

Department of Examinations, Sri Lanka
Examination for the issue of Amateur Radio Operators' License by the Telecommunications
Regulatory Commission of Sri Lanka (Novice Class License) – 2005 (2006)

(01) Basic Electricity, Radio and Electronics Theory

Two hours

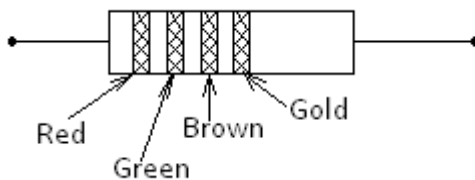
Answer all questions on this paper itself.

A minimum of 50% marks is required for a pass.

Pick out the correct answer **and underline** it.

Index No :

-
1. International System Unit to measure electric current is
(a) mA (b) A (c) V (d) mV
 2. Generally electrical engineering may be summarized in to
(1) one category (2) two categories (3) three categories (4) four categories
 3. A simple lamp switch is connected with
(1) live wire only (2) live and neutral wires
(3) live and earth wires (4) neutral and earth wires
 4. Consumer electric supply is
(1) 230 V, 50 Hz (2) 220V, 50 Hz (3) 230 V, 60 Hz (4) 220V, 60 Hz
 5. An electrical system transmits energy due to
(1) the movement of electrical charge (2) the current flow
(3) the potential difference (4) none of the above
 6. Movement of electrons are termed as
(1) voltage difference (2) potential difference
(3) current flow (4) none of the above
 7. The characteristics of an insulator is
(1) permit electrons freely (2) not permit electrons freely
(3) useful for making semiconductors (4) a good conductor
 8. The value of the resistor given below is

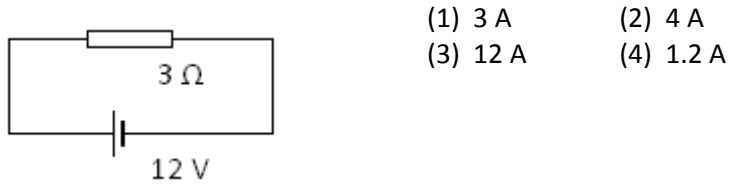


- (1) 25Ω (2) 250Ω
(3) 2500Ω (4) 2.5Ω

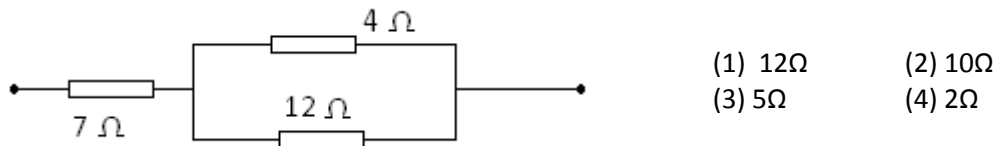
9. Ohm's law says

- (1) $R = V/I$ (2) $P = V I$ (3) $R = P I$ (4) $P = I R$

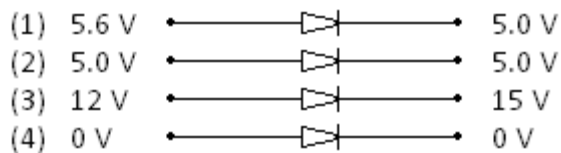
10. Current flow in the following circuit is



11. The equivalent resistance of the given circuit is



12. In the following diagrams, which represents the diode in a forward bias condition?



13. Copper and aluminum are the most widely used to make

- (1) Diodes (2) Conductors (3) Transistors (4) Insulators

14. What value of a resistor is required to drop 150 V when current flowing through it is 25 mA?

- (1) 6000Ω (2) 600Ω (3) 60Ω (4) 6Ω

15. A bipolar junction transistor has

- (1) one layer (2) two layers (3) three layers (4) four layers

16. P-N junction consist of

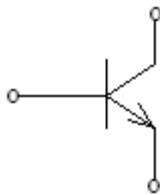
- (1) two N-type semiconductors (2) two P-type semiconductors
(3) n-type and p-type semiconductors (4) none of the above

