Seat No.	

ENT-34
Total No. of Pages : 20

M. SC. ELECTRONICS
RE-ENTRANCE EXAMINATION-2026
Subject Code : 58298

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Day and Date : Wednesday, 24-06-2026 **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 answer 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. What is the color code for resistance value 1KΩ.

   A) Brown, Black, Red B) Black, Brown, Red

   C) Red, Black, Brown D) Red, Brown, Black

2. Step-up transformer increases

   A) Current B) Voltage

   C) Power D) Resistance

3. Kirchhoff's Current Law (KCL) is based on conservation of

   A) Energy B) Charge

   C) Power D) Voltage

4. Thevenin equivalent consist of

   A) Only resistance

   B) Both current and voltage source

   C) Voltage source resistance

   D) Current source + resistance

5. Zener diode is used for

   A) Amplification B) Rectification

   C) Voltage regulation D) Oscillation

6. BCD represents cach decimal digit using

   A) 2 bits B) 3 bits

   C) 4 bits D) 8 bits

7. The output of XOR gate is HIGH when:

   A) Both inputs are HIGH. B) Both inputs are LOW.

   C) Inputs are same D) Inputs are different

8. A 4 variable K-map has how many cells?

   A) 4 B) 8

   C) 12 D) 16

9. Carry output of half adder is .....

   A) AND B) OR

   C) NAND D) XOR

10. Demultiplexer performs

    A) Data selection B) Data distribution

    C) Addition D) Storage

11. In BJT, cut-off region means

    A) Fully OFF B) Fully ON

    C) Saturation D) Partially ON

12. Thermal runaway occurs due to

    A) Decrease in temperature

    B) Constant current

    C) Increase in leakage current

    D) Decrease in β

13. Class B amplifier conducts for degree.

    A) 90 B) 180

    C) 270 D) 360

14. Positive feedback is used in.

    A) Amplifiers B) Oscillators

    C) Rectifiers D) Filters

15. Phase shift oscillator uses

    A) RC network B) LC network

    C) Transformer D) Crystal

16. 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

17. 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

18. 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

19. Which IC is commonly associated with a successive approximation ADC?

    a) ADC0804 b) DAC0808

    c) LM741 d) 555 Timer

20. In a dual slope ADC, what is the primary advantage over other ADC types?

    a) High speed

    b) High accuracy and noise rejection.

    c) Low cost

    d) Simple design

21. 7. A device that can both transmit and receive is called a:

    A. Transducer B. Duplexer

    C. Radar D. Modem

22. A cordless telephone using separate frequencies for transmission in base and portable units is known as

    A. duplex arrangement B. half duplex arrangement

    C. either (a) or (b) D. neither (a) nor (b)

23. For attenuation of high frequencies we should use

    A. shunt capacitance B. series capacitance

    C. inductance D. resistance

24. A modem is classified as low speed if data rate handled is

A. upto 100 bps B. upto 250 bps

C. upto 400 bps D. upto 600 bps

25. VSB modulation is preferred in TV because

A. it reduces the bandwidth requirement to half

B. it avoids phase distortion at low frequencies

C. it results in better reception

D. none of the above Answer:

26. The ALU of 8085 performs:

a) Only arithmetic operations

b) Only logical operations

c) Both arithmetic and logical operations

d) Control operations

27. In memory interfacing, address decoding is used to:

a) Select specific memory location

b) Perform arithmetic operations

c) Control program counter

d) Enable flag register

28. The accumulator in 8085 is:

a) 4-bit register b) 8-bit register

c) 16-bit register d) 32-bit register

29. To subtract contents of register B from accumulator, instruction is:

a) SUB B b) SBB B

c) CMP B d) DCR B

30. To mask lower nibble of accumulator, instruction is:

    a) ANI FOH b) ANI OFH

    c) ORI FOH d) XRI OFH

31. FDM stands for:

    a) Frequency Division Multiplexing

    b) Frequency Domain Modulation

    c) Frequency Data Multiplexing

    d) Frequency Delay Modulation

32. Cell splitting is used to:

    a) Increase coverage area

    b) Increase capacity

    c) Reduce interference

    d) Reduce power consumption

33. RFID stands for:

    a) Radio Frequency Identification

    b) Radio Frequency Interference Detection

    c) Remote Frequency Identification

    d) Radio Frequency Internal Device

34. CDMA stands for:

    a) Code Division Multiple Access

    b) Carrier Division Multiple Access

    c) Channel Division Multiple Access

    d) Control Division Multiple Access

35. Digital transmission is preferred because of

A) High noise immunity B) Simple design

D) No encoding needed C) Low bandwidth

36. Internal RAM size of 8051 is:

A) 64 bytes B) 128 bytes

C) 256 bytes D) 512 bytes

37. In 8051 microcontroller which instruction performs logical AND?

A) ORL B) ANL

C) XRL D) CPL

38. MOV A,#25H uses:

A) Register addressing B) Immediate addressing

C) Direct addressing D) Indirect addressing

39. The Program Status Word (PSW) register in 8051 is:

a) 4-bit b) 8-bit

c) 16-bit d) 32-bit

40. 8051 Microcontroller in Mode 1, the timer is:

