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Reg. No.

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V Semester B.Sc. Degree Examination, April - 2022

ELECTRONICS

Communication - I

(CBCS Scheme 2018 - 19 on wards)

Paper: (EL - 501T)



Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

- 1) Answer all questions from part A, any five questions from Part B and any four questions from Part C
- 2) Answer all the questions of part A in any one page, the same questions answered multiple times will not be evaluated.

PART - A

Answer all the sub divisions

(15×1=15)

1. i) Atmospheric noise is a type of
 - a) Internal noise
 - b) External noise
 - c) Johnson noise
 - d) Shot noise.
- ii) Noise figure is equal to _____
 - a) $\frac{\text{Output S/N}}{\text{Input S/N}}$
 - b) $\frac{\text{Input S/N}}{\text{Output S/N}}$
 - c) $\frac{\text{O/p Signal Voltage}}{\text{O/p Noise voltage}}$
 - d) $\frac{\text{O/p Noise voltage}}{\text{O/p Signal Voltage}}$
- iii) When a transmission line has a load impedance same as that of the characteristic impedance, the line is said to be _____
 - a) Parallel
 - b) Perpendicular
 - c) Polarised
 - d) Matched

[P.T.O.]



- iv) The Radio wave responsible for long-distance communications by multiple skips is:
- a) Ground Wave b) Direct Wave
 - c) Surface Wave d) Sky wave
- v) In frequency Modulation systems, theoretical value of Bandwidth is
- a) Double the modulating signal frequency b) Zero
 - c) Equal to the modulating signal frequency d) Infinity.
- vi) In Amplitude modulation, if the modulation index is more than 100%, recovered signal is _____
- a) Attenuated b) Distorted
 - c) Undistorted d) Of Double the frequency.
- vii) De-emphasis is used in FM Super Heterodyne Radio Receivers in order to
- a) Boost the high frequencies of the audio signal.
 - b) Attenuate the high frequencies of the audio signal
 - c) Boost the RF signal
 - d) Attenuate the RF signal.
- viii) Standard value of I.F. used in AM broadcast super Heterodyne Radio Receivers is:
- a) 10.7 MHz b) 33.4 MHz
 - c) 455 kHz d) 525 kHz
- ix) Antenna which radiates signal uniformly in all directions is called _____
- a) Unidirectional Antenna b) Bidirectional Antenna
 - c) Narrow band Antenna d) Isotropic Antenna.
- x) The length of a Folded dipole antenna at an operating frequency is equal to _____
- a) Wavelength of the signal b) Half wavelength of the signal
 - c) $3/4^{\text{th}}$ wavelength of the signal d) Quarter wavelength of the signal.
- xi) Helical Antenna is often used w
- a) For good radiation b) For satellite tracking at VHF
 - c) In mobile phones d) Due to small size.
- xii) Non-Resonant Antenna has
- a) More radiation efficiency b) No standing waves
 - c) Standing waves d) Reflected wave.

- xiii) A loop antenna gives _____ polarization.
- a) Horizontal b) Vertical
- c) Circular d) Unidirectional
- xiv) Vestigial sideband transmission in TV Broadcasting is used to
- a) Increase the bandwidth of the channel
- b) Reduce the bandwidth of the transmitted signal
- c) Incorporate the synchronising pulse.
- d) Mix the colour signals.
- xv) In colour Tv system, when the Green colour is added to RED, the secondary colour produced is:
- a) Magenta b) Green
- c) Yellow d) White.

PART - B

Answer any five questions.

(5×7=35)

2. a) Draw the equivalent circuit of a transmission line at low frequencies. Define its primary constants.
b) Define "Signal to Noise Ratio". (5+2)
3. a) Derive an expression for instantaneous voltage of an AM wave and draw the frequency spectrum diagram.
b) Draw the circuit of an AM collector modulator. (5+2)
4. Draw the Block diagram of an FM transmitter with AFC and explain the function of each block.
5. a) Define the terms 'Sensitivity' and 'Selectivity' with respect to a radio receiver.
b) Draw the Block diagram of AM super heterodyne receiver and explain the function of each block. (2+5)
6. a) Draw the circuit of a slope detector and explain its working.
b) What is the function of Limiter in FM receivers. (5+2)
7. Define the following terms with respect to an Antenna.
 - i) Band width
 - ii) Beam width
 - iii) Polarisation
 - iv) Directivity
 - v) Efficiency.

