Seat No.	

ENT-58

Total No. of Pages : 20

M.Sc. Electronics Entrance Examiantion 2026
Sub. Code: 58298

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Day and Date : Tuesday, 21-07-2026 **Total Marks : 100**
Time : 02.30 p.m. to 04.00 p.m.

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Instructions

1) All questions are compulsory.
2) Each question carries 1 mark.
3) Answers should be marked in the given OMR sheet by darkening the appropriate option.
4) Follow the instructions given on OMR Sheet.
5) Rough work shall be done on the sheet provided at the end of question paper.

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1. Gold band in resistor indicates?

   A) +1% B) 2%

   C) ± 5% D) 10%

2. Ideal voltage sources has

   A) Infinite internal resistance B) Zero internal resistance

   C) High resistance D) Variable resistance

3. Algebraic sum of voltages in a loop is:

   A) Maximum B) Minimum

   C) Zero D) Infinite

4. Norton equivalent consist of

   A) Only resistance B) Both current and voltage source

   C) Voltage source + resistance D) Current source + resistance

5. Line regulation refers to change in output due to

   A) Load variation B) Input voltage variation

   C) Temperature D) Frequency

6. Output of AND gate is 1 when

   A) Any input is 0 B) Any input is 1

   C) All inputs are 0 D) All inputs are 1

7. A.1 =

   A) 0 B) 1

   C) A D) A'

8. Half adder has how many inputs?

   A) 1 B) 2

   C) 3 D) 4

9. Multiplexer is

   A) Many inputs to one output B) One input to many outputs

   C) One input to one output D) Memory device

10. A 3 to 8 decoder has outputs

    A) 3 B) 4

    C) 8 D) 16

11. In BJT, saturation region means

    A) Fully OFF B) Fully ON

    C) Saturation D) Partially ON

12. CE amplifier has

    A) No gain B) Low gain

    C) High voltage gain D) High input impedance

13. Class Camplifier conducts for ..... degree.

    A) <180 B) >180

    C) 180 D) 360

14. Phase shift required for oscillation ..... degree.

A) 90 B) 180

C) 270 D) 360

15. JFET operation is controlled by

A) Voltage B) Current

C) Power D) Resistance

16. What is the modulus of a 4-bit decade counter?

a) 4 b) 8

c) 10 d) 16

17. Which flip-flop is characterized by a race-around condition when both I and K inputs are high?

a) SR Flip-Flop b) D Flip-Flop

c) JK Flip-Flop d) T Flip-Flop

18. In a 4-bit binary weighted DAC, what determines the output voltage?

a) The reference voltage and resistor values

b) The clock frequency

c) The input frequency

d) The number of flip-flops

19. Which performance characteristic of a DAC refers to the smallest change in output voltage it can produce?

a) Accuracy b) Resolution

c) Conversion time d) Linearity

20. Which ADC technique uses a counter to compare the input voltage with a reference voltage incrementally?

    a) Dual Slope ADC b) Successive Approximation ADC

    c) Flash ADC d) Sigma-Delta ADC

21. A woofer should be fed from the input through a

    A. low pass filter B. high pass filter

    C. band pass filter D. band stop filter

22. Which of the following is an indirect way of generating FM?

    A. Armstrong modulator

    B. Varactor diode modulator

    C. Reactance FET modulator

    D. Reactance bipolar transistor

23. For attenuation of high frequencies, we should use

    A. shunt capacitance B. series capacitance

    C. inductance D. resistance

24. Which of the following is an example of point-to-point communication?

    A. Radio broadcast B. Television

    D. Satellite radio C. Telephone

25. What type of communication is used for underwater communication?

    A. Radio communication B. Microwave communication

    C. SONAR D. Fiber optics

26. Number of address lines in 8085:

    A) 8 B) 16

    C) 20 D) 32

27. Program Counter stores:

A) Data B) Address of next instruction

C) Output data D) Interrupts

28. In 8085 Stack works on:

A) FIFO B) LIFO

C) FILO D) None

29. 8085 has how many flags?