a) 8-bit b) 16-bit

c) 32-bit d) 4-bit

41. Gross errors occur due to:

A) Human mistakes B) Calibration

C) Filtering D) Shielding

42. LVDT is used to measure:

A) Temperature B) Pressure

C) Linear displacement D) Humidity

43. PIR sensor detects:

A) Pressure B) Infrared radiation from humans

C) Humidity D) Voltage

44. LM35 is a:

A) Pressure sensor B) Current sensor

C) Temperature sensor D) Humidity sensor

45. Clipping circuits are used to:

A) Amplify signal

B) Remove unwanted portion of waveform

C) Generate oscillation.

D) Convert AC to DC

46. Active filters use:

A) Resistors only

B) Inductors only

C) Op-Amps with RC components

D) Transformers only

47. Resolution means:

A) Smallest detectable change B) Maximum range

C) Speed D) Stability

48. Which characteristic indicates closeness of repeated readings?

A) Sensitivity B) Accuracy

C) Precision D) Resolution.

49. 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

50. 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

51. 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

52. 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)

53. If an observation point is closely located to the source, then the field is termed as

    a. Induced b. Radiated

    c. Reflected d. Far-field

54. Which waveform plays a crucial role in determining the radiation pattern of the dipole/wire antennas?

    a. Current b. Voltage

    c. Frequency d. Phase

55. In flared transmission line, the radiation phenomenon increases due to in flaring

    a. Increase b. Decrease

    c. Stability d. None of the above

56. Which pattern is generated due to plotting of square of amplitude of an electric field?

    a. Field Pattern b. Voltage Pattern

    c. Power Pattern d. All of the above

57. ..... declaration statement is used to access the Special Function Register P1 at memory address 90H in 8051 C.

    A) unsigned char P1 = 90: B) bit P1 = 0 x 90;

    C) sfr P1 = 0 x 90; D) sbit P1 = 0 x 90;

58. .... C operator is used for toggling the bits of Port 1 to create a square wave.

    A) Bitwise OR (|) B) Bitwise NOT (~)

    C) Bitwise AND (&) D) Bitwise XOR (^)

59. In 8051-C, ... keyword is used to store a constant lookup table (like Seven Segment codes) in program memory, to ensure that it does not occupy Data RAM.

A) data B) idata

C) code D) pdata

60. In level-triggered mode, the external interrupt of 8051 is triggered when the pin is:

A) High

B) Low

C) Falling from High to Low

D) Rising from Low to High

61. To convert a BCD value to ASCII in C, ...

A) Add 0x30 to the BCD digit.

B) Subtract 0x30 from the BCD digit.

C) AND the value with 0x0F.

D) Multiply the value by 0x10.

62. .....register is used to set the baud rate for the 8051 serial port in Mode 1.

A) TCON B) THI

C) SBUF D) Timer 0

63. ..... is used to write the compiled 'Hex' file into the program memory of the 8051.

A) Device Programmer B) Simulator

C) In-Circuit Debugger D) Logic Analyzer

64. ..... pin of ADC0804 must be polled by 8051 microcontroller to determine if the analog-to-digital conversion is finished.

A) CLK IN B) CS

C) Vref/2 D) INTR

65. 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

66. 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

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

a) UPS b) SMPS

c) Electronic ballast d) Power factor correction

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

    a) Output voltage magnitude b) Input frequency

    e) Diode conduction time. d) Reverse recovery time

70. What is the primary role of the drift layer in a power diode?

    a) To increase forward voltage drop

    b) To enhance conductivity modulation

    c) To reduce reverse recovery time

    d) To block high voltages

71. Which phenomenon in power diodes reduces power loss during forward conduction?

    a) Reverse recovery effect

    b) Conductivity modulation

    c) Avalanche breakdown

    d) Zener effect

72. What is the main purpose of a base drive circuit in a power transistor?

    a) To control reverse recovery

    b) To provide sufficient base current for switching

    c) To limit collector-emitter voltage

    d) To reduce drift layer resistance

73. Which solid-state switch is commonly used for AC load control?

    a) MOSFET b) TRIAC

    c) Diode d) Bipolar transistor

74. What is a key consideration in mechanical aspects of motor selection?

    a) Display brightness

    b) Torque and speed requirements

    c) Color of the motor

    d) Type of display used

75. Which type of stepper motor combines features of both variable reluctance (VR) and permanent magnet (PM) designs?

    a) Hybrid b) Servo

    c) AC motor d) DC motor

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 a key advantage of robotics in manufacturing?