[P.T.O.]



8. a) Draw the radiation pattern for a Resonant Antenna of Length $l = \lambda$.
b) With a Schematic diagram, explain the working of a vidicon Camera tube. (1+6)
9. Draw the block diagram of a Monochrome TV receiver and mention the function of each block.

PART - C

Answer any four questions

(4×5=20)

10. Calculate the noise voltage at the input of a TV RF amplifier, using a device that has a 600Ω equivalent noise resistance. The bandwidth of the amplifier is 7 MHz, and the temperature is 20°C .
11. The carrier component in a certain AM signal is of 600W. Calculate the total power in AM wave and power carried by each of the side-bands in the following cases.
i) $m_a = 40\%$ ii) $m_a = 80\%$
12. In an FM system, when the audio frequency and voltage values are 5 kHz and 5V respectively, the deviation is 40 kHz. If the audio frequency and the voltage values are increased to 10 kHz and 20 V respectively, What is the new deviation? Find the modulation Index in each case.
13. Draw the circuit of a Linear diode detector and explain its working.
14. A horizontal wire antenna of length 4m, has rms current of 2A flowing through it. If the signal frequency is 5 MHz, Calculate
a) Radiation resistance
b) Radiation efficiency and
c) Total power radiated if the loss resistance of the antenna is 12Ω
15. Calculate the horizontal and vertical frequencies of interlaced scanning in the following systems.
a) 525 lines and 30 frames/sec.
b) 425 lines and 60 fields/sec.
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V Semester B.Sc. Degree Examination, April - 2022

ELECTRONICS

Microprocessor and Electronic Instrumentation

(CBCS Scheme 2018 - 2019 onwards)

Paper : VI (EL - 502T)



Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

Answer all questions of Part A, any five questions from Part B, and any four questions from part C answer all questions of part - A in any one page, the same question answered multiple times will not be considered for evaluation.

PART - A

Answer all the sub questions:

(15×1=15)

1. i) A crystal of 6 MHz is connected to 8085 microprocessor, so internally it works with ____ Mhz
 - a) 6
 - b) 9
 - c) 3
 - d) 12
- ii) There are _____ numbers of flag bit in 8085 microprocessor.
 - a) Sixteen
 - b) Eight
 - c) Four
 - d) Five
- iii) Operand in the mnemonics will represent.
 - a) Data or address
 - b) Operation to be performed
 - c) Opcode
 - d) None
- iv) _____ instruction will return the control back from the sub program
 - a) RAR
 - b) RET
 - c) RRC
 - d) RAC

[P.T.O.]



- v) LDAX B is _____ addressing mode
- a) Direct
 - b) Indirect
 - c) Implicit
 - d) Immediate
- vi) The Instruction DAA is used to convert
- a) BCD to binary
 - b) Binary to BCD
 - c) Hexadecimal to binary
 - d) Binary to hexadecimal.
- vii) The I/O instruction to receive data from accumulator to address 80H is
- a) MVI A, 80H
 - b) OUT 80H
 - c) IN 80H
 - d) LDA 80H
- viii) The correct ascending sequence of hierarchy in priority of interrupt in 8085 is
- a) RST 7.5, RST 6.5, RST 5.5, TRAP.
 - b) TRAP, RST 7.5, RST 6.5, RST 5.5
 - c) TRAP, RST 5.5, RST 6.5, RST 7.5.
 - d) RST 5.5, RST 6.5, RST 7.5, TRAP.
- ix) Control Signal \overline{RD} is not required to interface.
- a) LED display
 - b) ROM
 - c) PPI
 - d) RAM
- x) Capacitor transducer can be used to measure.
- a) Displacement
 - b) Pressure
 - c) Temperature
 - d) Both (a) and (b)
- xi) Two dissimilar metals connected together forms.
- a) Thermo couple
 - b) Thermistors
 - c) Ultrasonic temperature transducer
 - d) None of the above.
- xii) Photoelectric transducers convert light energy into
- a) Displacement
 - b) Electrical energy.
 - c) Illumination
 - d) Pressure.
- xiii) MIC converts _____ into electric signal
- a) Light
 - b) Heat
 - c) Pressure
 - d) None of the above.



