

**K-429**

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Roll No. ....

## **MPHY-609**

### **COMMUNICATION SYSTEM**

M.Sc. Physics (MSCPHY)

4th Semester Examination, 2023 (Dec.)

**Time : 2 Hours]**

**[Max. Marks : 35**

**Note :** This paper is of Thirty Five (35) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein. Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

### **SECTION–A**

**(Long Answer Type Questions)**

**Note :** Section 'A' contains Five (05) long answer type questions of Nine and Half ( $9\frac{1}{2}$ ) marks each. Learners are required to answer any Two (02) questions only.

( $2 \times 9\frac{1}{2} = 19$ )

1. Derive an expression for the induced current, output power delivered and efficiency of the two cavity klystron.
2. Discuss the construction and working of Travelling Wave Tube with suitable diagram. What are the applications of Travelling Wave Tube?
3. What is amplitude modulation? Describe an amplitude modulated transmitter using block diagram.
4. What do you understand by antenna? Obtain a formula for field strength due to a short electric doublet (elementary dipole).
5. What do you mean by RADAR? Explain the principle and working of RADAR with a neat block diagram. What are the applications of RADAR?

### **SECTION-B**

#### **(Short Answer Type Questions)**

**Note :** Section 'B' contains Eight (08) short answer type questions of Four (04) marks each. Learners are required to answer any Four (04) questions only. (4×4=16)

1. Briefly discuss the advantages and disadvantages of Two cavity klystron.

2. List the advantages and disadvantages of amplitude modulation over frequency modulation.
  3. Briefly explain the working of FM Transmitter.
  4. What are magnetrons? What are the different types of magnetrons?
  5. Explain in briefly the very high frequency antenna.
  6. What are the antenna efficiency and antenna gain?
  7. The peak voltage of an AM signal varies from 4 V to 20 V (assume sinusoids). Find the total power and power efficiency.
  8. Explain the working of Tracking Radar with its applications.
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