lines





- 12. A sharp peak in a X-Ray Diffractogram represents :
 - (A) Amorphous Material
 - (B) Polymeric Material
 - (C) Highly Crystalline Structure
 - (D) Conductor Material
- 13. The chemical used for shielding the active areas to achieve selective oxide growth is :
 - (A) Silver Nitride
 - (B) Silicon Nitride
 - (C) Hydrofluoric acid
 - (D) Polysilicon
- 14. The scaling factor of current density in constant voltage model is :
 - (A) $1/\alpha^2$
 - (B) 1
 - (C) α^2
 - (D) α^2/β

15. The energy band diagram of the MOS system when gate voltage is zero is :







6





- What is the Primary Function of the Shift Register in A CCD ?
 - (A) Data storage
 - (B) Serial transfer of charge
 - (C) Analog-to-digital conversion
 - (D) Image processing
- 17. Which of the following design styles provides higher integration density?
 - (A) Switch transistor logic
 - (B) Transistor buffer logic
 - (C) Transistor transistor logic
 - (D) Circuit level logic
- 18. Which gives scalable design rules?
 - (A) Lambda rules
 - (B) Micron rules
 - (C) Layer rules
 - (D) Thickness rules

- 19. Which of the following is used to obtain silicon single crystal structure while fabricating integrating circuits ?
 - (A) Oxidation
 - (B) Epitaxial growth
 - (C) Photolithography
 - (D) Silicon wafer preparations
- 20. The pull up to pull down impedance ratio for an nMOS inverter driven by another nMOS inverter is
 - (A) 8/1
 - (B) 4/1
 - (C) 8/3
 - (D) 1/4





- 21. What is the purpose of Norton's theorem ?
 - (A) Simplify parallel circuits
 - (B) Analyse AC circuits
 - (C) Calculate equivalent resistance
 - (D) Determine open-circuit voltage
- 22. Norton's equivalent current is in parallel with :
 - (A) A resistor
 - (B) A capacitor
 - (C) An inductor
 - (D) A voltage source
- 23. The Laplace transform of a unit impulse function is :
 - (A) 1/s
 - (B) e^{-st}
 - (C) $\delta(t)$
 - (D) 1

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- 24. What does the term "cut-set" refer to in network analysis ?
 - (A) A set of parallel resistors
 - (B) A set of series resistors
 - (C) A combination of resistors and capacitors
 - (D) A set of branches that, if cut,will divide the network into two parts
- 25. In filter design, what is the purpose of the Butterworth approximation ?
 - (A) To achieve a maximally flat response in the passband
 - (B) To minimize phase distortion in the stopband
 - (C) To maximize the bandwidth of the filter
 - (D) To ensure equal ripple in both the passband and stopband



- 26. What does the term "poles and zeros cancellation" imply in control system theory ?
 - (A) It results in an unstable system
 - (B) It improves the transient response of the system
 - (C) It simplifies the transfer function of the system
 - (D) It reduces the order of the system
- 27. What is the purpose of the Routh-Hurwitz stability criterion ?
 - (A) To determine the stability of a control system
 - (B) To analyse power distribution in electrical grids
 - (C) To optimize the bandwidth of a communication system
 - (D) To design filters with optimal frequency response

- 28. In filter design, what is the significance of the transition bandwidth ?
 - (A) It represents the range of frequencies with equal ripple in the stopband
 - (B) It indicates the sharpness of the frequency transition between passband and stopband
 - (C) It is the range of frequencies over which the filter exhibits a maximally flat response
 - (D) It defines the frequency rangein which the filter has minimalgroup delay



- 29. In filter design, what is the significance of the transition bandwidth ?
 - (A) It represents the range of frequencies with equal ripple in the stopband
 - (B) It indicates the sharpness of the frequency transition between passband and stop-band
 - (C) It is the range of frequencies over which the filter exhibits a maximally flat response
 - (D) It defines the frequency range in which the filter has minimal group delay
- 30. The multiplication of two discrete Fourier transforms (DFTs) is equal to the of two sequences in the time domain.
 - (A) Circular convolution
 - (B) Auto-correlation
 - (C) Linear convolution
 - (D) Cross-correlation

31. What does the symbol IGSS represent in the context of a JFET?

- (A) Drain current
- (B) Gate-source voltage
- (C) Gate current when the gatesource junction is forwardbiased
- (D) Gate current when the gatesource junction is reverse-biased
- 32. What information does the measurement of dc beta provide about a bipolar junction transistor ?
 - (A) Voltage drop across the collector resistor
 - (B) Gain bandwidth product
 - (C) Current gain characteristics
 - (D) Base-emitter voltage threshold