17. A P-N junction is allowed current flow when, it is

- (1) reverse biased (2) away from p and n type semi-conductors
(3) forward biased (4) all the above are correct

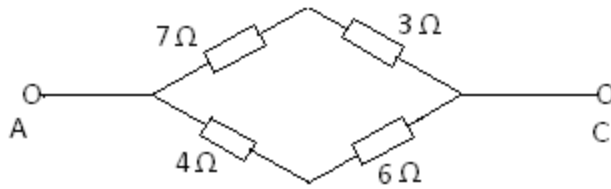
18. When P-N junction is reversed biased there will be
 (1) depletion layer (2) current flow
 (3) electron flow (4) free electrons
19. In a bridge rectifier there are
 (1) two diodes (2) three diodes (3) four diodes (4) no diodes
20. The average value of a sin-wave is
 (1) peak (2) one (3) zero (4) half
21. n-p-n transistor has
 (1) three p-type material (2) two n-type and one p-type
 (3) three n-type material (4) two p-type and one n-type
22. Diode bridge is used to
 (1) Convert AC to DC (2) Convert DC to AC
 (3) increase voltage (4) increase current
23. People still prefer analog instruments
 (1) they are cheaper (2) They used for a log display
 (3) Approximate readings are enough for them (4) All are correct
24. Permanent magnet moving coil meter is suitable for measuring
 (1) D.C. current (2) A.C. current (3) power (4) resistance
25. Latest Oscilloscopes have
 (1) graphical display (2) analog display (3) no display (4) none of the above
26. The function of an amplifier in electronic circuits are to
 (1) reduce voltage (2) reduce current (3) magnify input (4) All are correct
27. The basic parameter of an amplifier is
 (1) Voltage gain (2) Current gain (3) Power gain (4) All are correct

28. The symbol shown in the figure indicates



- (1) Resistor (2) Capacitor
 (3) N-P-N transistor (4) P-N-P transistor

29. The effective resistance between A and C in the circuit below is



- (1) 20Ω
- (2) 10Ω
- (3) 5Ω
- (4) 0Ω

30. The power dissipated in the resistor R is

- (1) $I R^2$
- (2) $I R$
- (3) $V^2 R$
- (4) $I^2 R$

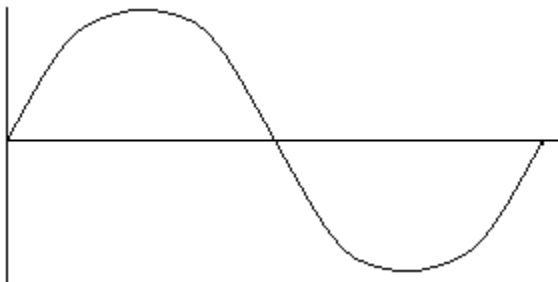
31. A current of 50 mA flow through a resistor 1.5 kΩ. What is the voltage across the resistor?

- (1) 50 V
- (2) 75 V
- (3) 100 V
- (4) 240 V

32. A n-type semiconductor has free

- (1) electrons
- (2) holes
- (3) atoms
- (4) protons

33. The waveform given in the figure is



- (1) a sinusoid
- (2) a square
- (3) a triangle
- (4) complicated

34. The function of an oscillator is to produce

- (1) a constant frequency
- (2) a constant power
- (3) variable frequency
- (4) variable power

