

|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

**P.G. Entrance Examination, July - 2023****M.Sc. ELECTRONICS****Sub. Code : 58298****Day and Date : Tuesday, 18 - 07 - 2023****Total Marks : 100****Time : 10.30 a.m. to 12.00 noon**

- 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.

- 1) In case of Kirchhoff's Current Law, currents meeting the junction point are considered \_\_\_\_\_.  
A) Positive  
B) Negative  
C) Zero  
D) None of the above
- 2) The superposition theorem is essentially based on the concept of \_\_\_\_\_.  
A) duality  
B) linearity  
C) reciprocity  
D) non-linearity
- 3) Thevenin's network gives an equivalent network in \_\_\_\_\_ form.  
A) shunt  
B) series  
C) ladder  
D) T
- 4) If  $R_s$  is the source resistance and  $R_L$  is the load resistance then according to maximum power transfer theorem, maximum power is delivered to the load if \_\_\_\_\_.  
A)  $R_s > R_L$   
B)  $R_s < R_L$   
C)  $R_s = R_L$   
D)  $R_s = R_L = 0$

**P.T.O.**

- 5) Inductive reactance is given by  $X_L = \underline{\hspace{2cm}}$ .
- A)  $2\pi fL$     B)  $4\pi fL$   
C)  $2\pi f$      D)  $2\pi L$
- 6) A multiplexer is also called as a \_\_\_\_\_.
- A) Coder    B) Parallel adder  
C) Data selector     D) NOR gate
- 7) Which number system has a base of 2?
- A) Decimal     B) Binary  
C) Hexadecimal     D) None of the above
- 8) The 2's complement of 1001
- A) 0110    B) 0111  
C) 0011    D) 0101
- 9) The sum of half adder is \_\_\_\_\_.
- A) A OR B     B) A Ex-OR B  
C) A AND B    D) A Ex-NOR B
- 10) A logic circuit for converting BCD code to 7 segment code is known as
- A) Multiplexer    B) Demultiplexer  
C) Decoder     D) Encoder
- 11) \_\_\_\_\_ device is used to design saw tooth oscillator.
- A) SCR     B) BJT  
C) UJT     D) FET
- 12) In case of negative feedback, feedback signal \_\_\_\_\_.
- A) reduces the signal voltage                               B) increases the signal voltage  
C) reduces the signal voltage to zero                    D) none of the above

- 13)** In phase shift oscillator, RC feedback network produces phase shift of \_\_\_\_\_.
- A) 180°
  - B) 360°
  - C) 90°
  - D) 270°
- 14)** In an NPN transistor the majority carriers in the emitter are \_\_\_\_\_.
- A) electrons
  - B) holes
  - C) both A and B
  - D) none of the above
- 15)** A JFET \_\_\_\_\_.
- A) is a voltage controlled device
  - B) is a current controlled device
  - C) has a low input resistance
  - D) has a very large voltage gain
- 16)** What does the acronym “IC” stand for in digital electronics?
- A) Integrated Circuit
  - B) Interface Converter
  - C) Input Controller
  - D) Inductive Capacitor
- 17)** Which logic gate produces a high output when all of its inputs are high?
- A) AND gate
  - B) OR gate
  - C) NOT gate
  - D) XOR gate
- 18)** What is the binary representation of the decimal number 10?
- A) 1010
  - B) 1100
  - C) 1001
  - D) 0110
- 19)** Which logic gate is equivalent to the Boolean expression “A + B”?
- A) AND gate
  - B) OR gate
  - C) NOT gate
  - D) XOR gate
- 20)** What is the basic building block of digital circuits?
- A) Transistor
  - B) Capacitor
  - C) Resistor
  - D) Diode

- 21) \_\_\_\_\_ capacitor store a higher amount of energy.  
 A) Mica capacitor  
 B) Air capacitor  
 C) Plastic  
 D) None of these
- 22) IGBT stands for \_\_\_\_\_.  
 A) Inductive gate bipolar transistor  
 B) Insulated gate bidirectional transistor  
 C) Insulated gate bipolar transistor  
 D) Insulator gate best transformer
- 23) In octal system \_\_\_\_\_ numbers is used.  
 A) 8  
 B) 9  
 C) 16  
 D) None of these
- 24) One of the following semiconductor material?  
 A) Copper  
 B) Silicon  
 C) Iron  
 D) None of these
- 25) PAC stands for \_\_\_\_\_.  
 A) Permanent angle converter  
 B) Phase angle converter  
 C) Phase angle components  
 D) Phase angle capacitor
- 26) In 8085 microprocessors, how many interrupts are maskable.  
 A) Two  
 B) Three  
 C) Four  
 D) Five
- 27) Which stack is used in 8085 microprocessors?  
 A) FIFO  
 B) FILO  
 C) LIFO  
 D) LILO

