Answer **<u>Question No. 1</u>** and rest accordingly :

1. a) What is signal? What are its characteristics?
    b) Which of the following is not a purpose of modulation—
        i) multiplexing
        ii) increase in signal power
        iii) effective radiation
        iv) Narrow banding
    c) The maximum efficiency transmission in AM with large carrier is—
        i) 66%
        ii) 33%
        iii) 100%
        iv) 50%
    d) What is VSB and mention its application.   [(1+1)+1+1+1]

2. What is modulation? Mention the need of modulation? Derive the expression of AM waveform with frequency spectrum analysis.   [10]

Or,

An antenna transmits an AM signal having total power content of 15KW. Determine the power being transmitted at the carrier frequency and at each of the sidebands when the modulation is 85%.

Derive the equation which may be used in above problem with proper explanation.   [10]

3. Draw and explain the block diagram of CRO.   [10]

Or,

What is Carson's formula? Derive the equation of WBFM with proper explanation of Bessel function. [10]

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