- xiv) _____ transducer requires energy for translating the changes due to measurand
- a) Active
 - b) Photoelectric
 - c) Crystal
 - d) Passive.
- xv) EMG measurement is done with the help of _____ electrode.
- a) Needle
 - b) Scalp
 - c) Skin
 - d) Contact.

PART - B

Answer any five questions.

(5×7=35)

2. Explain register organization of 8085 microprocessor.
3. Explain the following instructions.
 - a) DAD B
 - b) SBB B
 - c) RAL
 - d) XCHG
4. What is stack pointer? Explain PUSH and POP instructions with an example.
5. Write an ALP to find the number of 1's and 0's in the data 9DH and indicate the result.
6. Explain the various interrupts available in 8085 microprocessor.
7.
 - a) Draw the control word format of IC 8255.
 - b) Draw the structure of LVDT and mention the principle of it.
8. Explain the block diagram of carrier amplifier.
9. Draw and explain the block diagram of ECG.

PART - C

Answer any four questions

(4×5=20)

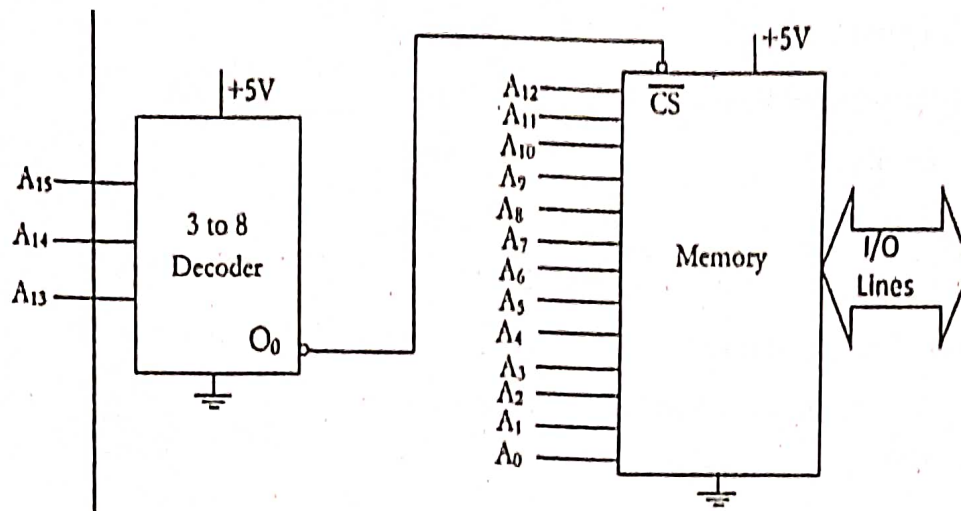
10. Draw the architecture of 8085
11. Calculate the total time delay generated by the given loop with clock frequency 3MHz.

	MVID, CDH	7T
Loop2:	MVI E, F0H	7T
Loop1:	DCR E	4T
	JNZ Loop1	10T
	DCR D	4T
	JNZ Loop2	10T

[P.T.O.]



12. Identify the chip select address and memory range for the given interfacing.



13. The expected value of the voltage across a resistor is 6V. However, the measurement gives a value of 5.95V.

Calculate

- Absolute error
 - Percentage error,
 - Relative accuracy and
 - Percentage of accuracy.
14. Write a note on origin of bio electrical signal.
15. Draw the block diagram of EEG and explain the working of filter section.