

EXAMINATION FOR THE AMATEUR RADIO OPERATORS' CERTIFICATE OF PROFICIENCY
ISSUED BY THE DIRECTOR OF TELECOMMUNICATION OF SRI LANKA – FEBRUARY 1995
(Novice Class)

Index No.

BASIC ELECTRICITY, RADIO AND ELECTRONICS THEORY

Two hours

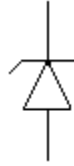
Answer all questions on this paper itself. A minimum of 50 marks is required for a pass.
Choose the correct answer and underline it.

-
- What is the unit of electromotive force?
(a) Ampere (b) Volt (c) Ohm (d) Watt
 - Hertz is a unit to measure
(a) Current (b) Voltage (c) Frequency (d) Power
 - A 10 Ohm resistor consumes a current of 1 Ampere. The power dissipated in the resistor is
(a) 10 Watts (b) 1 Watt (c) 100 Watts (d) .1 Watt
 - The Radiation Resistance of a $\frac{1}{2}$ -wave dipole is
(a) 50 Ohms (b) 100 Ohms (c) 300 Ohms (d) 75 Ohms
 - A moving coil meter responds only by itself to
(a) AC (b) DC (c) AC+DC (d) Frequency
 - An R.F. choke
(a) Aids the flow of R.F. (b) prevent AC ripple.
(c) prevent the flow of R.F. (d) accelerates the flow of R.F.
 - How can key clicks be eliminated?
(a) Should have a regulated power supply (b) Have an antenna matching device.
(c) Neutralize the P.A. (d) Use a key click filter.
 - Radio waves above 30 kHz are called
(a) Audio frequencies. (b) radio frequencies.
(c) very high frequencies. (d) super high frequencies.
 - List three good electrical insulators.
(a) Rubber, paper, aluminium. (b) paper, gold, copper.
(c) gold, mica, wood. (d) mica, wood, ceramic.

10. What is a grid dip meter.
 (a) A field strength meter
 (b) A SWR meter
 (c) A frequency counter
 (d) A variable L/C oscillator with a metered feed back current.
11. 28.160 MHz is the fourth harmonic of
 (a) 7.160 MHz. (b) 7.04 MHz. (c) 112.64 MHz. (d) 1.760 MHz.
12. 20 dB power gain is an increase by
 (a) 20 times. (b) 2 times. (c) 100 times. (d) 10 times.
13. The unit of measurement of capacitance is
 (a) Farad. (b) Volt. (c) Ampere. (d) Ohm.
14. The unit of measurement of resistance is
 (a) Farad. (b) Volt. (c) Ampere. (d) Ohm.
15. Ohm's law says
 (a) $V = IR$ (b) $V = I/R$ (c) $V = R/I$ (d) $V = I^2R$
16. What is the value of resistor shown?
- | | | |
|-----|-------|-------|
| RED | BLACK | BROWN |
|-----|-------|-------|
- (a) 210 Ohms (b) 200 Ohms
 (c) 20 Ohms (d) 2000 Ohms
17. Fading of H.F. is due to
 (a) Poor feeder line (b) poor antenna system
 (c) poor propagation (d) interaction between ground and sky wave
18. What propagation condition is indicated when a VHF signal received from a station 1500 km away?
 (a) D-Layer propagation (b) Moon bouncing
 (c) Faraday condition (d) Tropospheric propagation
19. A SSB signal could be received on a A.M. receiver by using an external
 (a) Diode detector. (b) Product detector.
 (c) Ratio detector. (d) Beat frequency oscillator.
20. 'D' layer is
 (a) The highest layer in the ionosphere. (b) The lowest layer in the ionosphere.
 (c) The medium layer in the ionosphere. (d) none of the above.
21. Which diode is used for voltage stabilization ?
 (a) Zener diode (b) Varicap diode (c) Light emitting diode (d) germanium diode

22. Which diode is used to charge capacitance?
 (a) Zener diode (b) Varicap diode (c) Light emitting diode (d) germanium diode

23. The symbol indicates a
 (a) Germanium diode (b) Silicon diode (c) Varicap diode (d) Zener diode



24. The ground wave of a radio transmitter disappears at
 (a) night (b) day light. (c) twilight. (d) does not disappear at any time.

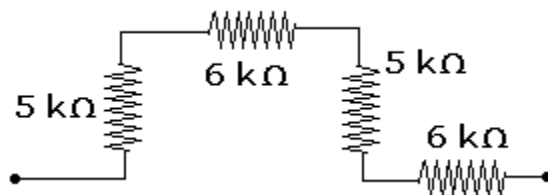
25. What emission designator describes F.M. voice transmission
 (a) A3E (b) F3E (c) J3E (d) F3F

