

EXAMINATION FOR THE AMATEUR RADIO OPERATORS' CERTIFICATE OF PROFICIENCY  
ISSUED BY THE DIRECTOR GENERAL OF TELECOMMUNICATIONS, SRI LANKA - (2000)  
(NOVICE CLASS)

Basic Electricity, Radio and Electronic Theory Two hours

Answer all questions on this paper itself.

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A minimum of 50 marks is required for a pass.

Pick out the correct answer and underline it.

- Voltmeters should be connected in electrical circuits  
(a) Serially (b) parallelly  
(c) either serially or parallelly (d) neither serially or parallelly
- What is a unit of  
(a) resistance (b) volt (c) current (d) power
- A 12V DC supply is connected across to a  $30\ \Omega$  resistance, the current will be  
(a) 4 A (b) 0.4 A (c) 0.04 A (d) 0.004 A
- The dissipated power in a  $12\ \Omega$  resistor in a circuit which carries 0.1 mA  
(a) 1.2 W (b) 0.12 W (c) 0.12  $\mu$ W (d) 0.012  $\mu$ W
- The effective resistance between A and B in the diagram shown  
(a) 17 (b)  $10\ \Omega$   
(c) 7 (d)  $4\ \Omega$
- The frequency range from 3MHz is generally referred to as  
(a) Ultra high frequency (b) Very high frequency  
(c) High frequency (d) Medium frequency
- The value of the resistor shown in the figure

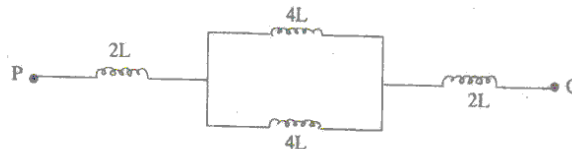


- The symbol shown indicate a  
(a) transistor (b) capacitor  
(c) battery (d) resistor



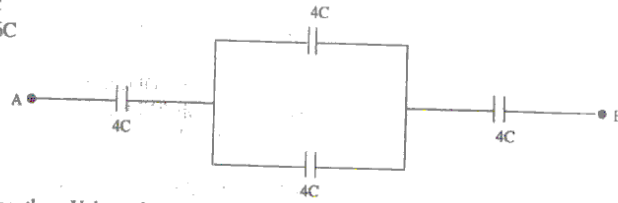
- The total inductance between P and Q in the circuit shown is

- (a) 2L (b) 4L  
(c) 6L (d) 8L

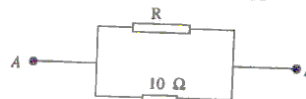


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10. The total capacitance between A and B in the circuit shown is  
 (a) 10C (b) 8C  
 (c) 6C (d) 1.6C



11. Transformers are used to change the Value of  
 (a) Voltage (b) Resistance (c) Inductance (d) Capacitance
12. The prefix "nano" is equivalent to  
 (a)  $10^{-12}$  (b)  $10^{-9}$  (c)  $10^{-6}$  (d)  $10^{-3}$
13. What is the power consumed by a transmitter taking 0.5 A at 12V DC?  
 (a) 12 W (b) 6 W (c) 1.2 W (d) 0.12 W
14. What is the energy stored in 2H inductor carrying current of 2 amps?  
 (a) 2 J (b) 4 J (c) 2 W (d) 4 W
15. When constant DC Voltage applied to a capacitor, it acts as  
 (a) zero resistor (b) a infinite resistor (c) a finite resistor (d) a current source
16. In the ionosphere, the highest layer is  
 (a)  $F_2$  (b)  $F_1$  (c) E (d) D
17. Radio waves travels in free space is  
 (a)  $3 \times 10^8$  m/s (b)  $3 \times 10^{-8}$  m/s (c)  $3 \times 10^{12}$  m/s (d)  $3 \times 10^{-12}$  m/s
18. When a transmission line terminated properly, its reflection co-efficient is  
 (a) infinity (b) 1 (c) 0.5 (d) zero
19. A 220  $\Omega$  resistor dissipating 22 W of power the current flowing across the resistor is  
 (a) 10 A (b) 1 A (c) 0.1 A (d) 0.01 A
20. The conductivity of a current carrying conductor can be increased by  
 (a) Increasing its diameter (b) Increasing its length  
 (c) adding a resistor (d) none of these
21. AC Voltage can be converted to DC by using a  
 (a) resistor. (b) transformer. (c) dynamo. (d) diode bridge.
22. As frequency increases, the reactance of an inductor  
 (a) decreases. (b) increases. (c) stays constant. (d) none of these.
23. The magnification factor of a series (LRC) circuit is given by  
 (a)  $Q = 2\pi\sqrt{LC}$  (b)  $Q = \frac{\omega L}{R}$  (c)  $Q = \sqrt{\frac{\omega L}{R}}$  (d)  $Q = \left(\frac{\omega L}{R}\right)^2$
24. The radiation resistance of a folded dipole antenna is  
 (a) 75  $\Omega$ . (b) 100  $\Omega$ . (c) 150  $\Omega$ . (d) 300  $\Omega$ .
25. The voltage across the resistor R shown in the given figure when 12 V applied across A and B.  
 (a) 1.2 V.  
 (b) 12 V.  
 (c) 120 V.  
 (d) 122 V.



