

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

Term-End Examination

00554

June, 2017

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

Time : 2 hours

Maximum Marks : 70

Note : Attempt any **five** questions. Question no. 1 is **compulsory**. Use of scientific calculator is permitted.

1. Choose the correct answer for the following : $7 \times 2 = 14$

- (a) When VSWR is equal to zero, this means that
- (i) no power is applied.
 - (ii) the load is purely resistive.
 - (iii) the load is a pure reactance.
 - (iv) the load is opened.
- (b) In a superheterodyne receiver
- (i) the IF stage has better selectivity than the RF stage.
 - (ii) the RF stage has better selectivity than the IF stage.
 - (iii) both IF and RF stages should have the same selectivity.
 - (iv) None of the above

- (c) A duplexer is a device used to
- (i) feed more than one receiver from a single antenna.
 - (ii) connect two transmitters to the same antenna.
 - (iii) connect a receiver and a transmitter to the same antenna.
 - (iv) None of the above
- (d) In frequency modulation
- (i) the frequency of the carrier wave remains constant.
 - (ii) the amplitude of the carrier wave remains the same.
 - (iii) both the frequency and amplitude of the carrier wave vary.
 - (iv) the signal is distorted.
- (e) The parasitic element of an antenna system will
- (i) decrease its directivity.
 - (ii) increase its directivity.
 - (iii) give the antenna unidirectional properties.
 - (iv) Both (ii) and (iii)

- (f) Electromagnetic energy radiated from an antenna is known as _____ waves.
- (i) sky
 - (ii) ground
 - (iii) magnetic
 - (iv) radio
- (g) A ground wave is a radio wave that travels
- (i) skyward.
 - (ii) skyward and near the Earth's surface.
 - (iii) near the skip zone.
 - (iv) near the Earth's surface.
2. (a) Describe the operation and applications of a folded dipole. 7
- (b) Sketch the radiation patterns of isotropic and half wave dipoles. 7
3. (a) Compare AM and FM receivers. 7
- (b) Draw and explain the block diagram of Phase-Locked Loop (PLL). 7
4. (a) Discuss briefly, Tropospheric scatter propagation. 7
- (b) Describe about reflection, refraction and diffraction of electromagnetic waves. 7

5. (a) A broadcast radio transmitter radiates 10 kW when the modulation percentage is 60. What is the unmodulated carrier power? 7

(b) Differentiate between narrow band FM and wide band FM. 7

6. Define any *seven* of the following : $7 \times 2 = 14$

(a) Modulation Index in AM

(b) Heterodyning

(c) Selectivity

(d) Modulation Index in FM

(e) Maximum Usable Frequency

(f) Deviation Ratio

(g) Sensitivity

(h) Beam Width

(i) Front-to-Back Ratio

7. Write short notes on any *two* of the following : $2 \times 7 = 14$

(a) Duct Propagation

(b) Microwave Antennas

(c) Slope Detection