35. Pure silicon is

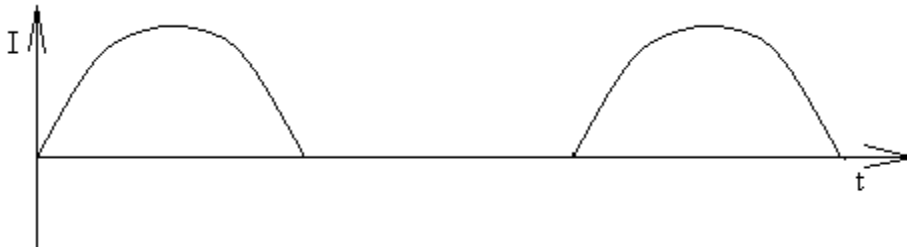
- (1) an insulator
- (2) a conductor
- (3) a semiconductor
- (4) none of the above

36. To trouble shoot an electronic instrument

- (1) it is advisable to read user and service manuals first
- (2) it is advisable to use a multimeter
- (3) it is advisable to call a technician
- (4) it is advisable to open and check

37. The performance checks of an electronic equipment are to be done
 (1) at regular intervals (2) to check the basic functions
 (3) to check the malfunctions and problems (4) all are correct

38. The waveform shown in the figure is an output of



- (1) AC current (2) AC voltage (3) half wave rectifier (4) full wave rectifier

39. Semiconductors are classified into
 (1) two types (2) four types (3) six types (4) eight types

40. LED is a
 (1) transistor (2) diode (3) resistor (4) capacitor

41. The instrument used for testing insulation is
 (1) voltmeter (2) ammeter (3) meggar (4) power meter

42. The terminals of a field effect transistor (FET) are
 (1) base, collector, emitter (2) gate, drain, source
 (3) base, collector, source (4) gate, drain, emitter

43. Zener diodes are used in
 (1) power supplies (2) modulators (3) demodulators (4) low pass filters

44. The velocity of radio waves in free space is
 (1) increasing with frequency (2) decreasing with frequency
 (3) constant (4) none of the above

45. The value of a resistor is 120 Ω . The corresponding colour codes will be
 (1) brown, red, brown (2) red, brown, brown (3) green, red, brown (4) red, green, brown

46. The lowest layer in the ionosphere is
 (1) F₁ (2) F₂ (3) E (4) D

47. Generally dummy loads are made by
 (1) sand (2) none reactive resistors (3) clay (4) copper

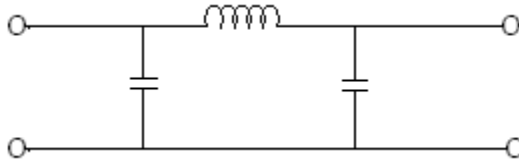
48. The frequency above 1 GHz is generally refers to as

- (1) high frequency (2) very high frequency (3) ultra high frequency (4) microwave

49. Generally the value of a components increases as the

- (1) temperature increases (2) temperature decreases
 (3) temperature been constant (4) none of these

50. The circuit shown in the figure is



- (1) low pass filter (2) high pass filter (3) simple dc circuit (4) simple ac circuit

Answers

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

Q-2 answer is doubtful (out of syllabus)

Q-4 In Sri Lanka standard AC frequency is 50 Hz, dose not use 60Hz.

Q-23 spelling mistake:- “prefer” typed as “preter” (I corrected here)

Department of Examinations, Sri Lanka

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(02) Licensing conditions, Operating Practices and Procedures one hour

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**.

Index No :.....

1. The only general call allowed from an amateur station is
(1) a news bulletin (2) a CQ call (3) a third party call (4) on VHF
2. Time in the log book must always be in
(1) local time (2) UTC (3) BST (4) UTC+1hour
3. Codes and abbreviations may be used by the license as long as
(1) they are specified only by the RSGB
(2) they are in secret cipher
(3) they do not obscure the meaning of the communication
(4) Q-codes only are used
4. The purpose of the terrestrial repeater is to
(1) increase satellite coverage (2) increase the range of mobile stations
(3) increase the rang of fixed stations (4) minimize contacts by pedestrian stations
5. When calling a station, it is good practice to
(1) put your call sign first (2) use your call sign only
(3) put the call sign of the station been called first (4) none of these
6. The band plans should be observed because
(1) they are mandatory (2) they are governed by international regulations
(3) they are intended to to aid operating (4) they are only for novices
7. It is an offence to send by wireless telegraphy
(1) certain misleading massages (2) severe weather warnings
(3) test transmission (4) they are only for novices