- 33. What is the purpose of inverting
 (-) and non-inverting (+) input
 terminals on an operational
 amplifier ?
 - (A) Determine Op-Amp's power supply
 - (B) Control gain of Op-Amp
 - (C) Define the amount of feedback
 - (D) Provide input signals for differential amplification
- 34. The phase difference between the input and output voltages in a common base arrangement is
 - (A) 180°
 - (B) 90°
 - (C) 270°
 - (D) 0°

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- 35. Which of the following is true about the FET as its advantage ?
 - (A) Low input resistance
 - (B) High output resistance
 - (C) Big size, small life
 - (D) Better thermal stability
- 36. What is fractional -N frequency synthesis in PLLs and is it used ?
 - (A) It involves using fractional values in the frequency divider to achieve finer frequency resolution
 - (B) It utilizes non-integer division ratios to improve phase noise performance
 - (C) It refers to using fractional values VCO control voltage
 - (D) It is technique to eliminate spurious signals in the PLL output





- 37. oscillator can be used where high stability of frequency is required.
 - (A) Wien bridge
 - (B) Crystal
 - (C) Hartley
 - (D) Colpitts
- 38. Which of the following ICs is the standard IC used for V to F conversion ?
 - (A) 741
 - (B) 7400
 - (C) 566
 - (D) 723

- 39. Instrumentation amplifier is best suited for
 - (A) Detection of signal from photodiode
 - (B) Detection of output from load cell
 - (C) Detection of signal from distance stars
 - (D) Detection of signal from RF transponder
- 40. Which of the following IC does not belong to voltage regulator class ?
 - (A) 7805
 - (B) **7905**
 - (C) LM 723
 - (D) NE536





41.	What type of gates are NAND and	44.	In a 4-bit ripple counter, how many
	NOR gates considered to be ?		clock pulse are required for a
	(A) Special-purpose gates		complete counting cycle ?
	(B) Complex gates		(A) 4
	(C) Standard logic gates		(B) 8
	(D) Outdated gates		(C) 16
42.	What is the primary building block		(D) 2
	of a CPLD ?	45.	is used to carry digital data
	(A) Flip-flop		on analog lines.
	(А) Гпр-пор		(A) Modem
	(B) Gate		(B) Demodulator
	(C) Block RAM		(C) Modulator
	(D) Macro cell		(D) Multiplexer
43.	What is the primary building block	46.	Modulo 6 counter can be built with
	of an FPGA ?		flip flops.
	(A) Macro cell		(A) 2
	(B) Gate		(B) 3
	(C) Look-Up Table (LUT)		(C) 4
	(D) Flip-flop		(D) 6





- 47. The type of register, in which we have access only to leftmost and rightmost feedback :
 - (A) Parallel in serial out register
 - (B) Serial in serial out register
 - (C) Shift left and shift right register
 - (D) Serial in parallel out register
- 48. In FSM diagram what does circle represent ?
 - (A) State
 - (B) Change of state
 - (C) Output value
 - (D) Initial state
- 49. are employed to specify parameters that can be supplied to VHDL entities.
 - (A) Port numbers
 - (B) Packages
 - (C) Declarations
 - (D) Generics

- 50. is an example of a combinational circuit.
 - (A) Shift Registers
 - (B) Counters
 - (C) Flip flops
 - (D) Multiplexers
- 51. Why do we need a ULN2003 in driving a stepper motor from 8051 port ?
 - (A) for switching the motor ON and OFF
 - (B) for increasing the current
 - (C) for increasing the power
 - (D) for auto shut off on short circuit
- 52. Which of the following signal controls the flow of data ?
 - (A) RTS
 - (B) DTR
 - (C) RTS and DTR
 - (D) ECNR



- 53. If we push data onto the stack, thenthe stack pointer :
 - (A) increases with every push
 - (B) decreases with every push
 - (C) increases and decreases with every push
 - (D) doesn't change
- 54. What steps are followed when we need to turn on any timer ?
 - (A) load the count, start the timer,keep monitoring it, stop the timer
 - (B) load the TMOD register, load the count, start the timer, keep monitoring it, stop the timer
 - (C) load the TMOD register, start the timer, load the count, keep monitoring it, stop the timer
 - (D) load the count, divide TCON by2, start the timer, keep monitoring it, stop the timer

- 55. The function of Execution Unit is :
 - (A) Encoding
 - (B) Decoding
 - (C) Processing
 - (D) Calculations
- 56. The JS is called as
 - (A) jump the signed bit
 - (B) jump single bit
 - (C) jump simple bit
 - (D) jump signal it
- 57. Which microprocessor accepts the program written for 8086 without any changes ?
 - (A) 8085
 - (B) 8051
 - (C) 8057
 - (D) 8088





58. Match the following :

List I

- (1) TCON
- (2) SBUF
- (3) **TMOD**
- (4) **PSW**
- (5) PCON

List II

- (i) contains status information
- (ii) timer/counter control register
- (iii) idle bit, power down bit
- (iv) serial data buffer for Tx and Rx
- (v) timer/counter modes of operation

