Amateur Radio Operator Certificate Examination

Basic Qualification

2024-07-27

To pass this exam, you must correctly answer 70 out of 100 questions

Exam Number: 1000805

1. (B-004-004-002)

A semiconductor having its leads labelled gate, drain, and source is best described as a:

A. silicon diode
B. field-effect transistor
C. bipolar transistor
D. gated transistor

2. (B-007-001-002)

How does the range of sky-wave propagation compare to ground-wave propagation?

A. It is about the same
B. It depends on the weather
C. It is much shorter
D. It is much longer

3. (B-006-006-003)

What would you use to connect a coaxial cable of 50 ohms impedance to an antenna of 17 ohms impedance?

A. A terminating resistor
B. An impedance-matching device
C. An SWR meter
D. A low pass filter

4. (B-006-005-011)

The type of transmission line best suited to operating at a high standing wave ratio is:

A. coaxial line
B. 300 ohm twin-lead
C. 600 ohm open wire line
D. 75 ohm twin-lead

5. (B-003-004-006)

In a CW transmitter, the output of the _____ is transferred to the antenna.

A. power supply
B. master oscillator
C. power amplifier
D. driver/buffer

6. (B-002-006-003)

What is the meaning of: "Your signal report is 5 7"?

A. Your signal is perfectly readable and moderately strong
B. Your signal is perfectly readable with near pure tone
C. Your signal is perfectly readable, but weak
D. Your signal is readable with considerable difficulty

7. (B-002-001-007)

Why should you pause briefly between transmissions when using a repeater?

A. To check the SWR of the repeater
B. To listen for anyone else wanting to use the repeater
C. To dial up the repeater's autopatch
D. To reach for pencil and paper for third-party communications

8. (B-003-013-009)

Why isn't frequency modulated (FM) phone used below 28.0 MHz?

A. Harmonics could not be attenuated to practical levels
B. The bandwidth would exceed limits in the Regulations
C. The transmitter efficiency for this mode is low
D. The frequency stability would not be adequate

9. (B-005-013-004)

The correct instrument to measure plate current or collector current of a transmitter is:

A. a voltmeter
B. a wattmeter
C. an ammeter
D. an ohmmeter

10. (B-008-002-006)

An amateur transmitter is being heard across the entire dial of a broadcast receiver. The receiver is most probably suffering from:

A. splatter from the transmitter
B. audio rectification in the receiver
C. poor image rejection
D. harmonics interference from the transmitter

11. (B-001-021-004)

Australia, Japan, and Southeast Asia are in which ITU Region?

A. Region 2
B. Region 4
C. Region 3
D. Region 1

12. (B-002-009-005)

What method is used by radio amateurs to provide written proof of communication between two amateur stations?

A. A signed post card listing contact date, time, frequency, mode and power, called a "QSL card"
B. A two-page letter containing a photograph of the operator
C. A packet message
D. A radiogram sent over the CW traffic net

13. (B-008-005-008)

A band pass filter will:

A. allow only certain frequencies through
B. stop frequencies in a certain band
C. attenuate high frequencies but not low
D. pass frequencies each side of a band

14. (B-003-020-004)

What equipment should be worn for working on an antenna tower?

A. A reflective vest of approved colour
B. A grounding chain
C. A flashing red, yellow or white light
D. Approved equipment in accordance with applicable standards concerning fall protection

15. (B-001-005-003)

Where a friend is not the holder of any type of radio operator certificate, you, as a holder of an Amateur Radio Operator Certificate with Basic Qualification, may, on behalf of your friend:

A. modify and repair the radio apparatus but not install it
B. install and operate the radio apparatus, using your own call sign
C. install an amateur station, but not operate or permit the operation of the apparatus
D. not install, place in operation, modify, repair, maintain, or permit the operation of the radio apparatus

16. (B-003-021-009)

If you operate your amateur station with indoor antennas, what precautions should you take when you install them?

A. Position the antennas parallel to electrical power wires to take advantage of parasitic effects
B. Position the antennas along the edge of a wall where it meets the floor or ceiling to reduce parasitic radiation
C. Locate the antennas close to your operating position to minimize transmission line length
D. Locate the antennas as far away as possible from living spaces that will be occupied while you are operating

17. (B-007-002-005)

What two sub-regions of ionosphere exist only in the daytime?