- 28) Which one of the following addressing technique is not used in 8085 microprocessor?
- A) Register
  - B) Immediate
  - C) Register indirect
  - D) Relative
- 29) The program counter in 8085 microprocessors is a 16-bit register, because
- A) It counts 16 bits at a time
  - B) There are 16 address times
  - C) It facilitates the users storing 16-bit data temporarily
  - D) It has to fetch two 8-bit data at a time.
- 30) A direct memory access (DMA) transfer replies
- A) Direct transfer of data between memory and accumulator
  - B) Direct transfer of data between memory and I/O devices without the use of microprocessor
  - C) Transfer of data exclusively within microprocessor registers
  - D) A fast transfer of data between microprocessor and I/O devices
- 31) How many voltage levels are present in a PWM signal?
- A) 0
  - B) 1
  - C) 2
  - D) 3
- 32) Pulse code modulation is a type of \_\_\_\_\_ modulation.
- A) Analog
  - B) Angle
  - C) Digital
  - D) None of the above
- 33) The pulse position modulation is a type of \_\_\_\_\_ modulation.
- A) Analog
  - B) Angle
  - C) Digital
  - D) None of the above

- 34)** Indicate which of the following system is digital?  
A) PPM B) PWM  
C) PDM D) PCM
- 35)** GSM stands for \_\_\_\_\_.  
A) General System for Mobile Communication  
B) Global System for Mobile Communication  
C) Guided System for Mobile Communication  
D) Growing System for Mobile Communication
- 36)** Which of the following interrupt is both level and edge sensitive?  
A) RST 5.5 B) INTR  
C) RST 7.5 D) TRAP
- 37)** The addressing mode in instruction PUSH B is  
A) direct B) register  
C) register indirect D) immediate
- 38)** What is mean by ALU?  
A) Arithmetic logic upgrade B) Arithmetic logic unsigned  
C) Arithmetic local unsigned D) Arithmetic logic unit
- 39)** In 8085 name of the 16 bit registers is  
A) stack pointer B) program counter  
C) both A and B D) none of these
- 40)** In 8085, 16-bit address bus, which can address upto?  
A) 16KB B) 32KB  
C) 64KB D) 128KB

- 41) MVI K,20F is an example of?
- A) Immediate addressing mode
  - B) Register addressing mode
  - C) Direct addressing mode
  - D) Indirect addressing mode
- 42) What is the frequency of the clock that is being used as the clock source for the timer?
- A) some externally applied frequency  $f'$
  - B) controller's crystal frequency  $f$
  - C) controller's crystal frequency  $/12$
  - D) externally applied frequency  $/12$
- 43) What is the function of the TMOD register?
- A) TMOD register is used to set various operation modes of timer/counter
  - B) TMOD register is used to load the count of the timer
  - C) Is the destination or the final register where the result is obtained after the operation of the timer
  - D) Is used to interrupt the timer
- 44) Auto reload mode is allowed in which mode of the timer?
- A) Mode 0
  - B) Mode 1
  - C) Mode 2
  - D) Mode 3
- 45) The number of bits transmitted or received per second is defined as
- A) transmission rate
  - B) reception rate
  - C) transceiver rate
  - D) baud rate
- 46) Sensor provides output signal depending on \_\_\_\_\_.
- A) Input
  - B) Physical quantity
  - C) Both A and B
  - D) None of the above

