

**DIPLOMA – VIEP – ELECTRONICS AND
COMMUNICATION ENGINEERING (DECVI)**

Term-End Examination

00259

December, 2017

**BIEL-032 : PRINCIPLES OF COMMUNICATION
ENGINEERING**

Time : 2 hours

Maximum Marks : 70

Note : Question no. 1 is compulsory, Attempt five questions in all. Use of scientific calculator is permitted. Assume missing data, if any, suitably.

1. (a) Draw the basic block diagram of a communication system.
- (b) Define Efficiency of an AM system. For what value of μ , is it maximum ?
- (c) What is Fidelity, in reference to an AM receiver ?
- (d) Define VSWR and give its range.
- (e) What is an Omnidirectional antenna ? Draw its radiation pattern.
- (f) State Sampling theorem.
- (g) Define Critical Frequency. 7×2=14

2. (a) In an AM system, the power of an unmodulated carrier is 10 kW and modulated signal is 12.5 kW. Find the modulation index, efficiency and power of modulating signal. Also state whether it is under modulated or critical modulated. 7
- (b) With a neat block diagram, explain the working of Phase Locked Loop (PLL). State its use. 7
3. (a) Explain the structure, radiation pattern and application of the following : 7
- (i) Microwave antenna
- (ii) Loop antenna
- (b) Briefly explain Ground Wave propagation with a suitable diagram. 7
4. (a) Explain the working of an FM transmitter with a block diagram. 7
- (b) What is a Superheterodyne receiver ? Discuss its working. 7
5. Explain the following terms briefly : $2 \times 7 = 14$
- (a) Bandwidth
- (b) Sensitivity
- (c) Directivity
- (d) Beam Width
- (e) Frequency Reusability
- (f) Slope Overload Distortion
- (g) Maximum Invisible Frequency

- 6. (a) Explain the concept of Pre-emphasis and De-emphasis used in FM. 7**
- (b) What is Automatic Gain Controller ? State its working principle and use. 7**
- 7. (a) Explain the difference between Lossy and Lossless transmission lines. 3**
- (b) Why is impedance matching necessary in a transmission line ? 3**
- (c) Explain Half wave and Quarter wave line impedance inversion. 8**
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