


Demo PDF file. This file includes questions: 10 from 616. Full version of file looks the same as demo, but full version includes all questions. You may download file with all questions by link on bottom of this page

FCC Element 6 - Advanced Radiotelegraph

1. SITOR-ARQ is a common mode of data communications in the maritime service. It is a system based on transmission bursts and acknowledgements. What is the baud, and interval between the burst transmissions:

- **100 baud, 240 ms interval**
- 50 baud, 1000 s interval
- 200 baud, 10 ms interval
- None of the above

Note:

SITOR-ARQ operates at a standard rate of 100 baud with a 240 ms interval between bursts, as defined by the maritime service protocol.

2. Weather information is commonly sent by radio in map form by one-way facsimile transmission. Two common parameters which must be set by the receiving station are:

- Lines-per-inch (LPI), and primary scan direction (PSD)
- Frequency shift (FS), and phase response pattern (PRP)
- Black-mode signal (BMS), and frequency jitter tolerance (FJT)
- **Index of cooperation (IOC), and revolutions per minute (RPM)**

Note:

Receiving stations for radio facsimile transmissions require setting the Index of Cooperation (IOC) to control image geometry and revolutions per minute (RPM) to control scan speed, ensuring accurate image reproduction.

3. 2182 kHz is the international radiotelephone distress frequency. It is also used for a calling channel. The authorized mode of emission is H3E (single-sideband full carrier). A3E (double-sideband full carrier) is only authorized for equipment:

- **Solely intended for distress and safety communications**
- Built and sold after the GMDSS implementation date
- Built and sold before the GMDSS implementation date
- Solely intended for ship-to-shore public correspondence

Note:

A3E is authorized on 2182 kHz only for equipment solely intended for distress and safety communications.

4. Ship's power is generated as 3-phase and is ungrounded. On a delta-wound transformer with 120 VAC line-to-line secondary, what is the voltmeter reading from line to ground:

- Approx 67 volts for a normal balanced system with no faults
- 0 VAC for a system with that phase faulted to ground
- 120 VAC when another phase is faulted to ground
- **Any of the above**

Note:

In an ungrounded 3-phase delta system, the line-to-ground voltage varies depending on system conditions. It can be approximately 67 volts in a balanced system, 0 volts if a phase is faulted to ground, or 120 volts if another phase is faulted to ground; therefore, any of these readings are possible.

5. When passing through areas of static charge, high voltages can accumulate on antennas which are insulated from ground. What protects a connected receiver from damage?

- Lightning arresters and suppressors
- Protection diodes on receiver input
- Capacitive coupling and static dissipative circuits
- **Any combination of the above**

Note:

Multiple protective measures—surge arresters, input diodes, and static-dissipative/coupling circuits—are typically used to safeguard receivers from high voltages induced on insulated antennas.

6. Vertical shipboard antennas for use in the MF band (410-525 kHz) are often fitted with top-hat loading sections. What is the purpose of these structures?

- Provides aerodynamic compensation for stress during high winds
- **Permits a physically short antenna to appear electrically longer**
- Improves the near-field radiated pattern at the expense of the far-field pattern
- Prevents salt build-up on antennas from shunting RF energy to ground

Note:

Top-hat loading increases capacitance at the antenna's top, effectively lengthening the antenna and facilitating resonance. This technique addresses the challenge of short antennas exhibiting low radiation resistance and difficulty in tuning at medium frequencies.

7. Modern reserve transmitters are solid-state designs and transmit using only A2 modulation. When measuring transmitter center frequency, what precaution must be taken:

- Antenna must be grounded to suppress spurious side-lobes
- **Modulation must be reduced to zero to eliminate sidebands**
- Voltage to the PA must be kept at half-value
- Antenna current must be reduced to about 2.5 uA

Note:

To accurately measure a transmitter's center frequency, modulation must be eliminated to prevent sidebands from distorting the reading.

8. Voltage may be expressed by what other expression?

- Difference of potential
- IF drop
- Electromotive force
- **All of the above**

Note:

Voltage is equivalently expressed as difference of potential, electromotive force, or an IR drop, making 'All of the above' the correct answer.

9. Amperage may also be known by:

- Electron flow
- Electron drift
- Electric current flow
- **All of the above**

Note:

Amperage measures electric current, which can be described as electron flow, electron drift, or electric current flow; therefore, all terms are related and 'All of the above' is the correct answer.

10. Factors which determine the amplitude of the voltage induced in a conductor which is cutting magnetic lines of force:

- Flux density
- Velocity that the conductor cuts the magnetic lines of force
- The angle at which the conductor cuts through the magnetic lines of force
- **All of the above**

Note:

The induced voltage's amplitude is determined by flux density, conductor velocity, and the angle of intersection with magnetic lines of force; therefore, all factors are relevant.
