



100337

GN-262

V Semester B.Sc. Examination, December - 2019
(CBCS) (F+R) (2016-17 & Onwards)
ELECTRONICS - V
EL501 : COMMUNICATION - I



Time : 3 Hours

Max. Marks : 70

- Instructions :** (i) Answer **all** questions from **Part - A**, **any five** questions from **Part - B** and **any four** questions from **Part - C**.
(ii) Answer **all** questions from **Part - A** in **any one** page, the same question answered multiple times will not be considered for evaluation.

PART - A

Answer **all** the subdivisions.

15x1=15

1. (i) The Noise Figure of an ideal amplifier is _____.
(a) 1 (b) 0 (c) ∞ (d) None
- (ii) Z and Y are _____ constants of transmission line.
(a) primary (b) secondary
(c) tertiary (d) none of the above
- (iii) Signal fading in communication system is because of _____.
(a) interference of signals
(b) absorption of signals by earth surface
(c) both (a) and (b)
(d) none of the above
- (iv) In AM, if depth of modulation increases, then its total radiated power _____.
(a) increases (b) no change
(c) decreases (d) none of the above
- (v) A pre-emphasis circuit is used in FM transmitter to increase the amplitude of _____.
(a) lower audio frequencies (b) higher audio frequencies
(c) carrier frequency (d) none of the above
- (vi) The frequency spectrum allocated for AM transmission is _____.
(a) 535 kHz - 1605 kHz (b) 88 MHz - 108 MHz
(c) 535 MHz - 1605 MHz (d) 88 kHz - 108 kHz

P.T.O.



- (vii) The Intermediate Frequency (IF) of Super Heterodyne FM receiver is _____.
(a) 225 kHz (b) 10 MHz
(c) 455 kHz (d) 10.7 MHz
- (viii) Varactor diode is used in FM detector to _____.
(a) maintain standard frequency deviation
(b) change the amplitude of FM signals
(c) change the IF frequency
(d) all the above
- (ix) Which of the following is the same in AM and FM receivers ?
(a) discriminator (b) limiter
(c) IF amplifier (d) all of the above
- (x) Which antenna receives signal in all direction ?
(a) bidirectional antenna (b) unidirectional antenna
(c) isotropic antenna (d) none of the above
- (xi) The grounded antenna is also called _____.
(a) Marconi antenna (b) Loop antenna
(c) Helical antenna (d) None of the above
- (xii) The total length of a folded dipole antenna is _____.
(a) quarter wavelength (b) half wavelength
(c) several wavelength (d) none of the above
- (xiii) American TV system has _____ number of horizontal lines per frame.
(a) 405 (b) 525
(c) 625 (d) none of above
- (xiv) The aspect ratio of a TV receiver picture tube is _____.
(a) 2:1 (b) 4:3 (c) 1:2 (d) 3:4
- (xv) In colour TV, RED+BLUE= _____.
(a) green (b) magenta (c) cyan (d) white

PART - B

Answer **any five** questions.

5x7=35

2. (a) Define signal to noise ratio and noise figure. **2+5**
(b) Explain in brief sky wave propagation.
3. (a) What is a transmission line ? Define its primary and secondary constants. **3+4**
(b) With a circuit diagram, explain the working of an AM collector modulator.
4. Draw and explain the block diagram of FM transmitter with AFC. **7**



5. (a) With a circuit diagram explain the working of a AM transistor detector. 4+3
(b) Draw the block diagram of AM super heterodyne Radio receiver.
6. (a) Explain the need for de-emphasis in FM receiver. 2+5
(b) List the characteristics of radio receiver and explain.
7. (a) Define the terms : 3+4
(i) bandwidth
(ii) beamwidth
(iii) directive gain with respect to an antenna.
(b) Write a note on :
(i) loop antenna
(ii) helical antenna
8. (a) Distinguish between resonant and non resonant antenna. 3+4
(b) What are blanking and synchronizing pulses in TV systems ?
9. Draw the block diagram of a monochrome TV transmitter and explain in brief the function of each block. 7

PART - CAnswer **any four** questions.**4x5=20**

10. Calculate the rms noise voltage appearing across a 20 k Ω resistor at 25°C ambient temperature with an effective noise bandwidth of 10 kHz. If the temperature is decreased to 17°C, calculate the new rms noise voltage. 5
11. Find the percentage of modulation in the following cases : 5
(i) $V_{\max} = 10$ Volts and $V_{\min} = 4$ Volts
(ii) $I_t = 5$ A and $I_c = 4.8$ A
12. In FM modulating frequency is 15 kHz and frequency deviation is 75 kHz, calculate the carrier swing, modulation index and bandwidth. 5
13. What is an image frequency ? How its rejection is achieved ? 5
14. Find the radiation resistance of a dipole antenna of length $\lambda/2$ also find antenna efficiency, if the ohmic loss resistance of the dipole antenna is (i) 5 Ω (ii) 180 Ω 5
15. In a colour TV system the signal voltages corresponding to the three primary RGB colours are given as 4 mV, 3 mV and 2 mV respectively. Calculate voltages corresponding to Y, I and Q signals. 5



100315

GN-263

V Semester B.Sc. Examination, December - 2019
(CBCS) (F+R) (2016-17 and Onwards)
ELECTRONICS - VI



EL502 : Microprocessor and Electronic Instrumentation

Time : 3 Hours

Max. Marks : 70

- Instructions :** (i) Answer **all** questions from **Part - A**, **any five** questions from **Part - B** and **any four** questions from **Part - C**.
(ii) Answer **all** questions of **Part - A** in **one page**. The same question answered multiple times will not be considered for evaluation.

