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EXAMINATION FOR THE AMATEUR RADIO OPERATORS' CERTIFICATES OF PROFICIENCY
 ISSUED BY THE DIRECTOR GENERAL OF TELECOMMUNICATIONS, SRI LANKA - July 1997.
 (NOVICE CLASS)

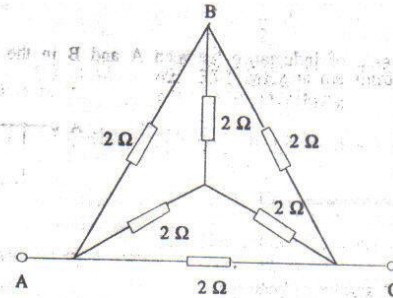
BASIC ELECTRICITY, RADIO & ELECTRONICS THEORY

Two hours

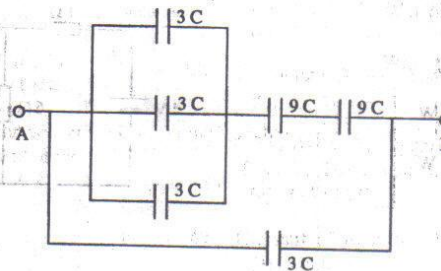
Index No.

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

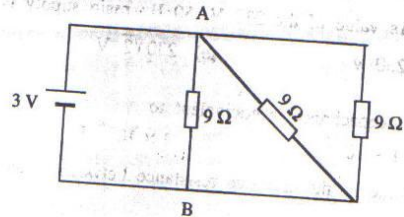
- Henry is a unit of
 (a) Resistance (b) Inductance (c) Capacitance (d) Frequency
- The rms value of the 230 V, 50 Hz main supply is
 (a) 230 V (b) $230\sqrt{2}$ V (c) $\frac{230}{\sqrt{2}}$ V (d) $2 \times 230\sqrt{2}$ V
- 0.1 mF capacitance is equivalent to
 (a) 1×10^{-5} F (b) 1×10^{-6} F (c) 1×10^{-7} F (d) 1×10^{-8} F
- The value of the effective resistance between A and C in the circuit shown is
 (a) $\frac{1}{2} \Omega$ (b) 1Ω (c) $\frac{3}{2} \Omega$ (d) 2Ω



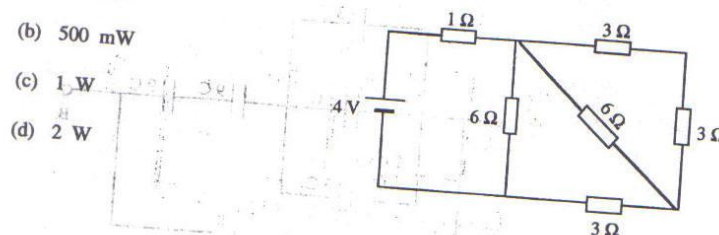
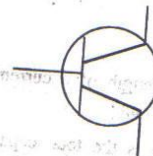
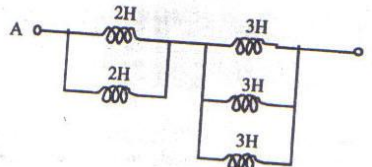
- The length of a current carrying conductor is doubled. The resistance will be
 (a) half (b) one fourth (c) twice (d) same
- What is the total capacitance between the points A and B in the given circuit ?
 (a) C (b) 3 C (c) 6 C (d) 9 C



7. The reactance of a 4 mH smoothing choke at a frequency of 50 Hz is
 (a) $4 \times 10^{-1} \pi \Omega$ (b) $4 \times 10^{-2} \pi \Omega$ (c) $2 \times 10^{-1} \pi \Omega$ (d) $2 \times 10^{-2} \pi \Omega$
8. The prefix "mega" is equivalent to
 (a) 10^3 (b) 10^6 (c) 10^9 (d) 10^{-6}
9. The resonant frequency of a tuned (LRC) circuit is given by
 (a) $\frac{1}{2\pi\sqrt{LC}}$ (b) $\frac{1}{2\pi}\sqrt{\frac{L}{C}}$ (c) $\frac{1}{2\pi}\sqrt{LC}$ (d) $\frac{2\pi}{\sqrt{LC}}$
10. The output signal of a balanced modulator is
 (a) DSB (b) AM (c) FM (d) SSB
11. The wavelength of a signal at 60 MHz in free space is
 (a) 1 m (b) 5 m (c) 10 m (d) 50 m
12. What is the value of the current flowing in branch AB in the given circuit ?