A) 3 B) S

C) 6 D) 8

30. MV1 A,32H is:

A) Register addressing B) Immediate addressing

C) Direct addressing D) Indirect addressing

31. TDM stands for:

a) Time Delay Modulation b) Time Division Multiplexing

c) Time Domain Multiplexing d) Time Data Modulation

32. ASK stands for:

a) Amplitude Shift Keying b) Amplitude Sampling Keying

c) Amplitude Signal Keying d) Amplitude Source Keying

33. IMEI stands for:

a) International Mobile Equipment Identity

b) International Mobile Encryption Identity.

c) Internal Mobile Equipment Identity

d) International Mobile Exchange Identity

34. Wi-Fi typically operates in:

    a) 2.4 GHz and 5 GHz bands b) 900 MHz only

    c) 1.8 GHz only d) 10 GHz band

35. Sampling theorem was given by:

    A) Nyquist B) Shannon

    C) Maxwell D) Hartley

36. A microcontroller contains:

    A) CPU only

    B) CPU and RAM only

    C) CPU, RAM, ROM and I/O ports

    D) ALU only

37. Program Counter in 8051 is:

    A) 8-bit B) 16-bit

    C) 32-bit D) 4-bit

38. The instruction MOV A, 30H uses:

    a) Immediate addressing b) Direct addressing

    c) Register addressing d) Indirect addressing

39. In 8051 which interrupt has highest priority by default?

    A) Timer 0 B) External interrupt 0

    C) Serial interrupt D) Timer 1

40. In 8051 Timer mode 2 is:

    A) 16-bit timer B) 8-bit auto reload timer

    C) Split timer D) 13-bit timer

41. Which characteristic indicates closeness of repeated readings?

A) Sensitivity B) Accuracy

C) Precision D) Resolution

42. Resolution means:

A) Smallest detectable change B) Maximum range

C) Speed D) Stability

43. Hall effect sensor is used for:

A) Temperature sensing B) Magnetic field sensing

C) Light sensing D) Pressure sensing

44. RTD stands for:

A) Resistance Temperature Detector

B) Reactive Temperature Detector

C) Resistance Thermal Device

D) Reactive Thermal Detector

45. A voltage follower has gain:

A) 0 B) 100

C) 1 D) Infinite

46. Clamping circuits are used to:

A) Shift DC level B) Increase frequency

C) Reduce noise D) Generate PWM

47. PLL stands for:

A) Phase Locked Loop B) Pulse Locked Loop

C) Phase Logic Loop D) Pulse Logic Loop

48. LM35 is a:

A) Pressure sensor B) Current sensor

C) Temperature sensor D) Humidity sensor

49. What is the wavelength of Super high frequency (SHF) especially used in Radar& satellite communication?

a. 1 m - 10 m b. 1 cm - 10 cm

c. 10 cm - 1 m d. 0.1 cm - 1 cm

50. Wave front is basically a locus of points acquiring similar

a. Phase b. Frequency

c. Amplitude d. Wave equation

51. In which kind of waveform is the phase velocity defined?

a. Sinusoidal b. Rectangular

e. Square d. Triangular

52. Which among the following is/are not present in free space?

a. Solid bodies

b. lonized particles

c. Interference of normal radiation & radio wave propagation

d. All of the above

53. The knowledge of which parameter is sufficient for deriving the timevarying electromagnetic field?

a. Electric field intensity b. Magnetic field intensity

c. Current density d. Power density

54. According to Webster's dictionary, what is an antenna?

    a. Impedance matching device

    b. Sensor of electromagnetic waves

    c. Transducer between guided wave & free space wave

    d. Metallic device for radiating or receiving radio waves.

55. Under which conditions of charge does the radiation occur through wire antenna?

    a. For a charge with no motion

    b. For a charge moving with uniform velocity with straight & infinite wire

    c. For a charge oscillating in time motion

    d. All of the above

56. Which among the following defines the angular distance between two points oneach side of major lobe especially when the radiation drops to zero?

    a. Half power beam width (HPBW)

    b. First null beam width (FNBW)

    c. Side lobe level (SLL)

    d. Front to back ratio (FBR)

57. Which statement best describes the 'Simulator' in the 8051 development system?

    A) It is a hardware device used to monitor signals.

    B) It converts Assembly code into C code.

    C) It allows a developer to test and debug code on a PC without the actual hardware.

