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BIEL-032

DIPLOMA – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)

Term-End Examination

00425

December, 2014

BIEL-032 : PRINCIPLES OF COMMUNICATION ENGINEERING

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks.*

1. A class C power amplifier has output load of 10 Ω. This is to be matched with an antenna of impedance 50 Ω by an L-network. Find the value of L and C if the carrier frequency to be used is 500 kHz. *10*

2. What is the difference between Pulse Width Modulation and Pulse Position Modulation ? Explain. *10*

3. Draw and explain the block diagram of FM transmitter. Also draw the waveform. *10*

4. What is the principle of heterodyne receiver ? Draw the block diagram and explain the working of superheterodyne receiver. *10*

5. The input to an envelope detector of a tone modulated signal is given as $v(t) = A_c[1 + m \cos \omega_m t] \cos \omega_c t$. Find the maximum value of time constant RC of the detector that can always follow the message envelope. *10*

6. Define Phase and Frequency modulation. Derive the relationship between Phase and Frequency modulation. *10*

7. A bandpass signal has a center frequency f_0 and extends from $f_0 - 5$ kHz to $f_0 + 5$ kHz. The signal is sampled at a rate $f_s = 25$ kHz. As the center frequency f_0 varies from $f_0 = 5$ kHz to $f_0 = 50$ kHz, find the ranges of f_0 for which the sampling rate is adequate. *10*

8. Explain the radiation mechanism of antenna. What are microwave antennas ? Explain. *10*

9. Define the following terms : $4 \times 2\frac{1}{2} = 10$

   (a) Critical frequency

   (b) Skip distance

   (c) Space wave propagation

   (d) Troposphere scatter propagation

10. Explain VSWR and Reflection Coefficient. How is impedance matching done in single stub transmission line ? *10*