A. Electrostatic and electromagnetic
B. D and E
C. Troposphere and stratosphere
D. F1 and F2

18. (B-003-015-004)

What does "network" mean in packet radio?

A. The connections on terminal-node controllers
B. A way of connecting packet-radio stations so data can be sent over long distances
C. The programming in a terminal-node controller that rejects other callers if a station is already connected
D. A way of connecting terminal-node controllers by telephone so data can be sent over long distances

19. (B-003-018-001)

How could you best keep unauthorized persons from using your amateur station at home?

A. Use a carrier-operated relay in the main power line
B. Use a key-operated on/off switch in the main power line
C. Put a "Danger - High Voltage" sign in the station
D. Put fuses in the main power line

20. (B-001-008-003)

Amateur radio operators may install or operate radio apparatus:

A. at any location in Canada
B. only at the address which is on record at Innovation, Science and Economic Development Canada
C. at the address which is on record at Innovation, Science and Economic Development Canada and in two mobiles
D. at the address which is on record at Innovation, Science and Economic Development Canada and at one other location

21. (B-003-008-002)

In a regulated power supply, the _____ is between the input and the rectifier.

A. output
B. transformer
C. filter
D. regulator

22. (B-005-011-005)

The strength of the magnetic field around a conductor in air is:

A. directly proportional to the current in the conductor
B. directly proportional to the diameter of the conductor
C. inversely proportional to the diameter of the conductor
D. inversely proportional to the voltage on the conductor

23. (B-004-002-001)

Zener diodes are used as:

A. RF detectors
B. voltage regulators
C. AF detectors
D. current regulators

24. (B-001-016-006)

Which of the following bands of amateur frequencies has a maximum allowed bandwidth of less than 6 kHz. That band is:

A. 10.1 to 10.15 MHz
B. 1.8 to 2.0 MHz
C. 24.89 to 24.99 MHz
D. 18.068 to 18.168 MHz

25. (B-001-025-002)

In the event of interference to a neighbour's television receiver, according to EMCAB-2 it will be deemed that a radio amateur's transmission is the cause of the problem if the field strength:

A. near the TV is below Innovation, Science and Economic Development Canada's specified immunity criteria

B. on the neighbour's premises is above Innovation, Science and Economic Development Canada's specified immunity criteria

C. at the transmitting location is above the radio amateur's maximum allowable transmitter power

D. at the transmitting location is below the radio amateur's maximum allowable transmitter power

26. (B-001-001-001)

Authority to make regulations governing radiocommunications is derived from:

A. the ITU Radio Regulations

B. the Radiocommunication Regulations

C. the Standards for the Operation of Radio Stations in the Amateur Radio Service

D. the Radiocommunication Act

27. (B-003-014-007)

If a single-sideband phone transmitter is 100% modulated, what will a speech processor do to the transmitter's power?

A. It will increase the output PEP

B. It will add nothing to the output Peak Envelope Power (PEP)

C. It will decrease the average power output

D. It will decrease the peak power output

28. (B-006-007-005)

Polarization of an antenna is determined by:

A. the type of antenna

B. the height of the antenna

C. the magnetic field

D. the orientation of the electric field relative to the Earth's surface

29. (B-007-008-004)

What makes HF scatter signals often sound distorted?

A. Auroral activity and changes in the Earth's magnetic field
B. Propagation through ground waves that absorb much of the signal
C. Energy scattered into the skip zone through several radio-wave paths
D. The state of the E-region at the point of refraction

30. (B-007-007-011)

What effect is responsible for propagating a VHF signal over 800 km (500 miles)?

A. Moon bounce (EME) Earth - Moon - Earth
B. D-region absorption
C. Tropospheric ducting
D. Faraday rotation

31. (B-003-007-004)

In an amateur digital radio system, the audio connections of the modem/sound card are connected to the _____.

A. transceiver
B. scanner
C. input/output
D. antenna

32. (B-006-002-006)

What is an unbalanced line?

A. Transmission line with neither conductor connected to ground
B. Transmission line with one conductor connected to ground
C. Transmission line with both conductors connected to ground
D. Transmission line with both conductors connected to each other

33. (B-008-004-004)

What type of interference may come from a multi-band antenna connected to a poorly tuned transmitter?

