About The Test

The exam consists of 100 questions divided into 8 topics:

- 25 questions on Regulations and Policies (*B-001*)
- 9 questions on Operating procedures (*B-002*)
- 21 questions on Station Assembly, Practice and Safety (*B-003*)
- 6 questions on Circuit Components (*B-004*)
- 13 questions on Basic Electronics and Theory (*B-005*)
- 13 questions on Feedlines and Antenna Systems (*B-006*)
- 8 questions on Radio Wave Propagation (*B-007*)
- 5 questions on Interference and Suppression (*B-008*)

More Details

More specifically, there will be one question chosen from each of the following sub-categories:[1)]

B-001 Regulations and Policies

- 1-1 radio licences, applicability, eligibility of licence holder
- 1-2 licence fee, term, posting requirements, change of address
- 1-3 licence suspension or revocation, powers of radio inspectors, offences and punishments
- 1-4 operator certificates, applicability, eligibility, equivalents, reciprocal recognition
- 1-5 operation, repair and maintenance of radio apparatus on behalf of other persons
- 1-6 operation of radio apparatus, terms of licence, applicable standards, exempt apparatus
- 1-7 content restrictions - non-superfluous, profanity, secret code, music, non-commercial
- 1-8 installation and operating restrictions - number of stations, repeaters, home-built, club stations
- 1-9 participation in communications by visitors, use of station by others
- 1-10 interference, determination, protection from interference
- 1-11 emergency communications (real or simulated), communication with non-amateur stations
- 1-12 non-remuneration, privacy of communications
- 1-13 station identification, call signs, prefixes
- 1-14 foreign amateur operation in Canada, banned countries, third-party messages
- 1-15 frequency bands and qualification requirements
- 1-16 maximum bandwidth by frequency bands
- 1-17 restrictions on capacity and power output by qualifications
- 1-18 unmodulated carriers, retransmission
- 1-19 amplitude modulation, frequency stability, measurements
- 1-20 International Telecommunication Union (ITU) Radio Regulations, applicability

- 1-21 operation outside Canada, ITU regions, reciprocal privileges, international licences
- 1-22 examinations - Department's fees, delegated examinations, fees, disabled accommodation
- 1-23 antenna structure approval, neighbour and land-use authority consultation
- 1-24 radio frequency electromagnetic field limits
- 1-25 criteria for resolution of radio frequency interference complaints

B-002 Operating and Procedures

- 2-1 voice operating procedures - channelized VHF/UHF repeater
- 2-2 phonetic alphabet
- 2-3 voice operating procedures - simplex VHF/UHF and HF
- 2-4 tuneups and testing, use of dummy load, courteous operation
- 2-5 Morse (CW) operating procedures, procedural signs
- 2-6 RST system of signal reporting, use of S meter
- 2-7 Q signals
- 2-8 emergency operating procedures
- 2-9 record keeping, confirmation practices, maps/charts, antenna orientation

B-003 Station Assembly, Practice and Safety

- 3-1 functional layout of HF stations
- 3-2 functional layout of FM transmitters
- 3-3 functional layout of FM receivers
- 3-4 functional layout of CW transmitters
- 3-5 functional layout of SSB)/CW receivers
- 3-6 functional layout of SSB transmitters
- 3-7 functional layout of digital systems
- 3-8 functional layout of regulated power supplies
- 3-9 functional layout of Yagi-Uda antennas
- 3-10 receiver fundamentals
- 3-11 transmitter, carrier, keying, and amplitude modulation fundamentals
- 3-12 carrier suppression, SSB fundamentals
- 3-13 frequency and phase modulation fundamentals
- 3-14 station accessories for telegraphy, radiotelephony, digital modes
- 3-15 digital mode fundamentals RTTY, ASCII, AMTOR, packet
- 3-16 cells and batteries, types, ratings, charging
- 3-17 power supply fundamentals
- 3-18 electrical hazards, electrical safety, security
- 3-19 electrical safety ground, capacitor discharge, fuse replacement
- 3-20 antenna and tower safety, lightning protection
- 3-21 exposure of human body to RF, safety precautions

B-004 Circuit Components

- 4-1 amplifier fundamentals
- 4-2 diode fundamentals
- 4-3 bipolar transistor fundamentals
- 4-4 field-effect transistor fundamentals
- 4-5 triode vacuum tube fundamentals
- 4-6 resistor colour codes, tolerances, temperature coefficient

B-005 Basic Electronics and Theory

- 5-1 metric prefixes – pico, micro, milli, centi, kilo, mega, giga
- 5-2 concepts of current, voltage, conductor, insulator, resistance
- 5-3 concepts of energy and power, open and short circuits
- 5-4 Ohm’s law - single resistors
- 5-5 series and parallel resistors
- 5-6 power law, resistor power dissipation
- 5-7 AC, sinewave, frequency, frequency units
- 5-8 ratios, logarithms, decibels
- 5-9 introduction to inductance, capacitance
- 5-10 introduction to reactance, impedance
- 5-11 introduction to magnetics, transformers
- 5-12 introduction to resonance, tuned circuits
- 5-13 introduction to meters and measurements

B-006 Feedlines and Antenna Systems

- 6-1 feed line characteristics, characteristic impedance
- 6-2 balanced and unbalanced feed lines, baluns
- 6-3 popular antenna feed line and coaxial connector types
- 6-4 line losses by line type, length and frequency
- 6-5 standing waves, standing wave ratio, SWR) meter
- 6-6 concept of impedance matching
- 6-7 isotropic source, polarization via element orientation
- 6-8 wavelength vs physical length
- 6-9 gain, directivity, radiation pattern, antenna bandwidth
- 6-10 vertical antennas - types, dimensions, characteristics
- 6-11 Yagi antennas - types, dimensions, characteristics
- 6-12 wire antennas - types, dimensions, characteristics
- 6-13 quad/loop antennas - types, dimensions, characteristics

B-007 Radio Wave Propagation

- 7-1 line of sight, ground wave, ionospheric wave (sky wave)
- 7-2 ionosphere, ionospheric regions (layers)
- 7-3 propagation hops, skip zone, skip distance
- 7-4 ionospheric absorption, causes and variation, fading, phase shift, Faraday rotation
- 7-5 solar activity, sunspots, sunspot cycle
- 7-6 MF and HF, critical and maximum useable frequencies, solar flux
- 7-7 VHF and UHF, sporadic E, aurora, ducting
- 7-8 scatter - HF, VHF, UHF

B-008 Interference and Suppression

- 8-1 front-end overload, cross-modulation
- 8-2 audio rectification, bypass capacitors, ferrites
- 8-3 intermodulation, spurious, key-clicks
- 8-4 harmonics, splatter, transmitter adjustments
- 8-5 use of filters: low-pass, high-pass, band-pass, band-reject

[1)]

See http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01008.html#s5.1 and RIC-3, Sec 5