PART - A

Answer **all** the subdivisions :

15x1=15

1. (i) Which among the following is **not** a microprocessor ?
(a) 8080 (b) 8051
(c) 8085 (d) 8086
- (ii) 8085 microprocessor has _____ bit address bus and _____ bit data bus.
(a) 4 and 8 (b) 8 and 8
(c) 16 and 8 (d) 8 and 16
- (iii) A program written in mnemonics is called _____.
(a) assembly language program
(b) high level language
(c) machine level language program
(d) all the above
- (iv) Instruction CP means _____.
(a) Call on Positive (b) Call on Parity
(c) Check Parity (d) Compare Positive
- (v) After the execution of POP instruction, the value of stack pointer is _____.
(a) incremented by 1 (b) decremented by 1
(c) incremented by 2 (d) decremented by 2

P.T.O.



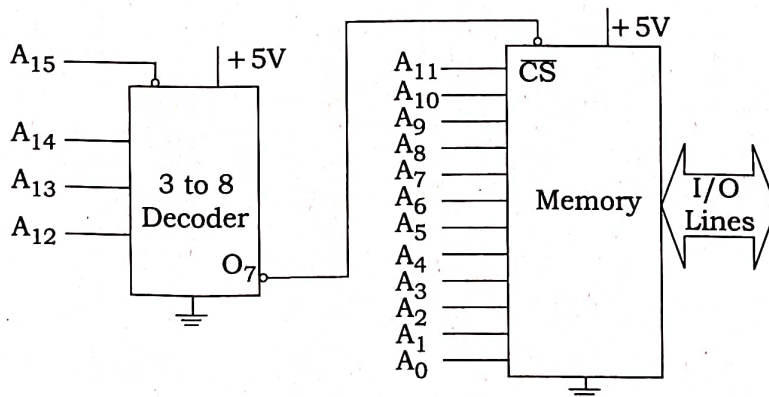
- (vi) Which is an example of implicit addressing ?
(a) MOV A,A (b) CMA
(c) MOV A,M (d) LHLD Addr.
- (vii) The I/O instruction to read data from location 40H is _____.
(a) IN 40H (b) OUT 40H
(c) MOV A, 40H (d) MOV A, M
- (viii) Control signal \overline{WR} is **not** required to interface _____.
(a) RAM (b) ROM
(c) PPI (d) display
- (ix) In 8255 mode 2, Port A uses _____.
(a) five lines of port C (b) three lines of port C
(c) six lines of port C (d) eight lines of port C
- (x) The dynamic characteristics of an instrument should have high _____.
(a) fidelity (b) lag
(c) dynamic error (d) all the above
- (xi) An active transducer is _____.
(a) self generating (b) dependent on external supply
(c) both (a) and (b) (d) none of the above
- (xii) Thermistors are made of _____.
(a) two dissimilar metals (b) only metallic conductors
(c) semiconductor materials (d) two similar metals
- (xiii) A single transistor dynamic switch which converts low level dc signal to an ac waveform is _____.
(a) chopper amplifier (b) carrier amplifier
(c) lock in amplifier (d) oscillator
- (xiv) When a cell is depolarized its potential will be approximately _____.
(a) +90 mV (b) +20 mV
(c) -20 mV (d) -90 mV
- (xv) Strain gauge transducers are used to measure _____.
(a) blood flow (b) oximetry
(c) blood pressure (d) phonocardiogram

**PART - B**Answer **any five** questions :**5×7=35**

2. Explain register organization of 8085 microprocessor. **7**
3. Classify 8085 instruction set and explain the following instructions : **7**
(a) CPI 8-bit (b) SBB B (c) RRC
4. Draw and explain the timing diagram of MVI A, FFH. **7**
5. (a) Write a program to add "n" one byte numbers. **5+2**
(b) What is subroutine ? Why it is required ?
6. Explain the block diagram of matrix key board interfacing with 8085. **7**
7. (a) Draw the functional block diagram of 8255. **4+3**
(b) Write a note on loudspeaker.
8. Explain the construction and working of LVDT. **7**
9. Draw and explain the block diagram of ECG. **7**

PART - CAnswer **any four** questions.**4×5=20**

10. Draw the architecture of 8085. **5**
11. Calculate the total time delay generated for the following program with clock frequency 3 MHz. **5**
MVI B, 38H 7 T states
Loop2: MVI C, FFH 7 T states
Loop1: DCR C 4 T states
JNZ Loop1 10/7 T states
DCR B 4 T states
JNZ Loop2 10/7 T states
12. Identify the chip select address and memory range for the given interfacing. **5**

**P.T.O.**



13. The expected value of the voltage across a resistor is 5 V. However, the measurement gives a value of 4.75 V. 5

Calculate (i) absolute error, (ii) percentage error, (iii) relative accuracy and (iv) percentage of accuracy.

14. Write a note on the origin of bioelectric signals. 5

15. Draw the block diagram of EEG and explain the working of filter section. 5

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