A. Intermodulation
B. Harmonic radiation
C. Auroral distortion
D. Parasitic excitation

34. (B-005-004-010)

The resistance of a circuit can be found by using one of the following:

A. R = E/R
B. R = E x I
C. R = I/E
D. R = E/I

35. (B-003-016-008)

Battery capacity is commonly stated as a value of current delivered over a specified period of time. What is the effect of exceeding that specified current?

A. The voltage delivered will be higher
B. A battery charge will not last as long
C. The internal resistance of the cell is short-circuited
D. The battery will accept the subsequent charge in shorter time

36. (B-006-001-009)

If the impedance terminating a transmission line differs significantly from the characteristic impedance of the line, what will be observed at the input of the line?

A. An impedance nearly equal to the characteristic impedance
B. Some value of impedance influenced by line length
C. A negative impedance
D. An infinite impedance

37. (B-001-006-002)

An amateur station may be used to communicate with:

A. stations operated under similar authorizations
B. armed forces stations during special contests and training exercises
C. any stations which are identified for special contests
D. any station transmitting in the amateur bands

38. (B-008-003-010)

Parasitic oscillations in the RF power amplifier stage of a transmitter may be found:

A. at low frequencies only
B. on harmonic frequencies
C. at high frequencies only
D. at high or low frequencies

39. (B-001-002-005)

The holder of an Amateur Radio Operator Certificate shall, at the request of a duly appointed radio inspector, produce the certificate, or a copy thereof, to the inspector, within ____ hours after the request:

A. 24
B. 72
C. 48
D. 12

40. (B-002-008-009)

If you are communicating with another amateur station and hear a station in distress break in, what should you do?

A. Continue your communication because you were on frequency first
B. Immediately cease all transmissions because stations in distress have emergency rights to the frequency
C. Acknowledge the station in distress and determine its location and what assistance may be needed
D. Change to a different frequency so the station in distress may have a clear channel to call for assistance

41. (B-003-009-002)

In a Yagi 3 element directional antenna, the _____ is the longest radiating element.

A. reflector
B. director
C. driven element
D. boom

42. (B-001-004-005)

One Morse code qualification is available for the Amateur Radio Operator Certificate. It is:

A. 12 w.p.m.
B. 5 w.p.m.
C. 15 w.p.m.
D. 7 w.p.m.

43. (B-006-013-007)

Compared to a dipole antenna, what are the directional radiation characteristics of a cubical quad antenna?

A. The quad has more directivity in the horizontal plane but less directivity in the vertical plane
B. The quad has less directivity in the horizontal plane but more directivity in the vertical plane
C. The quad has less directivity in both horizontal and vertical planes
D. The quad has more directivity in both horizontal and vertical planes

44. (B-002-004-007)

If a net is about to begin on a frequency which you and another station are using, what should you do?

A. Turn off your radio
B. As a courtesy to the net, move to a different frequency
C. Transmit as long as possible on the frequency so that no other stations may use it
D. Increase your power output to ensure that all net participants can hear you

45. (B-003-010-010)

A communications receiver has four filters installed in it, respectively designated as 250 Hz, 500 Hz, 2.4 kHz and 6 kHz. You are copying a CW transmission and there is a great deal of interference. Which one of the filters would you choose?

A. 500 Hz
B. 2.4 kHz
C. 250 Hz
D. 6 kHz

46. (B-006-003-005)

What common connector usually joins a hand-held transceiver to its antenna?

A. An F-type cable connector
B. A PL-259 connector
C. An SMA connector
D. A binding post connector

47. (B-007-006-008)

If we transmit a signal, the frequency of which is so high we no longer receive a reflection from the ionosphere, the signal frequency is above the:

A. sunspot frequency
B. skip distance
C. speed of light
D. maximum usable frequency

48. (B-006-004-005)

As the frequency of a signal is changed, what happens to signal loss in a transmission line?

A. Signal loss increases with decreasing frequency
B. Signal loss is the least when the signal's wavelength is the same as the transmission line's length
C. Signal loss is the same for any frequency
D. Signal loss increases with increasing frequency

49. (B-006-008-002)

If an antenna is made shorter, what happens to its resonant frequency?

