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Ham Radio Technician Certification Exam

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Question: 1

Which of the following is part of the Basis and Purpose of the Amateur Radio Service?

- A. Providing personal radio communications for as many citizens as possible
- B. Providing communications for international non-profit organizations
- C. Advancing skills in the technical and communication phases of the radio art
- D. All these choices are correct

Answer: C

Explanation:

As stated in the FCC rules, advancing skills in the technical and communication phases of the radio art is a purpose of the Amateur Radio Service

Question: 2

Which of the following frequency ranges are available for phone operation by Technician licensees?

- A. 28.050 MHz to 23.150 MHz
- B. 28.100 MHz to 23.300 MHz
- C. 28.300 MHz to 23.500 MHz
- D. 28.500 MHz to 28.600 MHz

Answer: C

Explanation:

Frequencies in the 28.300 MHz to 28.500 MHz range are available for phone operation by Technician licensees.

Question: 3

For which license classes are new licenses currently available from the FCC?

- A. Novice, Technician, General, Amateur Extra
- B. Technician, Technician Plus, General, Amateur Extra
- C. Novice, Technician Plus, General, Advanced
- D. Technician, General, Amateur Extra

Answer: D

Explanation:

The classes of amateur operator license grants are: Novice, Technician, General, Advanced, and Amateur Extra. The person named in the operator license grant is authorized to be the control operator of an amateur station with the privileges authorized to the operator class specified on the license grant.

Question: 4

With which countries are FCC-licensed amateur radio stations prohibited from exchanging communications?

- A. Any country whose administration has notified the International Telecommunication Union (ITU) that it objects to such communications
- B. Any country whose administration has notified the American Radio Relay League (ARRL) that it objects to such communications
- C. Any country banned from such communications by the International Amateur Radio Union (IARU)
- D. Any country banned from making such communications by the American Radio Relay League (ARRL)

Answer: A

Explanation:

FCC-licensed amateur stations are prohibited from exchanging communications with any country whose administration has notified the ITU that it objects to such communications.

Question: 5

When may an amateur station transmit without a control operator?

- A. When using automatic control, such as in the case of a repeater
- B. When the station licensee is away and another licensed amateur is using the station
- C. When the transmitting station is an auxiliary station
- D. Never

Answer: D

Explanation:

When transmitting, each amateur station must have a control operator.

Question: 6

When must the station and its records be available for FCC inspection?

- A. At any time ten days after notification by the FCC of such an inspection
- B. At any time upon request by an FCC representative
- C. At any time after written notification by the FCC of such inspection
- D. Only when presented with a valid warrant by an FCC official or government agent

Answer: B

Explanation:

The station licensee must make the station and the station records available for inspection upon request by an FCC representative.

Question: 7

What is a common repeater frequency offset in the 2 meter band?

- A. Plus or minus 5 MHz
- B. Plus or minus 600 kHz
- C. Plus or minus 500 kHz
- D. Plus or minus 1 MHz

Answer: B

Explanation:

The most common repeater frequency offset in the 2 meter band is plus or minus 600 kHz.

Question: 8

How is a VHF/UHF transceiver's "reverse" function used?

- A. To reduce power output
- B. To increase power output
- C. To listen on a repeater's input frequency
- D. To listen on a repeater's output frequency

Answer: C

Explanation:

A VHF/UHF transceiver's "reverse" function is used to listen on a repeater's input frequency.

Question: 9

When do FCC rules NOT apply to the operation of an amateur station?

- A. When operating a RACES station
- B. When operating under special FEMA rules

- C. When operating under special ARES rules
- D. FCC rules always apply

Answer: D

Explanation:
FCC rules always apply to the operation of an amateur station.

Question: 10

Why do VHF signal strengths sometimes vary greatly when the antenna is moved only a few feet?