    D) It burns the hex code into the microcontroller's flash memory.

58. In 8051 C programming ..... statement configures Port 1 as an input port.

A) P1 = 0x00; B) P1=0x55;

C) P1 = 0xFF; D) P1 = 0x0F;

59 In Serial Communication the MAX-232 IC is interfaced with 8051 microcontroller, to .....

A) generate the parity bit

B) convert TTI. logic levels to RS-232 logic levels

C) To store serial data buffers

D) To increase the baud rate

60. ..... bit in the PCON register is responsible for doubling the baud rate of serial communication.

A) IDL B) PD

C) SMOD D) GFI

61. When interfacing a 16x2 LCD module with an 8051, ... pin is used to select between the Data Register and the Command Register of LCD module.

A) R/W B) RS

C) E D) VEE

62. An opto-coupler is used when interfacing the 8051 with high-voltage industrial devices, to ..... .

A) provide electrical isolation between the CPU and high-voltage circuits.

B) convert analog signals to digital signals.

C) increase the processing speed of the 8051

D) multiplex multi-digit seven-segment displays

63. To start the conversion process..... pin of ADC0804 should be pulsed 'LOW' by 8051 microcontroller.

A) WR B) RD

C) CS D) INTR

64. When interfaced with 8051, a Thumbwheel Switch provides ..... input to the 8051.

A) PWM signal

B) BCD (Binary Coded Decimal)

C) Serial Data shift

D) Freewheeling Voltage

65. In a three-phase half-wave rectifier with resistive load, how many diodes conduct simultaneously?

a) One b) Two

c)Three d) Four

66. What is the effect of a large inductive load in a three-phase full-wave rectifier?

a) Increases ripple in output voltage

b) Smooths output current.

c) Reduces output voltage

d) Increases power loss

67. In a controlled rectifier, what does the firing angle determine?

a) Output voltage magnitude

b) Input frequency

c) Diode conduction time

d) Reverse recovery time

68. What is the role of a freewheeling diode in a semi-converter circuit?

    a) To increase output voltage

    b) To provide a path for inductive load current

    c) To reduce firing angle.

    d) To prevent reverse recovery

69. What is the primary function of a single-phase bidirectional controller with resistive load?

    a) Voltage regulation c) ON/OFF control of AC power

    b) Power factor correction d) Frequency modulation

70. Which application uses high-frequency switching to reduce transformer size?

    a) UPS b) SMPS

    c) Electronic ballast d) Power factor correction

71. What is the principle behind induction heating?

    a) Resistive heating of conductive materials

    b) Eddy current generation in conductive materials.

    c) Dielectric loss in insulators.

    d) Capacitive coupling

72. In power factor correction, what is the main goal?

    a) To reduce harmonic distortion

    b) To align voltage and current phases.

    c) To increase output voltage

    d) To reduce switching losses

73. Which drive system is commonly used in industrial robots for precise motion?

    a) Pneumatic drive b) Hydraulic drive

    c) Electric drive d) Manual drive

74. Which type of robot control system uses feedback to adjust motion?

    a) Non-servo control

    b) Servo control

    c) Manual control

    d) Open-loop control

75. What is a key advantage of robotics in manufacturing?

    a) Increased human error

    b) Improved precision and efficiency

    c) Higher operational costs

    d) Reduced production speed

76. Which of the following is NOT one of Asimov's Laws of Robotics?

    a) A robot must obey humans

    b) A robot must not harm humans

    c) A robot must maximize profits

    d) A robot must protect its own existence.