- 47) LDR sensor is abbreviated as \_\_\_\_\_.
- A) Light Dependent Resistor                      B) Light determinant Resistor  
C) Luminous Duplicated Resistor                D) None of the above
- 48) Which \_\_\_\_\_ sensors resistance value varies with respect to light intensity?
- A) LDR    B) Photosensitive  
C) Bio    D) All the above
- 49) The output generated by the piezoelectric sensor is \_\_\_\_\_.
- A) Mechanical    B) Electric charge  
C) Chemical    D) All the above
- 50) Which of the following is applications of IR sensor?
- A) TV remote    B) Burglar alarm  
C) Robotics    D) All the above
- 51) LM35 sensor IC is an example of \_\_\_\_\_ sensor.
- A) Temperature                                        B) Light  
C) IR    D) PIR
- 52) Which among the following is an application of high frequency?
- A) SONAR    B) Subsurface communication  
C) Radio navigation                                    D) Facsimile
- 53) Wavefront is basically a locus of points acquiring similar \_\_\_\_.
- A) Phase    B) Frequency  
C) Amplitude    D) Wave equation
- 54) In which kind of waveform is the phase velocity defined?
- A) Sinusoidal    B) Rectangular  
C) Square     D) Triangular



- 55) Power density is basically termed as \_\_\_\_\_ power per unit area.
- A) Reflected
  - B) Refracted
  - C) Radiated
  - D) Diffracted
- 56) Which ionization layer exists during day time & usually vanishes at night due to highest recombination rate?
- A) D-region
  - B) Normal E-region
  - C) Sporadic E-region
  - D) Appleton region
- 57) What is the possible range of height for the occurrence of sporadic E-region with respect to normal E-region?
- A) 20 km - 50 km
  - B) 45 km - 85 km
  - C) 90 km - 130 km
  - D) 140 km - 200 km
- 58) The 8051 program counter is \_\_\_\_\_ bit wide.
- A) 4
  - B) 8
  - C) 14
  - D) 16
- 59) In 8051 \_\_\_\_\_ is true.
- A) DPH is 16 bit register and DPL is 8 bit register
  - B) DPH is used for long addressing, and DPL is used for relative addressing
  - C) Both DPH and DPL are 8 bit registers
  - D) None of these
- 60) \_\_\_\_\_ is true about Z-flag of 8051.
- A) There is no Z flag in 8051
  - B) Z flag is present in PSW SFR of 8051
  - C) Z flag is present in STATUS register of 8051
  - D) None of these

- 61) The 8051 microcontroller has \_\_\_\_\_ byte internal RAM.  
A) 32  
B) 64  
C) 128  
D) 256
- 62) 7-segment display is typically used for displaying \_\_\_\_\_.  
A) numbers 0-9  
B) alphabets a-z  
C) alphabets A-Z  
D) all of the above
- 63) DAC0808 is \_\_\_\_\_.  
A) 8-channel 8-bit D-A Converter  
B) 8-channel 8-bit A-D Converter  
C) 8-bit D-A Converter  
D) 8-bit A-D Converter
- 64) LM35 is a \_\_\_\_\_.  
A) temperature sensor  
B) temperature and humidity sensor  
C) moisture sensor  
D) smart sensor
- 65) \_\_\_\_\_ is used to monitor microcontroller programs to see if they are out of control and generate system reset.  
A) INT0  
B) watchdog timer  
C) Brownout detector  
D) RTC
- 66) Which power electronic device is capable of handling high voltage and current levels?  
A) Diode  
B) MOSFET  
C) IGBT  
D) SCR
- 67) Which power electronic device is known as a “bistable switch”?  
A) Diode  
B) Transistor  
C) Thyristor  
D) MOSFET



- 75) What is the purpose of a spectrum analyzer in electronic instrumentation?
- A) Measure voltage levels
  - B) Measure resistance
  - C) Analyze frequency components in a signal
  - D) Measure current flow
- 76) Which instrument is used to measure the intensity of light?
- A) Voltmeter
  - B) Ammeter
  - C) Luxmeter
  - D) Ohmmeter
- 77) Which programming language is commonly used for controlling robots?
- A) Python
  - B) C++
  - C) Java
  - D) All of the above
- 78) What is the term used to describe a robot's ability to perform tasks autonomously?
- A) Automation
  - B) Programming
  - C) Machine learning
  - D) Artificial intelligence
- 79) What is the purpose of a mobile robot?
- A) To perform tasks in a fixed location
  - B) To move from one location to another
  - C) To interact with humans
  - D) To perform tasks with high precision
- 80) Which power electronic device is used for voltage regulation and reactive power compensation in power systems?
- A) Diode
  - B) MOSFET
  - C) IGBT
  - D) SVC