Codes :

(1)(2)(3)(4)(5)(iii) (A) (*ii*) (iv)(v)*(i)* (B) (*i*) (v)*(iv) (iii)* (ii) (C) (v) (iv)(iii) (ii) *(i)* (D) (iii) (ii)*(i)* (v)(iv)

- 59. If the pin is, then we have the option of using theROM or EPROM together withmemory and devices.
 - (A) EA, high, internal, external
 - (B) EA, low, internal, external
 - (C) EA, high, external, internal
 - (D) EA, low, external internal
- 60. Which of the following Buses is/are present in a microcontroller for transferring data from one place to another ?
 - (A) Data bus only
 - (B) Data Bus, Address Bus
 - (C) Address Bus
 - (D) Address Bus, Data Bus, ControlBus





- 61. In charge free space, the Poisson equation becomes :
 - (A) Maxwell equation
 - (B) Ampere equation
 - (C) Laplace equation
 - (D) Steady state equation
- 62. The total number of magnetic field lines passing through an area is termed as :
 - (A) Voltage
 - (B) EMF
 - (C) Magnetic flux
 - (D) Magnetic flux density
- 63. Which of the following laws does not form a Maxwell equation ?
 - (A) Planck's law(B) Gauss's Law
 - (C) Faraday's law
 - (D) Ampere's Law

- 64. In free space, which of the following will be zero ?
 - (A) Permittivity
 - (B) Permeability
 - (C) Conductivity
 - (D) Resistivity
- 65. A wave incident on a surface at an angle 60 degree is having field intensity of 6 units. The reflected wave is at an angle of 30 degrees.
 Find the field intensity after reflection.

(A) 9.4

(B) 8.4

(C) 10.4

(D) 7.4





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66.	An example for lossless propagation	68.	The radiation resistance of an
	is:		antenna having a power of 120 units and antenna current of 5A is :
	(A) Dielectric waveguide propagation		(A) 4.8
	(B) Conductor propagation		(B) 9.6
	(C) Cavity resonator propagation		(C) 3.6
	(D) Not practically possible		(D) 1.8
		69.	Copper behaves as a :
67.	An example for usage of		(A) Conductor always
	electromagnetic wave propagation		(B) Conductor or dielectric
	is:		depending on the applied
	(A) refrigerator		electric field strength
			(C) Conductor or dielectric
	(B) electric fan		depending on the frequency
	(C) mobile transponder		(D) Conductor or dielectric
	(D) relays in actuators		depending on the electric current density





- 70. The modes in a rectangular waveguide are denoted by TE_{mn}/TM_{mn}, where m and n are the Eigen values along the larger and smaller dimensions of the waveguide respectively. Which one of the following statements is *true*?
 - (A) The TM_{10} mode does not exist
 - (B) The TE_{10} mode does not exist
 - (C) The TE_{10} and TM_{10} both exist and have same cut-off frequencies
 - (D) When m and n are increased, the cut-off frequency decreases
- 71. The refractive index variation of a singal mode fiber is :
 - (A) Gradual from core to cladding
 - (B) Increasing from core to cladding
 - (C) Step change from core to cladding
 - (D) Linear change from core to cladding

- 72. The characteristic of a radio receiver associated with true reproduction of audio signal is :
 - (A) Sensitivity
 - (B) Selectivity
 - (C) Image rejection
 - (D) Fidelity
- 73. The wavelength for a frequency of25 MHz is :
 - (A) 15 metres
 - (B) 4 metres
 - (C) 12 metres
 - (D) 32 metres
- 74. Which of the following is disadvantage of FM over AM ?
 - (A) less modulating power is required
 - (B) better noise immunity is provided
 - (C) higher bandwidth is required
 - (D) carrier is of any shape





- 75. If the noise figures of the first stage of a two stage cascade network is
 8 dB and the noise figure of the second stage is 7 dB and the gain of the first stage is 10, then the noise figure of the cascade is :
 - (A) 8.6 dB
 - (B) 7.6 dB
 - (C) 5.6 dB
 - (D) 8.9 dB
- 76. Bluetooth is an example of :
 - (A) Wide area network
 - (B) Virtual private network
 - (C) Local area network
 - (D) Personal area network

- 77. Intermodal dispersion occurring in a large amount in multimode step index fiber results in
 - (A) Propagation of the fiber
 - (B) Propagating through the fiber
 - (C) Pulse broadening at output
 - (D) Attenuation of waves
- 78. The internal quantum efficiency of LEDs decreases

with temperature.