8. Transmitting a CQ is to
 (1) establish communication (2) end communication
 (3) Continue communication (4) None of these
9. Abbreviation for "closing station" is
 (1) CM (2) CL (3) CQ (4) AT
10. Which of the following can be entered in the station log book
 (1) Date (2) Class of emission
 (3) CQ calls (4) All the above are correct
11. RST stands for
 (1) Readability, Signal strength, Tone (2) Readability, Safety strength, Tone
 (3) Radio transmitter, Safety , Tone (4) Radio transmitter, Signal strength, Tone
12. Using speech transmission, A3E corresponds to
 (1) DSB (2) SSB (3) FM (4) DSSB
13. The Novice class B licence does not authorize the use of the frequencies for transmitting
 (1) below 30 MHz (2) above 30 MHz (3) UHF (4) above GHz
14. In amateur transmission it is not permissible to use
 (1) Secret code (2) Q-code (3) Morse code (4) plain language
15. The correct group using the international phonetic alphabet is
 (1) Echo, Golf, Zulu (2) Echo, Gate, Zulu (3) Each, Gate, Zulu (4) Echo, Golf, Zoo
16. Abbreviation for "How do you receive me" is
 (1) HF (2) HT (3) HR (4) HW
17. Abbreviation for "What is the correct time" is
 (1) QTH (2) QTR (3) QSZ (4) QSY
18. QSA is for abbreviation for
 (1) What is the strength of my signal? (2) What is your location?
 (3) What is the time? (4) What is your position?
19. The correct phonetic alphabet for the word "WIN" is
 (1) Whiskey, India, Novel (2) Whiskey, Ice, November
 (3) Whiskey, India, November (4) White, India, November
20. QSB is the Q-code for
 (1) Are you been interfered with (2) Are my signals fading?
 (3) Are you busy? (4) How do you receive me
21. Q-code abbreviation of QRL means

- | | |
|----------------------------------|------------------------------|
| (1) Are you busy? | (2) Are you being interfered |
| (3) Are you trouble with static? | (4) Are you ready? |
22. Q-code abbreviation of QRQ means
- | | |
|---------------------------|-------------------------------|
| (1) Shall I send slowly? | (2) Shall I change frequency? |
| (3) Shall I change power? | (4) Shall I send faster? |
23. Before making a CQ – call
- | | |
|--|-----------------------------------|
| (1) Listen on the frequency before commencing. | (2) send a series of Vs' in Morse |
| (3) send a 1750 Hz tone | (4) keep giving your call sign |
24. As well as amateur frequency transmission , the licensee allows reception of
- | | |
|------------------------------|-------------------------------------|
| (1) diplomatic message | (2) standard frequency transmission |
| (3) News agency transmission | (4) police transmission |
25. An amateur licence requires minimum
- (1) a pass in Radio Amateur Examination and Morse test
 - (2) a pass in Radio Amateur Examination only
 - (3) a pass in the Morse test only
 - (4) none of these above

Answers:-

- | | | | | |
|--------|--------|--------|--------|--------|
| (1) 2 | (2) 2 | (3) 3 | (4) 2 | (5) 3 |
| (6) 2 | (7) 1 | (8) 1 | (9) 2 | (10) 4 |
| (11) 1 | (12) 1 | (13) 1 | (14) 1 | (15) 1 |
| (16) 4 | (17) 2 | (18) 1 | (19) 3 | (20) 2 |
| (21) 1 | (22) 4 | (23) 1 | (24) 2 | (25) 2 |

Q-12 There is no abbreviation "DSSB"

Q-24 typing error- "news" typed as "new" (I corrected)

Q-25 typing error – "Morse" typed as "most" (I corrected)