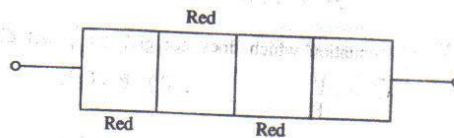


13. The total value of inductance between A and B in the circuit shown is
 (a) $\frac{1}{2}$ H (b) 1 H (c) $\frac{3}{2}$ H (d) 2 H
14. The symbol shown indicates a
 (a) npn transistor (b) pnp transistor (c) field effect transistor (d) diode
15. The power dissipation of the 1Ω resistor in the circuit shown is
 (a) 250 mW (b) 500 mW (c) 1 W (d) 2 W



16. The input power of a transmitter running at 24 V, 0.5A is
 (a) 6 W (b) 12 W (c) 18 W (d) 24 W
17. 0.01 microhenry inductance is equivalent to
 (a) 1×10^{-5} H (b) 1×10^{-6} H (c) 1×10^{-7} H (d) 1×10^{-8} H
18. When 1 V emf is applied across a 1 F capacitor, the energy stored in the capacitor is
 (a) $\frac{1}{2}$ J (b) 1 J (c) 2 J (d) 4 J
19. As the frequency decreases, the reactance of an inductor
 (a) decreases (b) stays constant (c) increases (d) none of the above
20. The wave length of a signal in free space is 100 m. What is its wave length ?
 (a) 1 MHz (b) 10 MHz (c) 100 MHz (d) 3 MHz
21. The frequency range from 30 MHz to 300 MHz is generally referred to as
 (a) Low Frequency (b) High Frequency
 (c) Very High Frequency (d) Ultra High Frequency
22. A half-wave antenna is resonant at 30 MHz. Its approximate length will be
 (a) 2.5 m (b) 5 m (c) 7.5 m (d) 10 m
23. In the ionosphere, the lowest layer is known as
 (a) D layer (b) E layer (c) F₁ layer (d) F₂ layer
24. In a series RLC circuit at resonance the impedance is
 (a) zero (b) minimum (c) maximum (d) infinity
25. A transformer is used to change the value of
 (a) voltage (b) frequency (c) power (d) none of the above
26. To measure the voltage of a circuit a voltmeter must be connected in
 (a) series with the circuit. (b) paralld with the circuit.
 (c) either series or paralld with the circuit. (d) none of the above.
27. The equation which does not give the power dissipated in a resistor R is
 (a) $P = \frac{I^2}{R}$ (b) $P = I^2 R$ (c) $P = \frac{V^2}{R}$ (d) $P = VI$
28. The magnification factor of a series (LRC) circuit is given by
 (a) $Q = \frac{\omega L}{R}$ (b) $Q = \omega LR$ (c) $Q = \frac{\omega C}{L}$ (d) $Q = \frac{\omega L}{C}$
29. The purpose of adding reflectors and a director to a folded dipole antenna is to
 (a) increase its impedance (b) decrease its impedance
 (c) make it unbalanced (d) none of the above
30. The moving coil instrument can be used to measure
 (a) dc values only (b) ac values only
 (c) both dc and ac values (d) none of the above
31. A transformer is laminated to
 (a) reduce hysteresis losses (b) increase exciting current
 (c) reduce eddy current losses (d) increase magnetic flux.
32. The meggar is used for
 (a) measuring current (b) measuring voltage (c) measuring power (d) testing insulation

33. A varactor diode acts as a variable
 (a) resistance (b) capacitance (c) inductance (d) voltage regulator
34. The electric field of an antenna is perpendicular to the earth's surface. The polarization of the antenna is
 (a) horizontal (b) vertical (c) circular (d) none of the above
35. The ability of a receiver to separate signals on different frequencies is defined as
 (a) stability (b) screening (c) selectivity (d) sensitivity
36. The total power content of an AM signal is 200 W and the percent modulation is 100%. The power transmitted by the carrier is
 (a) 66.66 W (b) 133.32 W (c) 33.32 W (d) 200 W
37. Overmodulation occurs when the modulation index (m) is such that
 (a) $m = 0$ (b) $m = 1$ (c) $m < 1$ (d) $m > 1$
38. The ionosphere layer which has the greatest effect on radio signals is the
 (a) D layer (b) E layer (c) F layer (d) none of the above
39. An antenna whose input impedance is 75Ω should have a feeder link with an impedance of
 (a) 50Ω (b) 75Ω (c) 150Ω (d) 300Ω
40. Shunts should have
 (a) zero resistance (b) very low resistance (c) high resistance (d) infinite resistance
41. The energy stored in an inductor L is given by
 (a) $\frac{1}{2} LI$ (b) $\frac{1}{2} LI^2$ (c) $\frac{1}{2} LV$ (d) $\frac{1}{2} LV^2$
42. 35.1 MHz is the third harmonic of
 (a) 11.7 MHz (b) 70.2 MHz (c) 105.3 MHz (d) 175.5 MHz
43. What is the characteristic impedance of a transmission line which has a capacitance of 50 pF/m and an inductance of $0.5 \mu\text{H/m}$?
 (a) 10Ω (b) 100Ω (c) 500Ω (d) 50Ω
44. The value of the resistor shown in the figure is
 (a) 22Ω (b) 220Ω (c) 2200Ω (d) $22 \text{ k}\Omega$
45. For better signal reception, the S/N ratio should be
 (a) low (b) medium (c) high (d) zero
46. Signals in the VHF range uses
 (a) sky wave propagation (b) space wave propagation
 (c) ground wave propagation (d) any one of these
47. The automatic gain control (AGC) circuit is usually used to control the gain of the
 (a) mixer (b) detector (c) IF amplifier (d) audio amplifier
48. A 75 MHz carrier signal having an amplitude of 50 V is modulated by a 3 kHz audio signal having an amplitude of 20 V. The modulation factor of the amplitude modulated wave is
 (a) 0.4 (b) 0.6 (c) 0.8 (d) 1.0
49. The unit of frequency is
 (a) Ampere (b) Volt (c) Ampere meter (d) Hertz
50. 3 dB power gain is equivalent to an increase of gain by
 (a) 2 times (b) 3 times (c) 10 times (d) 30 times



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EXAMINATION FOR THE AMATEUR RADIO OPERATORS' CERTIFICATES OF PROFICIENCY
ISSUED BY THE DIRECTOR GENERAL OF TELECOMMUNICATIONS, SRI LANKA - July 1997.