26. The average value of the sine wave  
(a) zero (b) one. (c) half. (d) two.
27. The instrument meggar is used for  
(a) measuring insulation. (b) measuring frequency.  
(c) measuring capacitance. (d) measuring inductance.
28. Over modulation occurs when modulation index (m)  
(a)  $m > 1$  (b)  $m < 1$  (c)  $m = 1$  (d)  $m = 0$
29. 'PNP' is a  
(a) Junction transistor (b) Bipolar transistor.  
(c) Field effect transistor (d) diode.
30. A coil has a resistance of  $6\ \Omega$  and inductive reactance  $8\ \Omega$ . The impedance of the coil is  
(a)  $10\ \Omega$ . (b)  $8\ \Omega$ . (c)  $6\ \Omega$ . (d)  $14\ \Omega$ .
31. The reactance of a  $0.6\text{H}$  shunt caoil at a frequency  $50\text{ Hz}$  is  
(a)  $0.6\pi\ \Omega$ . (b)  $6\pi\ \Omega$ . (c)  $60\pi\ \Omega$  (d)  $600\pi\ \Omega$ .
32. A varactor diode acts as a variable  
(a) voltage source (b) capacitor (c) Inductor. (d) resistor.
33. A diode detector is used for detection of  
(a) DSB signal (b) SSB signal (c) AM signals. (d) FM signals.
34. A two-way communication is called  
(a) simplex (b) half duplex (c) full duplex. (d) RF.
35. Transmitter and receiver together called as  
(a) transceiver. (b) full transmitter. (c) full receiver. (d) none of these.
36. Basic transistor terminals  
(a) Base, Collector, Emitter. (b) Positive, Negative, Base.  
(c) Base, Collector, Positive. (d) Base, Emitter, Negative.
37. A transformer coils are called  
(a) first and second (b) inductive and capacitive  
(c) motor coil and rotor coil (d) primary and secondary
38. The function of a shunt in an ammeter is to  
(a) increase the frequency. (b) decrease the current.  
(c) increase voltage. (d) by pass the current.
39. The oscillators, most commonly used in amateur radio is  
(a) Clapp-gouriet. (b) colpitts.  
(c) colpitts or clapp-gouriet. (d) none of these.
40. A half-wave antenna is resonant at  $10\text{ MHz}$ . Its approximate length will be  
(a)  $2.50\text{ m}$ . (b)  $5.0\text{ m}$ . (c)  $10\text{ m}$ . (d)  $15\text{ m}$ .
41.  $0.001\text{ picofarad}$  is equivalent to  
(a)  $1 \times 10^{-15}\text{ F}$  (b)  $1 \times 10^{-12}\text{ F}$  (c)  $1 \times 10^{-9}\text{ F}$  (d)  $1 \times 10^{-6}\text{ F}$
42.  $10\text{ dB}$  power gain is an increase by  
(a) 1 time (b) 5 times. (c) 10 times. (d) 100 times.

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43. Transformer is a device to transfer  
(a) mechanical energy to mechanical energy. (b) mechanical energy to electrical energy.  
(c) electrical energy to electrical energy. (d) electrical energy to mechanical energy.
44. The ability of a receiver to pick up weak signal is  
(a) stability. (b) screening. (c) sensitivity. (d) selectivity.
45. The characteristic impedance of a lossless transmission line is given by  
(a)  $Z = \sqrt{L/C}$  (b)  $Z = \sqrt{C/L}$  (c)  $Z = L/C$  (d)  $Z = \sqrt{LC}$ .
46. The resonant frequency of a tuned (LCR) circuit depends on  
(a) L and C. (b) R only. (c) I only. (d) V only.
47. Zener diodes are used in  
(a) modulator. (b) demodulator (c) dc power supply. (d) multipliers.
48. The deviation of a standard meter in an Amateur Radio Transmitter is  
(a)  $\pm 5$  kHz. (b)  $\pm 2.5$  kHz. (c)  $\pm 2$  kHz. (d)  $\pm 1$  kHz.
49. On a transmission line voltage Standing Wave Ratio (VSWR) is given by  
(a)  $\sqrt{V_{\max}/V_{\min}}$  (b)  $(V_{\max}/V_{\min})^2$  (c)  $V_{\max}/V_{\min}$  (d)  $V_{\min}/V_{\max}$ .
50. The r.m.s. value of the 230V, 50Hz main supply  
(a)  $230\sqrt{2}$  V. (b)  $230/\sqrt{2}$  V. (c) 230 V. (d)  $2 \times 230\sqrt{2}$  V.



