University Institute of Engineering and Technology
Panjab University, Chandigarh (2nd Sessional, Dec, 2020)

Subject: AWP **Time: 90Min**
Sem: 5th Sem (Section A and B) **MM: 30**
Note: All questions are compulsory.

Ques1) Briefly discuss the following terms: ***(6)***

a) **Virtual Height**
b) **Critical frequency**
c) **Fading**
d) **Duct Propagation**
e) **Side Lobe level**
f) **Conditions for frequency-independent antennas.**

Ques2

a) Compare Ground Wave, sky Wave and Space Wave propagation (atleast six points). ***(4)***

b) Find Optimum working frequency if maximum usable frequency is 43.2 MHz. What is the critical angle at 15 MHz? ***(2)***

Ques 3

a) Draw and explain structure of ionosphere. Also discuss the characteristics of different ionized layers. ***(4)***

b) Determine Dolph- Tchebyscheff current distribution for the minimum beamwidth of a linear phase broadside array of five isotropic unit sources. The spacing between sources is half wavelength and side lobe level 21dB. Also determine the half power beamwidth. ***(4)***

Ques4

a) Obtain alignment design parameters of rhombic antenna to operate at 30MHz, when the required elevation angle is 30^0. ***(2)***

b) List out disadvantages of rhombic antenna. ***(2)***

Ques5

a) Design a log-periodic antenna for the FM band (88 to 108MHz) using a ratio factor 0.95 and diameter equal to 0.08λ. ***(3)***

b) Derive the expression of radiation resistance for half wave dipole antenna. ***(3)***

OR

b) Discuss the benefits of Top loading and Tuning.

**********ALL THE BEST**********