(NOVICE CLASS)

LICENCING CONDITIONS, OPERATING PRACTICES AND PROCEDURES

One hour

Index No.

Answer all questions on this paper itself.

A minimum of 50 marks is required for a pass.

Pick out the correct answers and underline it.

above

above

1. Q - code abbreviation "QRK?" means
 - (a) What is the readability of my signals ?
 - (b) What is the tone of my transmission ?
 - (c) What is the strength of my signals ?
 - (d) Does my frequency vary ?
2. Q - code abbreviation "QRP?" means
 - (a) Shall I send more slowly ?
 - (b) Shall I send faster ?
 - (c) Shall I decrease power ?
 - (d) Shall I increase power ?
3. Q - code abbreviation "QRS?" means
 - (a) Shall I change to another frequency ?
 - (b) Shall I stop sending ?
 - (c) Shall I send faster ?
 - (d) Shall I send more slowly ?
4. Q - code abbreviation "QSV?" means
 - (a) Shall I change to another frequency ?
 - (b) Shall I send a series of Vs ?
 - (c) Shall I stop sending ?
 - (d) Shall I send each word more than once ?
5. "I am busy" is given by a Q - code
 - (a) QRL
 - (b) QRM
 - (c) QRN
 - (d) QRV
6. "Increase power" is given by Q - code
 - (a) QRP
 - (b) QSY
 - (c) QRO
 - (d) QSV
7. "Send each word twice" is given by Q - code
 - (a) QSQ
 - (b) QSY
 - (c) QSV
 - (d) QRS
8. Using voice modulation F3E corresponds to
 - (a) PM
 - (b) FM
 - (c) DSB
 - (d) SSB
9. Using voice transmission A3E corresponds to
 - (a) SSB with suppressed carrier
 - (b) FM
 - (c) SSB with full carrier
 - (d) DSB
10. Amplitude modulated signal - side band full carrier is denoted by
 - (a) A 3 E
 - (b) G 3 E
 - (c) H 3 E
 - (d) J 3 E
11. What emission designator describes PM (phase modulation) voice transmission ?
 - (a) H 3 E
 - (b) J 3 E
 - (c) F 3 E
 - (d) G 3 E
12. Abbreviation "VA" means
 - (a) end of message
 - (b) end of work
 - (c) starting signal
 - (d) stand by
13. Abbreviation "AR" means
 - (a) end of message
 - (b) end of work
 - (c) starting signal
 - (d) stand by

14. Abbreviation for "invitation to a particular station to transmit" is
(a) K (b) KA (c) KN (d) AR
15. Abbreviation for "starting signal" is
(a) AR (b) AS (c) KN (d) KA
16. The amateur radio equipment cannot be used for
(a) intercommunications (b) transmitting news (c) self training (d) none of the above
17. Which of the following types of messages can be transmitted over amateur radio ?
(a) messages relating to technical investigations. (b) those of personal affairs.
(c) the words of a third party publicly spoken. (d) all the above are correct.
18. All times entered in the station log book shall be in
(a) BST (b) local time (c) UTC (d) any one of the above
19. In the RST code, S represents
(a) Signal strength (b) Specific station (c) Starting signal (d) Secret code
20. During transmission, amateur stations are required to transmit their call signs at intervals not exceeding
(a) 7 minutes (b) 5 minutes (c) 3 minutes (d) 2 minutes
21. In amateur transmission, it is not permissible to use
(a) secret code (b) plain language
(c) international phonetic alphabet. (d) the words of a third party publicly spoken
22. When transmissions are made it is always better to use
(a) phone patched traffic (b) Q - code
(c) plain language (d) secret code
23. Which of the following can be entered in the station log book ?
(a) transmitter power (b) test carried out
(c) station operated at temporary location. (d) all the above are correct.
24. The correct phonetic alphabet for the word "STAR" is
(a) Sierra, Thomas, Alpha, Romeo. (b) Sierra, Tango, Alpha, Romeo.
(c) Sarah, Thomas, Alpha, Robert. (d) Sarah, Tango, Alpha, Robert.
25. The correct group using the international phonetic alphabet is
(a) Oscar, Victor, Yankee, Zulu. (b) Oscar, Victor, York, Zulu
(c) Oscar, Violet, Yankee, Zero. (d) Oscar, Violet, York, Zero.

Answers for 1997-July

Basic Electronic

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

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