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Licencing Conditions, Operating  
Practices and Procedures

One hour

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1. Abbreviation AA means  
(a) End of message or Communication. (b) End of transmission.  
(c) Invitation to a particular station to transmit (d) Waiting period.
2. Amplitude modulated signal side-Band full carrier is denoted by  
(a) A1A. (b) J3E. (c) A3E. (d) H3E.
3. Abbreviation KN means  
(a) invitation to any station to transmit. (b) end of transmission.  
(c) end of message or communication. (d) invitation to a particular station to transmit.
4. "Increase power" is given by Q code  
(a) QRS (b) QRQ. (c) QRP. (d) QRO.
5. "Your frequency varies" is given by Q-code  
(a) QRK (b) QRL. (c) QRH. (d) QRG.
6. Abbreviation for "stand by" is  
(a) SK (b) VA. (c) AR. (d) AS.
7. Abbreviation VA means  
(a) end of work. (b) end of message. (c) stand by. (d) closing station.
8. A log book must be kept for  
(a) main station address and all temporary locations (b) main station address only.  
(c) all temporary locations. (d) mobile operations.
9. An amateur station log book shall be maintained in a  
(a) writing pad. (b) an exercise book serially numbered and stapled.  
(c) daily diary. (d) a folder with loose leaf.
10. When using voice transmission  
(a) use secret cypher. (b) reduce the power on the transmitter.  
(c) switch off the transmitter. (d) communicate in Q code.
11. Direction CQ call should  
(a) be made. (b) not be made  
(c) be acknowledged. (d) not be acknowledged.
12. The Q code, QSD means  
(a) your signals are mutilated. (b) are you busy.  
(c) stop sending. (d) I am ready.

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13. The Q code QRO means
  - (a) change transmission to another frequency.
  - (b) I will call you again.
  - (c) shall I increase transmitter power.
  - (d) I am ready.
14. The Q code for "send more slowly" is given by
  - (a) QSR.
  - (b) QSV.
  - (c) QRS.
  - (d) QSS.
15. The Q code for "what working frequency will you use" is
  - (a) QRL.
  - (b) QRT.
  - (c) QRX.
  - (d) QSS.
16. Abbreviation KA means
  - (a) stating signal.
  - (b) end of work.
  - (c) please do not interfere.
  - (d) end of QSO.
17. Abbreviation AR means
  - (a) end of work.
  - (b) send faster.
  - (c) waiting period.
  - (d) end of transmission.
18. In amateur transmission it is permissible to use
  - (a) phone patched traffic.
  - (b) secret codes.
  - (c) the words of a third party publicly spoken.
  - (d) none of the above.
19. To prevent interference to other users of an amateur band a transmitter should initially be tuned into a
  - (a) Antenna.
  - (b) Dummy load.
  - (c) Real load.
  - (d) none of the above.
20. In a RST code "Tone" is given by
  - (a) RS.
  - (b) RT.
  - (c) T.
  - (d) S.
21. Listen on the frequency
  - (a) before initiating a CQ call.
  - (b) after initiating a CQ call.
  - (c) while initiating a CQ call.
  - (d) none of the above.
22. Q-code abbreviation QSV means
  - (a) Send a message.
  - (b) Do not send a message.
  - (c) Send a series of VVVS.
  - (d) Do not send a series of VVVS.
23. Which of the following types of messages can be received by an amateur licensee?
  - (a) Secret transmission.
  - (b) Air Force transmission.
  - (c) Standard frequency transmission.
  - (d) Diplomatic transmission.
24. Q-code abbreviation QTH means
  - (a) What is your location.
  - (b) Are my signal Fading.
  - (c) Is my keying defective.
  - (d) What is the strength of my signal.
25. Abbreviation K means
  - (a) What is the correct time.
  - (b) How many messages have you sent.
  - (c) What is your location.
  - (d) Invitation to any station to transmit.

**Answers for 2000**

**Basic Electronic ....**

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

**Licencing conditions.....**

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