26. What is unlabelled in the diagram

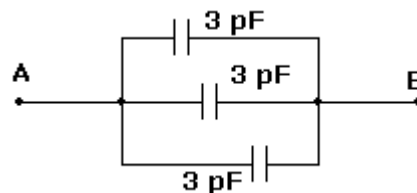


- (a) Microphone (b) Loudspeaker (c) Antenna tuner (d) Dummy load
27. If a person gets an electric shock you should immediately
 (a) Give him artificial respiration. (b) Switch off the mains supply immediately.
 (c) Send for a doctor. (d) Remove the victim to a safe place.
28. The standing wave ratio (S.W.R.) in a properly matched antenna should read
 (a) 1:1 (b) 2:1 (c) 1:2 (d) 1:3
29. 1000 Milliwatts is equivalent to
 (a) 10 Watts. (b) 1 Watt. (c) 0.1 Watt. (d) 0.01 Watt.
30. To prevent stray radiation From an R.F. oscillator one should enclose it in a
 (a) Plastic Box (b) perforated wooden box. (c) mica box. (d) metal box.
31. During Sunspot maximum propagation of H.F. signals is
 (a) Very poor (b) no propagation at all (c) very good (d) none of above
32. A fuse is used in an electrical circuit
 (a) to prevent AC hum. (b) to protect from lightning
 (c) to prevent damage of all equipment due to overload. (d) none of the above
33. 3 GHz is equivalent to
 (a) 30 MHz. (b) 3000 MHz. (c) 30000 MHz. (d) 300 MHz.
34. A sunspot cycle is
 (a) 11 years. (b) 5 years. (c) 10 years. (d) 21 years.

35. A dipole is used on 7 MHz will work very efficiently on
 (a) 14 MHz. (b) 21 MHz (c) 28 MHz. (d) 3.5 MHz.
36. The deviation of a standard 2 meter Amateur Radio Transmitter is
 (a) 50 kHz. (b) 25 kHz. (c) 2.5 kHz. (d) 5kHz.
37. A vertical polarized transmission could have for best reception
 (a) A horizontal receiving antenna. (b) a vertical receiving antenna.
 (c) a cross polarized antenna. (d) a circular polarized antenna.
38. An antenna whose input impedance is 50 Ohms should have a feeder with the impedance at
 (a) 100 Ohms. (b) 75 Ohms. (c) 50 Ohms. (d) 300 Ohms.
39. A coaxial cable is
 (a) an unbalanced line. (b) a balanced line.
 (c) a wave guide. (d) none of the above.
40. A 300 Ohm twin feeder line is
 (a) an unbalanced line. (b) a balanced line.
 (c) a wave guide. (d) none of the above.
41. What happens to the input impedance of a Yagi antenna when more elements are added ?
 (a) Decreases. (b) increases.
 (c) will cause unbalanced. (d) remains unchanged.
42. The equivalent resistance of the circuit given is
 (a) 10 kilohms (b) 11 kilohms (c) 1 kilohm. (d) 22 kilohms.



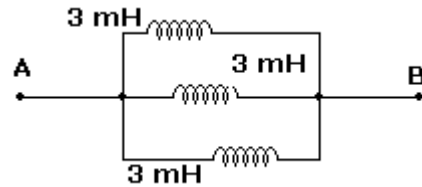
43. Where does R.F. current flow in a conductor ?
 (a) In the centre of the conductor. (b) In the magnetic field around the conductor.
 (c) along the surface. (d) none of the above.
44. What is the total capacitance between the points A and B shown in the diagram ?



- (a) 9pF (b) 1 pF (c) 18 pF (d) 27 pF

45. What is the total inductance between A and B?

- (a) 9 mH (b) 1 mH (c) 18 mH (d) 27 mH



46. "MEGA" is equivalent to

- (a) One thousand. (b) one million.
(c) one thousand million. (d) one thousandth.

47. The prefix Micro is equivalent to

- (a) 10^{-6} (b) 10^{-3} (c) 10^{-12} (c) 10^{-9}

48. Over modulation in an F.M. transmission will cause

- (a) Heavy distortion. (b) to occupy wide bandwidth.
(c) To occupy narrow bandwidth. (d) none of the above.

49. A PNP transistor is a

- (a) Current operating device (b) voltage operating device
(c) power operating device (d) high impedance device

50. The power input of a transistor is

- (a) Emitter current x base current (b) collector current X emitter current.
(c) collector current X collector voltage. (d) base current X collector voltage.

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முழுப் பதிப்புரிமையுடையது/
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Index No.

LICENSING CONDITIONS, OPERATING PRACTICES AND PROCEDURES

One hour

Answer all questions on this paper itself.

Choose the correct answer and underline it. A minimum of 50 marks is required for a pass.

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1. Abbreviation of SK means
(a) end of transmission. (b) waiting period.
(c) invitation to a particular station to transmit. (d) end of message of communication.
 2. Abbreviation AA means
(a) answer again (b) all after (c) repeat message. (d) all received.
 3. Abbreviation for closing station is
(a) CP (b) C (c) CL (d) CQ
 4. Abbreviation KA
(a) invitation to transmit. (b) break in.
(c) starting signal (d) signal used to interrupt a transmission in progress.
 5. Telegraphy by on-off keying of an amplitude-modulated audio frequency, double side-band, for reception by ear is denoted by
(a) A2A (b) A1A (c) J3E (d) H3E
 6. Amplitude modulated single side-band full carrier, is denoted by
(a) A3E (b) A1A (c) J3E (d) H3E
 7. An amateur station log book shall be maintained in a
(a) loose leaf folder. (b) writing pad
(c) an exercise book serially numbered and stapled. (d) computer printout sheets.
 8. All times entered in the log book shall be in
(a) local time of transmitting station. (b) local time the receiving station
(c) in standard time of the region. (d) UTC
 9. In Amateur transmission it is not permissible to use
(a) the words of the third party publicly spoken (b) secret code.
(c) international phonetic alphabet. (d) plain language.