    a) Increased human error

    b) Improved precision and efficiency

    c) Higher operational costs

    d) Reduced production speed

78. 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

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

    a) Pneumatic drive b) Hydraulic drive

    c) Electric drive d) Manual drive

80. 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) 4.0 108 ?/s

81. 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.

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

    a) Silicon b) Germanium

    c) Gallium Arsenide Phosphide. d) Carbon

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

    a. Spontaneous emission.

    b. Stimulated emission

    c. Absorption

    d. Photoelectric effect

84. Which of the following is used to convert light signals into electrical signals?

    a) LED b) Photodiode

    c) Laser diode d) Solar cell

85. Which of the following is not an IoT device?

a) Table b) Laptop

c) Arduino d) Tablet

86. Which of the following is false about loT devices?

a) loT devices use the internet for collecting and sharing data

b) IoT devices need microcontrollers

c) lot devices use wireless technology

d) loT devices are completely safe

87. The primary function of the Watchdog Timer (WDT) in a PIC microcontroller is ..... .

A) To detect if the supply voltage drops below a safe level

B) To reset the microcontroller if the software hangs or enters an infinite loop

C) To manage the speed of the SPI bus

D) To keep track of the time of day

88. In PIC microcontroller..... register is used as the accumulator for arithmetic and logic operations.

A) STATUS Register B) WREG (Working Register)

C) BSR (Bank Select Register) D) FSR (File Select Register)

89. The Brown-out Reset (BOR) is required to

A) synchronize the CAN bus timing.

B) enable the ZigBee wireless interface

C) prevent the CPU from executing 'garbage' instructions at low voltage

D) charge the internal capacitors for the LCD driver

90. PIC18 is running at a crystal frequency (Fosc) of 20 MHz. The single instruction cycle (Tcy) takes .....

A) 50 ns B) 800 ns

C) 400 ns D) 200 ns

91. To convert a BCD digit to its ASCII equivalent .....operation is required.

A) XOR with 0 x FF

B) Subtract 0 x 30

C) Add 0 x 30

D) Shift the bits 4 times to the left

92. ..... PIC instruction is used to generate a short delay by doing nothing for exactly one instruction cycle.

A) RESET B) CLR

C) SLEEP D) NOP

93. In PIC18 port programming, setting TRISB0xFF results in .....

A) All pins of Port B are set to high voltage

B) Port B is disabled to save power

C) All pins of Port B are configured as inputs

D) All pins of Port B are configured as outputs

94. ..... is true about open-loop control system.

A) The control action is independent of the output.

B) The output is compared to a reference set point..

C) It requires feedback.

D) The system automatically corrects all the disturbances.

95. In a PID controller, ... term is responsible for eliminating steady-state error.

A) Proportional (P). B) Integral (I).

C) Derivative (D). D) Any of these

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

A) Non-inverting comparator.

B) Integral controller.

C) Proportional controller.

D) Derivative controller.

97. In an electrical control circuit, 'Relay' .....

A) converts AC power into DC power.

B) stores electrical energy for emergency use.

C) allows a low-power signal to switch a high-power circuit.

D) measures the speed of a rotating shaft.

98. The primary function of an 'Up/Down Counter' in an 'Automatic Car Parking' program is

A) to change the color of the traffic lights based on the time of day.

B) to increment for entering cars and decrement for exiting cars.

C) To measure the speed at which cars enter the garage.

D) To calculate the total revenue collected at the end of the day.

99. Which arithmetic instruction is most likely used to convert a raw sensor value (0-1000) into a percentage (0-100%) for an HMI display?

    A) ADD 100.

    B) A 'Jump to Label' instruction..

    C) DIV (Divide) by 10.

    D) A 'Normally Open' contact.

100. In a ladder diagram, what logic is created by placing two 'Normally Closed' (NC) contacts in SERIES?

    A) OR logic B) AND logic

    C) NAND logic D) NOR logic

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- Rough Work -