A. It decreases
B. It disappears
C. It stays the same
D. It increases

50. (B-001-003-005)

Which of the following is not correct? The Minister may suspend an Amateur Radio Operator Certificate:

A. Where the holder has failed to comply with a request to pay fees or interest due
B. Where the certificate was obtained through misrepresentation
C. Where the holder has contravened the Radiocommunication Act, its Regulations, or the terms and conditions of the certificate
D. With no notice, or opportunity to make representation thereto

51. (B-003-003-003)

In a frequency modulation receiver, the output of the local oscillator is fed to the:

A. radio frequency amplifier
B. mixer
C. antenna
D. limiter

52. (B-003-005-008)

In a single sideband and CW receiver, the output of the _____ is connected to the product detector.

A. beat frequency oscillator
B. mixer
C. audio frequency amplifier
D. radio frequency amplifier

53. (B-003-001-008)

In an HF station, the antenna tuner is usually used for matching the transceiver with:

A. mono-band Yagi type antennas

B. most antennas when operating below 14 MHz

C. tri-band Yagi antennas

D. most antennas when operating above 14 MHz

54. (B-005-008-011)

A local amateur reports your 100W 2M simplex VHF transmission as 30 dB over S9. To reduce your signal to S9, you would reduce your power to _____ watts.

A. 100 mW

B. 10 W

C. 33.3 W

D. 1 W

55. (B-003-002-003)

In a frequency modulation transmitter, the _____is in between the speech amplifier and the oscillator.

A. microphone

B. frequency multiplier

C. power amplifier

D. modulator

56. (B-001-014-010)

Which of the following is not correct? While operating in Canada a radio amateur licensed by the Government of the United States must:

A. obtain a Canadian amateur certificate before operating in Canada

B. add to his call sign the Canadian call sign prefix for the geographic location of the station

C. identify with the call sign assigned by the FCC

D. qualify his identification when operating phone by adding to the call sign the word "mobile" or "portable" or when operating Morse code by adding a slash "/"

57. (B-006-010-001)

How do you calculate the length in metres (feet) of a quarter-wavelength antenna using frequencies below 30MHz?

A. Divide 468 (1532) by the antenna's operating frequency in MHz
B. Divide 300 (982) by the antenna's operating frequency in MHz
C. Divide 71.5 (234) by the antenna's operating frequency in MHz
D. Divide 150 (491) by the antenna's operating frequency in MHz

58. (B-001-009-008)

The owner of an amateur station may:

A. permit anyone to use the station and take part in communications
B. permit any person to operate the station under the supervision and in the presence of the holder of the amateur operator certificate
C. permit anyone to use the station without restrictions
D. permit anyone to take part in communications only if prior written permission is received from Innovation, Science and Economic Development Canada

59. (B-003-017-005)

A power supply is to supply DC at 12 volts at 5 amperes. The power transformer should be rated higher than:

A. 6 watts
B. 2.4 watts
C. 60 watts
D. 17 watts

60. (B-001-013-006)

What is the longest period of time an amateur station can transmit, without identifying by call sign?

A. 15 minutes
B. 30 minutes
C. 20 minutes
D. 10 minutes

61. (B-004-005-002)

Which component can amplify a small signal but must use high voltages?

A. A vacuum tube
B. An electrolytic capacitor
C. A multiple-cell battery
D. A transistor

62. (B-006-009-009)

In free space, what is the radiation characteristic of a half-wave dipole?

A. Maximum radiation at 45 degrees to the plane of the antenna
B. Maximum radiation from the ends, minimum broadside
C. Minimum radiation from the ends, maximum broadside
D. Omnidirectional

63. (B-003-011-005)

In what emission type does the instantaneous amplitude (envelope) of the RF signal vary in accordance with the modulating audio?

A. Frequency shift keying
B. Frequency modulation
C. Amplitude modulation
D. Pulse modulation

64. (B-007-003-007)

The distance from the transmitter to the nearest point where the sky wave returns to the Earth is called the:

A. skip distance
B. angle of radiation
C. maximum usable frequency
D. skip zone

65. (B-001-017-010)

Which of the following is the most powerful equipment the holder of a Basic with Honours certificate can legally operate at full power?