- A. The signal path encounters different concentrations of water vapor
- B. VHF ionospheric propagation is very sensitive to path length
- C. Multipath propagation cancels or reinforces signals
- D. All these choices are correct

Answer: C

Explanation:
If a signal is experiencing multipath propagation, it can easily cancel itself out or reinforce itself over a distance of a few feet.

Question: 11

What is the relationship between the electric and magnetic fields of an electromagnetic wave?

- A. They travel at different speeds
- B. They are in parallel
- C. They revolve in opposite directions
- D. They are At right angles

Answer: D

Explanation:
The electric and magnetic fields of electromagnetic waves are at right angles (perpendicular) to each other.

Question: 12

Why are simplex UHF signals rarely heard beyond their radio horizon?

- A. They are too weak to go very far

- B. FCC regulations prohibit them from going more than 50 miles
- C. UHF signals are usually not propagated by the ionosphere
- D. UHF signals are absorbed by the ionospheric D region

Answer: C

Explanation:

Simplex (that is, not by means of a repeater) UHF signals are rarely heard from stations outside the local coverage area because UHF signals are usually not reflected by the ionosphere.

Question: 13

Which of the following is an appropriate power supply rating for a typical 50 watt output mobile FM transceiver?

- A. 24.0 volts at 4 amperes
- B. 13.8 volts at 4 amperes
- C. 24.0 volts at 12 amperes
- D. 13.8 volts at 12 amperes

Answer: D

Explanation:

For a typical 50 watt output mobile FM transceiver, 13.8 volts at 12 amperes would be an appropriate power supply rating.

Question: 14

What is the effect of excessive microphone gain on SSB transmissions?

- A. Frequency instability
- B. Distorted transmitted audio
- C. Increased SWR
- D. All these choices are correct

Answer: B

Explanation:

If a transmitter is operated with the microphone gain set too high, the output signal might become distorted.

Question: 15

Electrical current is measured in which of the following units?

- A. Volts
- B. Watts
- C. Ohms
- D. Amperes

Answer: D

Explanation:

Electrical current is measured in amperes, usually referred to as amps. Current is the amount of electrons flowing through a circuit.

Question: 16

How many milliamperes is 1.5 amperes?

- A. 15 milliamperes
- B. 150 milliamperes
- C. 1500 milliamperes
- D. 15,000 milliamperes

Answer: C

Explanation:

1.5 amperes is equivalent to 1500 mA. The prefix milli- means thousandth, so a milliampere is a thousandth of an ampere. Therefore, 1.5 amperes can be converted to milli amperes by multiplying by a thousand: $1.5 \times 1000 = 1500$.

Question: 17

What describes the ability to store energy in an electric field?

- A. Inductance
- B. Resistance
- C. Tolerance
- D. Capacitance

Answer: D

Explanation:

The ability to store energy in an electric field is called capacitance. Capacitance can also be defined as the ratio of the electric charge that is shifted from one conductor to another to the resulting potential difference between them.

Question: 18

What formula is used to calculate current in a circuit?

- A. $I = E \times R$
- B. $I = E / R$
- C. $I = E + R$
- D. $I = E - R$

Answer: B

Explanation:

The formula for calculating current in a circuit is current equals voltage divided by resistance.

Question: 19

What electrical component opposes the flow of current in a DC circuit?

- A. Inductor
- B. Resistor
- C. Inverter
- D. Transformer

Answer: B

Explanation:

The electrical component used to oppose the flow of current in a DC circuit is a resistor. For ham radio technicians, the most commonly required resistors are quarter- and half-watt fixed value resistors and 100, 500, 1k, 5k, 10k, and 100k ohm variable resistors.

Question: 20

Which is true about forward voltage drop in a diode?

- A. It is lower in some diode types than in others
- B. It is proportional to peak inverse voltage
- C. It indicates that the diode is defective
- D. It has no impact on the voltage delivered to the load

Answer: A

Explanation:

Forward voltage drop is lower in some diode types than in others.

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