77. What is an advantage of a brushless permanent magnet DC motor?

    a) Requires frequent maintenance

    b) Higher efficiency and longer lifespan

    c) Lower torque output

    d) Complex control system

78. Which mechanical component is used to convert rotational motion to translational motion?

    a) Gear train b) Cam

    c) Ratchet and pawl d) Belt drive

79. Which component is central to a function generator using the 8038 IC?

    a) Voltage-controlled oscillator b) Microprocessor

    c) Digital-to-analog converter d) Spectrum analyzer

80. To maximize the output power of a solar cell, it must operate at

    a) Maximum voltage point b) Maximum current point

    c) Maximum power point (MPP) d) Zero current point

81. Electromagnetic waves travel through a vacuum at a speed of:

    a) 1.5 x 108 ?/s b) 3.0 x 108 ?/s

    c) 2.2 x 108?/s d) 4.0 x 108 ?/s

82. Phase velocity (vp) is defined as:

    a) The speed of energy transfer in a wave

    b) The speed at which a wave's peaks propagate

    c) The velocity of wave packets

    d) The product of wavelength and group velocity

83. Which material is commonly used to produce LEDs emitting visible light?

    a) Silicon

    b) Germanium

    c) Gallium Arsenide Phosphide

    d) Carbon

84. The process of light generation in a laser diode is known as

    a. Spontaneous emission b. Stimulated emission

    c. Absorption d. Photoelectric effect

85. Which of the following is not an lol platform?

    a) Amazon Web Services b) Microsoft Azure

    c) Salesforce d) Flipkart

86. Which layer is used for wireless connection in loT devices?

    a) Application layer b) Network layer

    c) Data link layer d) Transport layer

87. The difference between GPR and SFR in the PIC file register is,.....

    A) SFRs control the hardware peripherals, while GPRS are used for general data storage

    B) SFRs can only be accessed in 16-bit mode

    C) GPR is for instructions; SFR is for data

    D) GPRS are non-volatile; SFRs are volatile

88. When the PIC microcontroller enters 'Sleep Mode',

    A) The program memory is erased to save energy

    B) The CPU and most peripherals stop, reducing power consumption to a minimum

    C) The WDT is automatically disabled to prevent wake-ups

    D) The clock speed is doubled to finish tasks faster before shutting down

89. ..... register in the PIC18 is used to configure whether a port pin is an Input or an Output.

A) ADCON Register B) LAT Register

C) PORT Register D) TRIS Register

90. Analog Comparator in PIC microcontroller is used to

A) To generate a PWM signal for motor control

B) To compare two analog voltages and output a digital '1' or '0' based on the result

C) To amplify a weak signal for the ADC

D) To convert a digital value into an analog voltage

91. The Real-Time Clock (RTC) is used to

A) provide accurate time-of-day and calendar information.

B) control the speed of an external stepper motor

C) keep track of the processor's temperature

D) generate the main system clock frequency

92. In the PIC18 microcontroller each bank of the data memory contains ....bytes.

A) 1024 B) 512

C) 128 D) 256

93. In PIC18 microcontroller, the MCLR (Master Clear) pin is a part of .....

A) Clock Oscillator circuit

B) Analog-to-Digital converter circuit

C) Reset circuit

D) Voltage Regulator circuit

94. The main advantage of feed-forward control over a simple feedback control is

A) It can compensate for disturbances before they affect the process output.

B) It is simpler to implement and requires no mathematical model.

C) It eliminates the need for any sensors.

D) It guarantees zero steady-state error without feedback.

95. The main disadvantage of a simple On-Off controller is .....

A) It requires a complex mathematical model.

B) It causes constant oscillation around the setpoint.

C) It cannot be used for temperature control.

D) It is too expensive for simple applications.

96. When an Op-amp is used as a zero-crossing detector, the primary function of the circuit is .....

A) To filter out all high-frequency noise from the signal.

B) To amplify the input signal by a factor of zero.

C) To switch the output state whenever the input signal passes through zero volts.

D) To ensure the output voltage never exceeds zero volts.

97. When Op-amp circuit has a capacitor in the feedback path and a resistor at the input, it is called

A) Non-inverting comparator.

B) Integral controller.

C) Proportional controller.

D) Derivative controller.

98. A Hall effect sensor is used to detect .....

    A) Changes in light intensity.

    B) Magnetic fields.

    C) The capacitance of a non-metallic object.

    D) Physical contact with a lever.

99. In PLC, ... section is responsible for executing the control logic and managing memory.

    A) Input Module

    B) Power Supply

    C) Central Processing Unit (CPU)

    D) Output Module

100. In 'Automatic Traffic Light Control, ... is used to manage the sequence of Green, Yellow, and Red lights.

    A) Math instructions for division.

    B) Timers or Sequencers

    C) Normally Closed Pushbuttons.

    D) Floating point registers.

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