A. 100 watts carrier power HF transmitter

B. 200 watts carrier power HF transceiver

C. 600 watts PEP HF linear amplifier

D. 160 watts carrier power VHF amplifier

66. (B-001-020-004)

The ITU Radio Regulations limit those radio amateurs, who have not demonstrated proficiency in Morse code, to frequencies above:

A. 1.8 MHz

B. 28 MHz

C. none of the other answers

D. 3.5MHz

67. (B-003-019-008)

What is one good way to avoid stray RF energy in your amateur station?

A. Keep the station's ground wire as short as possible

B. Use a beryllium ground wire for best conductivity

C. Drive the ground rod at least 4m (14 feet) into the ground

D. Make a couple of loops in the ground wire where it connects to your station

68. (B-005-003-007)

Which of the following two quantities should be multiplied together to find power?

A. Voltage and inductance

B. Inductance and capacitance

C. Voltage and current

D. Resistance and capacitance

69. (B-005-009-002)

If two equal-value inductors are connected in parallel, what is their total inductance?

A. The same as the value of either inductor
B. Half the value of one inductor
C. Twice the value of one inductor
D. The value of one inductor times the value of the other

70. (B-004-006-010)

Which colour band would differentiate a 120-ohm from a 1200-ohm resistor?

A. First band
B. Second band
C. Fourth band
D. Third band

71. (B-005-010-008)

What property allows an RF bypass capacitor on an audio circuit to divert an offending radio signal?

A. High reactance at audio frequencies
B. High reactance at radio frequencies
C. Low reactance at audio frequencies
D. Low reactance at radio frequencies

72. (B-008-001-009)

Two mobile stations are traveling along the same road in close proximity to each other and having trouble communicating through a local repeater. Why may it be necessary to use simplex operation to communicate between these cars?

A. There are many more simplex frequencies than repeater frequencies available
B. Simplex operation does not require the use of CTCSS tones
C. There is less time delay using simplex operation compared to using a repeater
D. The strong signal of one mobile transmitter may desensitize the receiver of the other mobile receiver

73. (B-001-024-010)

Which of these statements about Safety Code 6 is false?

A. Safety Code 6 sets limits for allowable rates at which RF energy is absorbed in the body (Specific Absorption Rate)

B. Safety Code 6 sets limits for contact currents that could be drawn from ungrounded or poorly grounded objects

C. Safety Code 6 sets limits in terms of power levels fed into antennas

D. Safety Code 6 sets limits for induced currents, electrical field strength and magnetic field strength from electromagnetic radiation

74. (B-001-019-002)

A reliable means to prevent or indicate overmodulation must be employed at an amateur station if:

A. DC input power to the anode or collector circuit of the final RF stage is in excess of 250 watts

B. persons other than the holder of the authorization use the station

C. radiotelegraphy is used

D. radiotelephony is used

75. (B-001-022-002)

Which of the following statements is not correct?

A. A disabled candidate, taking a Morse code sending test, may be allowed to recite the examination text in Morse code sounds

B. A disabled candidate must pass a normal amateur radio certificate examination before being granted any qualification

C. An accredited examiner may recover the cost of administering an examination.

D. Examinations for disabled candidates may be given orally, or tailored to the candidate's ability to complete the examination

76. (B-007-004-002)

What causes distant AM broadcast and 160 metre ham band stations not to be heard during daytime hours?

A. The presence of ionized clouds in the E region

B. The splitting of the F region

C. The weather below the ionosphere

D. The ionization of the D region

77. (B-005-012-003)

Resonance is an electrical property used to describe:

A. the results of tuning a varicap (varactor)
B. an inductor
C. the frequency characteristic of a coil and capacitor circuit
D. a set of parallel inductors

78. (B-002-005-007)

What is meant by the term "DX"?

A. Distant station
B. Calling any station
C. Go ahead
D. Best regards

79. (B-005-005-009)

The total resistance of four 68 ohm resistors wired in parallel is:

A. 272 ohms
B. 17 ohms
C. 12 ohms
D. 34 ohms

80. (B-004-001-002)

If an amplifier becomes non-linear, the output signal would:

A. overload the power supply
B. be saturated
C. cause oscillations
D. become distorted

81. (B-001-012-003)

The operator of an amateur station:

A. shall charge no less than $10 for each message that the person transmits or receives

B. may accept a gift or gratuity in lieu of remuneration for any message that the person transmits or receives

C. shall not demand or accept remuneration in any form, in respect of a radiocommunication that the person transmits or receives

D. shall charge no more than $10 for each message that the person transmits or receives

82. (B-003-012-007)

What happens to the signal of an overmodulated single-sideband or double-sideband phone transmitter?