10. Which of the following types of messages cannot be transmitted over amateur radio ?
(a) Those of personal nature. (b) Communication using Q code.
(c) Phone patched traffic. (d) Words of a third party which have been publicly spoken.
11. The correct phonetic alphabet for the word WIRE is
(a) WILLIAM ISSAC ROBERT EDWARD (b) WHISKEY INDIA ROMEO ECHO
(c) WHISKEY INDIA ROBERT EDWARD (d) WHISKEY INDIA ROBERT ECHO
12. The correct group using the International Phonetic Alphabet is
(a) NOVEMBER SIERRA UNIFORM VICTOR (b) NOVEMBER SARAH UNCLE VIOLET
(c) NOVEMBER SIERRA UNCLE VICTOR (d) NOVEMBER SIERRA UNIFORM VIOLET
13. Items that are to be inspected by an officer acting under the authority of the Director General of Telecommunications, are
(a) Log book only. (b) station and logbook only.
(c) station, logbook and licence. (d) logbook and licence only.
14. An amateur station operating at a temporary location other than that given in the licence shall have use call-sign with suffix
(a) /A (b) /P (c) /M (d) /MM
15. If a station is operated by another person who does not a valid licence, other than the licensee, it will be operated in the following maner:
(a) By voice only under supervision of the icencee.
(b) By Morse code only under the supervision of the licensee.
(c) By voice only and no supervision required.
(d) With special permission of the Director General of Telecommunications.
16. Directional CQ calls should
(a) be made only on CW. (b) not be acknowledged.
(c) not be made. (d) be acknowledged immediately.
17. When calling an amateur station it is good procedure to
(a) transmit your callsign first and the called station last.
(b) transmit the callsign of the station being called, first and the calling ststion.
(c) transmit your callsign only.
(d) transmit the call sign of the station being called only.
18. When using voice transmission
(a) Communicate in Q code. (b) Use plain language.
(c) Use secret cipher. (d) Use low power on transmitter.
19. For making test transmission of duration exceeding 30 seconds on bands below 52 MHz it is best
(a) Use a dummy antenna.
(b) Transmit a test signal of a series of 'V' followed by your callsign.
(c) Make interruptions every 15 seconds.
(d) Use minimum power as far as possible.

20. Important entries in an amateur station log book are,
 (a) Callsigns of stations worked, frequency bands used, power transmitted.
 (b) Transmitter power used, frequency bands used and name of operator.
 (c) Date, month and year, beginning and end of transmission in UTC, callsigns of the station worked, frequency bands used, class of emissions.
 (d) Callsign of station worked, emissions used, power of transmitter, date, month and year.
21. The Q code abbreviation QRS means
 (a) Change transmission to another frequency. (b) Send more slowly.
 (c) Stop sending. (d) I will call you again.
22. The Q code QSD means
 (a) Your signals are mutilated. (b) Send faster.
 (c) I am ready. (d) I can send on my working frequency.
23. The Q code QRO means
 (a) Shall I decrease transmitter power ? (b) Shall I send faster ?
 (c) Shall I increase transmitter power ? (d) Are you ready ?
24. The Q code abbreviation for "Are you busy ?" is given by
 (a) QRL ? (b) QSL ? (c) QRT ? (d) QRX ?
25. The Q code for "What working frequency will you use ?"
 (a) QRS ? (b) QSL ? (c) QSU ?

Answers 1995-Feb
 Basic Electricity

- | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1. b | 2. c | 3. a | 4. a | 5. b | 6. c | 7. d | 8. ?? | 9. d | 10. d |
| 11. b | 12. c | 13. a | 14. d | 15. a | 16. b | 17. d | 18. d | 19. d | 20. b |
| 21. a | 22. d | 23. d | 24. d | 25. b | 26. c | 27. b | 28. a | 29. b | 30. d |
| 31. c | 32. c | 33. b | 34. a | 35. b | 36. | 37. b | 38. c | 39. a | 40. b |
| 41. a | 42. d | 43. c | 44. a | 45. b | 46. b | 47. a | 48. a | 49. a | 50. d |

Licensing Conditions

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|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1. d | 2. b | 3. c | 4. c | 5. a | 6. d | 7. c | 8. d | 9. b | 10. c |
| 11. b | 12. a | 13. c | 14. a | 15. d | 16. b | 17. b | 18. b | 19. a | 20. c |
| 21. b | 22. a | 23. c | 24. b | 25. d | | | | | |