- 81) Multimode step index fiber has \_\_\_\_\_.
- A) Large core diameter & large numerical aperture
  - B) Large core diameter and small numerical aperture
  - C) Small core diameter and large numerical aperture
  - D) Small core diameter & small numerical aperture
- 82) A typically structured glass multimode step index fiber shows as variation of attenuation in range of \_\_\_\_\_.
- A) 1.2 to 90 dB km<sup>-1</sup> at wavelength 0.69μm
  - B) 3.2 to 30 dB km<sup>-1</sup> at wavelength 0.59μm
  - C) 2.6 to 50 dB km<sup>-1</sup> at wavelength 0.85μm
  - D) 1.6 to 60 db km<sup>-1</sup> at wavelength 0.90μm
- 83) Multimode step index fiber has a large core diameter of range is \_\_\_\_\_.
- A) 100 to 300 μm
  - B) 100 to 300 nm
  - C) 200 to 500 μm
  - D) 200 to 500 nm
- 84) Multimode graded index fibers are manufactured from materials with \_\_\_\_\_.
- A) Lower purity
  - B) Higher purity than multimode step index fibers
  - C) No impurity
  - D) Impurity as same as multimode step index fibers
- 85) The performance characteristics of multimode graded index fibers are \_\_\_\_\_.
- A) Better than multimode step index fibers
  - B) Same as multimode step index fibers
  - C) Lesser than multimode step index fibers
  - D) Negligible

- 86) Multimode graded index fibers with wavelength of  $0.85\mu\text{m}$  have numerical aperture of 0.29 have core/cladding diameter of \_\_\_\_\_.
- A)  $62.5\mu\text{m}/125\mu\text{m}$                                       B)  $100\mu\text{m}/140\mu\text{m}$   
C)  $85\mu\text{m}/125\mu\text{m}$                                       D)  $50\mu\text{m}/125\mu\text{m}$
- 87) PIC 16Cxxx or 16Fxxx family has \_\_\_\_\_ instructions.
- A) 35    B) 64  
C) 126    D) 128
- 88) PIC 16CCxxx or 16Fxxx family has \_\_\_\_\_ bit instructions.
- A) 12    B) 14  
C) 16    D) 32
- 89) \_\_\_\_\_ register of PIC microcontroller sets input or output direction for each port pin.
- A)  $\text{PORT}_x$     B)  $\text{TRIS}_x$   
C)  $\text{DIR}_x$     D)  $\text{LAT}_x$
- 90) Most port pins of PIC microcontroller have \_\_\_\_\_ source/sink capability.
- A) 500  $\mu\text{A}$     B) 1.6mA  
C) 4 mA    D) 25mA
- 91) PIC USART generates interrupt on \_\_\_\_\_.
- A) TX buffer empty and RX buffer full  
B) RX buffer empty and TX buffer full  
C)  $\text{RI} = 1 \text{ AND } \text{TI} = 1$   
D)  $\text{RI} = 1 \text{ OR } \text{TI} = 1$
- 92) I<sup>2</sup>C is a \_\_\_\_\_.
- A) 1 wire interface    B) 2 wire interface  
C) 3 wire interface    D) 4 wire interface

- 93) SPI offers \_\_\_\_\_ speed.
- A) <100 kbps
  - B) <400 kbps
  - C) >1 mbps
  - D) >100 mbps
- 94) \_\_\_\_\_ is not true.
- A) ON-OFF control is an open-loop control system
  - B) Proportional control closed-loop control system
  - C) PI control is a closed-loop control system
  - D) None of these
- 95) \_\_\_\_\_ is a Discrete Control System.
- A) ON-OFF control
  - B) Proportional control
  - C) PI control
  - D) PID control
- 96) \_\_\_\_\_ can be easily used as zero-crossing detector.
- A) BJT
  - B) JFET
  - C) MOSFET
  - D) Op-amp
- 97) \_\_\_\_\_ control can be employed using op-amp.
- A) ON-OFF control
  - B) Proportional control
  - C) PI control
  - D) All of the above
- 98) \_\_\_\_\_ is not an output device.
- A) Relay
  - B) Solenoid
  - C) Sensor
  - D) Motor
- 99) \_\_\_\_\_ is an electric actuator.
- A) Reed relay
  - B) Triac
  - C) Servo motor
  - D) All of these
- 100) PLC programming uses \_\_\_\_\_.
- A) Ladder diagram
  - B) ALP
  - C) HLL
  - D) None of these



**Rough Work**