- (A) Exponentially, decreasing
- (B) Exponentially increasing
- (C) Linearly, increasing
- (D) Linearly, decreasing





- 79. Which technology is used by the backscatter measurement method ?
 - (A) Refraction
 - (B) Francis flat recovery
 - (C) Optical time domain reflectometry
 - (D) Optical frequency
- 80. Which of the following is the way in which an IoT device is associated with data ?
 - (A) Internet
 - (B) Cloud
 - (C) Automata
 - (D) Network

- 81. In a SCR circuit, the angle of conduction can be changed by changing :
 - (A) anode voltage
 - (B) anode current
 - (C) forward current rating
 - (D) gate current
- 82. A half-wave thyristor converter supplies a purely inductive load, as shown in Fig. If the triggering angle of the SCR is 120°, the extinction angle will be :







- 83. A dc to dc transistor chopper supplied from a fixed voltage dc source feeds afixed-resistiveinductive load and a free-wheeling diode. The chopper operates at 1 kHz and 50% duty cycle. Without changing the value of the average dc current through the load, if it is desired to reduce the ripple content of load current, the control action needed will :
 - (A) increase the chopper frequency and duty cycle in equal ratio
 - (B) increase the chopper frequency keeping the duty cycle constant
 - (C) decrease only the chopper frequency
 - (D) decrease only the duty cycle

- 84. In the SCR tap-switch inverter, when SCR_1 is fired :
 - (A) positive peak of the ac O/P is obtained
 - (B) negative peak of the O/P is obtained
 - (C) two-third to peak value is obtained
 - (D) one-third of the peak value is obtained
- 85. It is required to drive a d.c. shunt motor at different speeds in both the directions (forward and reverse) and also to break it in both the directions which one of the following would you use ?
 - (A) a half-controlled thyristorbridge
 - (B) a full-controlled thyristor-bridge
 - (C) a dual converter
 - (D) a diode bridge





- 86. The speed and torque of induction motors can be varied by which of the following means ?
 - (A) Chopper voltage control
 - (B) Rotor voltage control
 - (C) Current control
 - (D) Stator voltage, rotor voltage and frequency control
- 87. Which of the following statements is not necessarily correct for open control system ?
 - (A) Input command is the sole factor responsible for providing the control action
 - (B) Presence of non-linearity causes malfunctioning
 - (C) Less expensive
 - (D) More expensive

88. A closed loop system is distinguishedfrom open loop system by one of thefollowing :

- (A) Servo mechanism
- (B) Feedback
- (C) Output pattern
- (D) Input pattern
- 89. A system with gain margin close to unity or a phase margin close to zero is :
 - (A) Highly stable
 - (B) Oscillatory
 - (C) Relatively stable
 - (D) Unstable





90.	The transient response of a	92.	One of the following transducers is
	system is mainly due to :		very popular for measurement of
	(A) inertia forces		rotational displacements :
91.	(B) internal forces		(A) Shaft encoder
	(C) stored energy		(B) Differential capacitor
	 (D) friction Which of the following is most commonly used IOT standards for Medium Access Control (MAC) ? 		(C) LVDT
			(D) Strain gauge
		93.	What is the name of a device that
			converts sound waves to electrical
			waves ?
	(A) IEEE802.15.4		(A) an amplifier
	(B) IEEE802.11ah		(B) a recorder
	(C) IEEE 2413		(C) a filter
	(D) IEEE11073		(D) a microphone





- 94. For a measuring system, dynamic sensitivity is required to beof static sensitivity.
 - (A) <u>+</u> 2%
 - (B) <u>+</u> 5%
 - (C) <u>+</u> 10%
 - (D) <u>+</u> 20%
- 95. For a measurement, indicated value
 is 225 V while true value is 226 V.
 What will be the static error of
 instrument ?
 (A) 1 V
 - (B) –1 V
 - (C) 0.5 V
 - (D) -0.5 V

- 96. Which part is called as heart of CRO?(A) CRT
 - (B) Sweep generator
 - (C) Trigger circuit
 - (D) Amplifier
- 97. The process of obtaining the spectrum of a given signal using the basic mathematical tools is known as :
 - (A) time domain analysis
 - (B) mathematical analysis
 - (C) spectral analysis
 - (D) pseudo analysis



- 98. Strain gauge is a :
 - (A) active device and converts
 mechanical displacement into a
 change of resistance
 - (B) passive device and converts
 electrical displacement into a
 change of resistance
 - (C) passive device and convertsmechanical displacement into achange of resistance
 - (D) active device and convertselectrical displacement into achange of resistance

- 99. From equipment point of view, the respiratory system in the human body is a system.
 - (A) Hydraulic
 - (B) Pneumatic
 - (C) Mechanical
 - (D) Electrical

 $100. \ Home \ blood \ glucose \ sensor \ works \ on$

which principle ?

- (A) Electrophysiological
- (B) Electrochemical
- (C) Physio-chemical
- (D) Chemical





ROUGH WORK





ROUGH WORK