A. It becomes stronger with no other effects

B. It becomes distorted and occupies more bandwidth

C. It has higher fidelity and improved signal-to-noise ratio

D. It occupies less bandwidth with poor high-frequency response

83. (B-007-005-001)

How do sunspots change the ionization of the atmosphere?

A. Unless there are sunspots, the ionization is zero

B. They have no effect

C. The more sunspots there are, the less the ionization

D. The more sunspots there are, the greater the ionization

84. (B-005-006-001)

Why would a large size resistor be used instead of a smaller one of the same resistance?

A. For a higher current gain

B. For less impedance in the circuit

C. For better response time

D. For greater power dissipation

85. (B-002-002-005)

What is the Standard International Phonetic for the letter D?

A. Denmark
B. David
C. Dog
D. Delta

86. (B-001-015-006)

In Canada, the 160 metre amateur band corresponds in frequency to:

A. 1.5 to 2.0 MHz
B. 2.25 to 2.5 MHz
C. 1.8 to 2.0 MHz
D. 2.0 to 2.25 MHz

87. (B-001-007-002)

When is a radio amateur allowed to broadcast information to the general public?

A. Only when broadcasts last longer than 15 minutes
B. Only when broadcasts last less than 1 hour
C. Never
D. Only when the operator is being paid

88. (B-001-023-005)

Which is not an element of the Innovation, Science and Economic Development Canada Public Consultation Process for antenna systems?

A. Providing written notice
B. Addressing relevant questions comments and concerns
C. Participating in public meetings on the project
D. Providing an opportunity for the public to respond regarding measures to address reasonable and relevant concerns

89. (B-006-012-003)

What is the low angle radiation pattern of an ideal half-wavelength dipole HF antenna in free space installed parallel to the Earth?

A. It is a circle (equal radiation in all directions)

B. It is a figure-eight, perpendicular to the antenna

C. It is a figure-eight, off both ends of the antenna

D. It is two smaller lobes on one side of the antenna, and one larger lobe on the other side

90. (B-001-018-001)

What kind of amateur station automatically retransmits the signals of other stations?

A. Repeater station

B. Beacon station

C. Space station control and telemetry link

D. Remote-control station

91. (B-003-006-006)

In a single sideband transmitter, the output of the variable frequency oscillator is connected to the _____.

A. linear amplifier

B. antenna

C. balanced modulator

D. mixer

92. (B-002-007-011)

The "Q signal" which signifies "I will call you again" is:

A. QRT

B. QRZ

C. QRX

D. QRS

93. (B-005-002-008)

The reciprocal of resistance is:

A. permeability
B. reluctance
C. conductance
D. reactance

94. (B-001-011-001)

Amateur radio stations may communicate:

A. only with other amateur stations
B. with anyone who uses international Morse code
C. with non amateur stations
D. with any station involved in a real or simulated emergency

95. (B-006-011-005)

What is one effect of increasing the boom length and adding directors to a Yagi antenna?

A. Gain increases
B. SWR increases
C. Wind load decreases
D. Weight decreases

96. (B-002-003-003)

What is simplex operation?

A. Transmitting on one frequency and receiving on another
B. Transmitting and receiving over a wide area
C. Transmitting one-way communications
D. Transmitting and receiving on the same frequency

97. (B-004-003-006)

A semiconductor is described as a "general purpose audio NPN device". This would be:

A. a bipolar transistor
B. a silicon diode
C. a triode
D. an audio detector

98. (B-005-001-011)

An inductance of 10 000 microhenrys may be stated correctly as:

A. 10 millihenrys
B. 100 millihenrys
C. 1 000 henrys
D. 10 henrys

99. (B-005-007-004)

Electrical energy at a frequency of 7125 kHz is in what frequency range?

A. Hyper
B. Super-high
C. Audio
D. Radio

100. (B-001-010-005)

What name is given to a form of interference that seriously degrades, obstructs or repeatedly interrupts a radiocommunication service?

A. Disruptive interference
B. Intentional interference
C. Adjacent interference
D. Harmful interference