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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.



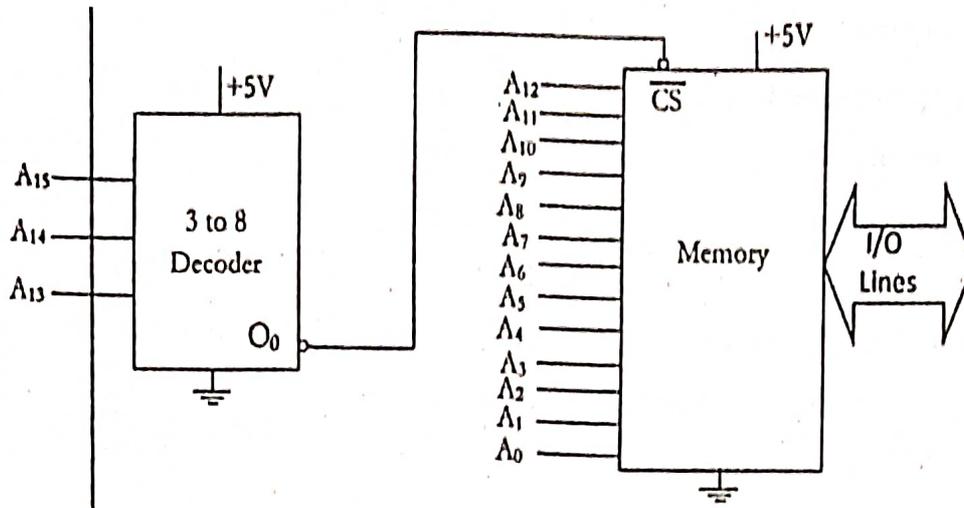
8. a) Draw the radiation pattern for a Resonant Antenna of Length $l = \lambda$.
b) With a Schematic diagram, explain the working of a vidicon Camera tube. (1+6)
9. Draw the block diagram of a Monochrome TV receiver and mention the function of each block.

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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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.