Jules' Workshop

Standard

Unit 17 – ANSWERS

Q1 What is a line of site communication?

Radio waves travelling directly in a straight line from the transmitting antenna to the receiving antenna.

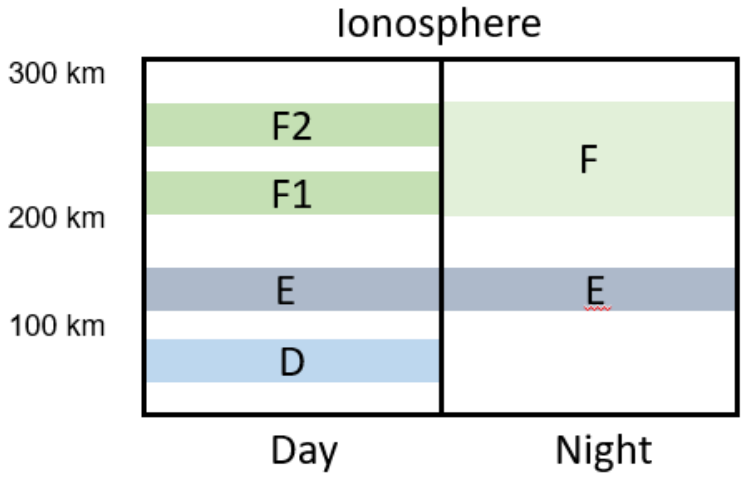
Q2 What frequencies is communication by ground wave more likely to occur?

VLF to ELF range.

Q3 What is Non-Line of Site?

Non-Line-of-Sight (NLOS) describes radio communications where there is no visual line of sight (LOS) between the transmitting antenna and the receiving antenna.

Q4 What are the ionospheric layers during the day and night?



Q5 What ionospheric layer is responsible for most skywave propagation?

F layer

Q6 Explain Tropospheric ducting.

Occasionally a layer of air in the troposphere will be at a higher temperature than the layers of air above and below. This temperature inversion layer creates a duct which radio waves can travel along. A temperature inversion may extend for 1,500 km or more along a stationary weather front. Tropospheric ducting of radio signals is relatively common during the summer and autumn months.

Q7 What is troposcatter?

Troposcatter, is a method of communicating with microwave radio signals over considerable distances – often up to 500 kilometres. This method of propagation uses the tropospheric scatter phenomenon, where radio waves at UHF and SHF frequencies are randomly scattered as they pass through the upper layers of the troposphere.

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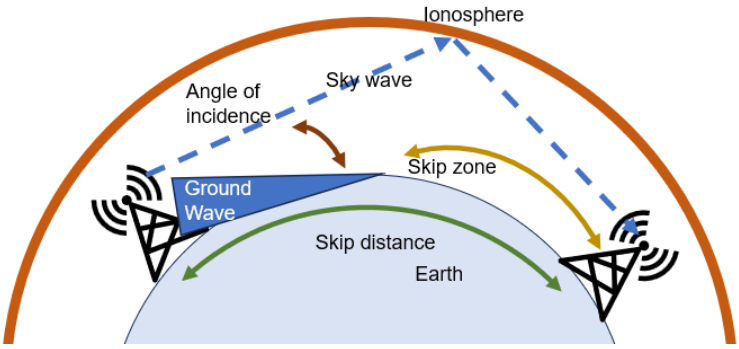
Q8 What is the longest communication path for amateurs?

Earth moon earth bounce

Q9 What is skip distance and skip zone?



Q10 What is the angle of incidence for a radio wave?

The take-off angle of the signal from the transmitter. The lower the angle the better skip distance.

Q11 Bending radio waves over geometric objects is called……..?

Diffraction

Q12 Do radio communications improve with sunspot activity?

Improve

Q13 What is the critical frequency?

The critical frequency is an indication of the ionosphere and HF propagation. CF is obtained by sending a signal pulse directly upwards (vertically) and received back at the same site.

Q14 What is the maximum usable frequency?

The maximum usable frequency (MUF) is the maximum frequency you can use at that time to achieve the skip. Frequencies above the MUF will go through the ionosphere and is lost. The MUF is generally three times greater than the CF (for the F region) and up to five times (for the E region).

Q15 What is the minimum detectable signal?

A minimum detectable signal is a signal at the input of a system that can be detected over the background noise. The signal can be defined as a signal that produces a signal-to-noise ratio of a given value at the output.

Q16 Explain MUF in your own words?

MUF most commonly refers to Maximum Usable Frequency, the highest radio frequency for ionospheric reflection between two points.

Q17 What the critical frequency?

Critical frequency is the maximum frequency at which a radio wave, transmitted vertically, is reflected to Earth by an ionized layer (e.g., E or F2) in the ionosphere.

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