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

**Basic Electricity, Radio and Electronic Theory**

Two hours

Index No:-…………

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

1. Voltmeter should be connected in electrical circuits
    (a) Serially   (b) Parallely
    (c) either serially or parrallsly   (d) neither serially nor parallely

2. Watt is a unit of
    (a) resistance   (b) volt   (c) current   (d) power

3. A 12V DC supply is connected across to a 30Ω resistance, the current will be
    (a) 1A   (b) 4A   (c) 0.4A   (d) 0.04A

4. The dissipated power in a 12Ω resistor in a circuit which carries 0.1 mA
    (a) 0.12mW   (b) 1.2 W   (c) 0.12 µW   (d) 0.012 µW

5. The effective resistance between A and B in the diagram shown

    (a) 17Ω   (b) 10Ω
    (c) 7Ω   (d) 4Ω
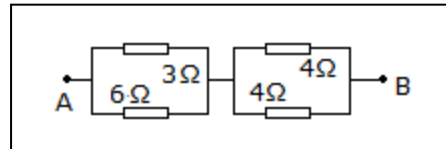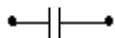

6. The frequency range from 3MHz is generally reffered as
    (a) Ultra High Frequency   (b) Very High Frequency
    (c) High Frequncy   (d) Medium Frequency

7.The value of the resistor shown in the figure

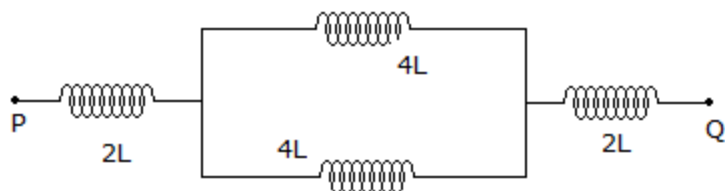   (a) 22Ω   (b) 220Ω   (c) 2200Ω   (d) 22kΩ
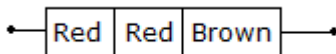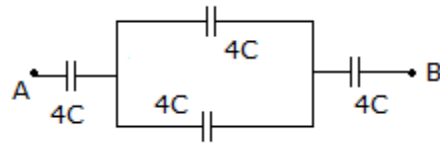
8.The symbol shown indicate a

    (a) transistor   (b) capacitor   (c) battery   (d) resistor

9. The total inductance between P and Q


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

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 0.5A 12V DC?
      (a) 12W   (b) 6W   (c) 1.2W   (d) 0.12W

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 is act 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) 3×10^8 m/s   (b) 3×10^{-8} m/s   (c) 3×10^{12} m/s   (d) 3×10^{-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 220Ω resistor dissipating 22W 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 it's diameter   (b) increasing it's 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 thease

23. The magnification factor of a series (LRC) circuit is given by
      (a) $Q = 2\pi\sqrt{(LC)}$ (b) $Q = \omega L / R$ (c) $Q = \sqrt{(\omega L / R)}$ (d) $Q = (\omega L / R)^2$

24. The radiation resistance of a folded dipole antenna is
      (a) 75 Ω   (b) 100 Ω   (c) 150 Ω   (d) 300 Ω

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
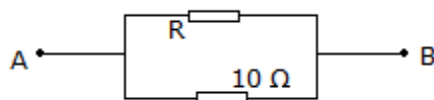
26. The average value of the sin wave
    (a) zero   (b) one   (c) half   (d) two

27. The instrument megger 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 Ω and inductive reactance 8 Ω. The impedance of the coil is
    (a) 10 Ω   (b) 8 Ω   (c) 6 Ω   (d) 14 Ω

31. The reactance of a 0.6 H shunt coil at a frequency 50 Hz is
    (a) 0.6π Ω   (b) 6π Ω   (c) 60π Ω   (d) 600π Ω

32. A varactor diode act as a variable
    (a) voltage source   (b) capacitor   (c) inductor   (d) resistor

33. A diode detector is use for detection of
    (a) DSB signal   (b) SSB signal   (c) AM signal   (d) FM signal

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 oscillator, most commonly used in amateur radio is
    (a) Clapp-gouriet   (b) colpits
    (c) colpits or clap-gouriet   (d) none of these

40. A half wave antenna is resonant at 10 MHz its approximate length will be
    (a) 2.5 m   (b) 5.0 m   (c) 10 m   (d) 15 m

41. 0.001 picofarad is equivalent to
    (a) $1x10^{-15}$ F   (b) $1x10^{-12}$ F   (c) $1x10^{-9}$ F   (d) $1x10^{-6}$ F

42. 10dB power gain is an increase by
    (a) 1 time   (b) 5 times   (c) 10 times   (d) 100 times

43. Transformer is 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 pickup weak signal is
    (a) stability   (b) screening   (c) sensitivity   (d) selectivity

45. The characteristic impedence 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 (LRC) circuit depend on
    (a) L and C   (b) R only   (c) L only   (d) V only

47. Zener diodes are used in
    (a) modulator   (b) demodulator   (c) dc power supply   (d) multiplier

48. The deviation of a standard meter in an Amateur Radio Transmitter is
    (a) ±5 kHz   (b) ±2.5 kHz   (c) ±2 kHz   (d) ±1 kHz

49. On a transmission line voltage Standing Wave Ratio (VSWR) is given by
    (a) $\sqrt{(V_{max} \cdot V_{min})}$ (b) $(V_{max} \cdot V_{min})^2$ (c) V_{max}/V_{min} (d) V_{min}/V_{max}

50. The r.m.s. value of the 230 V, 50 Hz 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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Answers:-

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. b	16. a	17. a	18. d	19. c	20. a
21. d	22. b	23. b	24. d	25. b	26.a	27. a	28. a	29. a	30. a
31. c	32. b	33. c	34. a	35. a	36. a	37. d	38. d	39. b	40. d
41. c	42. c	43. c	44. c	45. a	46. a	47. c	48. b	49. c	50. c

Department of Examination, Sri Lanka

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**Licencing Conditions, Operating
Practices and Procedures**

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1. Abbreviation AS 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 single 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
    (1) 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 logbook 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 loos leaf.

10. When using voice transmission
    (a) use secret cipher.   (b) reduce the power on the transmitter.
    (c) switch off the transmitter   (c) communicate in Q code.

11. Direction CQ call should
    (a) be made   (b) not be made
    (c) be acknowledge   (d) not be acknowledge

12. The Q code, QSD means
    (a) your signals are multilated.   (b) are you busy.
    (c) stop sending.   (d) I am ready.

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) starting 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 code
     (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 licence?
     (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
     (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:-

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

Q-11   typing error:- "Direction" should be "Directional"
Q-12   speling mistake:- "multilated" should be "mutilated"
        QSD = your signals are mutilated.
        Are you busy? = QRL?
        Stop sending = QRT
        I am ready = QRV
Q-13   Change transmission to another frequency = QSY
        I will call you again = QRX
        I am ready = QRV
Q-14   QSR = repeat your call on the calling frequency.(did not hear you due to interference...)
            This is not use in amateur radio.
        QSV = send a series of "V"s.

QSS = I will use the working frequency .....MHz.

This is not use in amateur radio.

Q-15   This is not use in amateur radio.

QRL = busy, QRT = stop, QRX = stand by, QSS = use the working frequency

Q-16   end of work = <u>VA</u>,   end of transmission = <u>AR</u>

Q-17   end of work = <u>VA</u>,   send faster = QRQ