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Examination for the Issue of Amateur Radio Operator's License by the Telecommunications Regulatory Commission of Sri Lanka (Advance Class) – 2017 (2018)

(01) Advance Electrical Technology and Radio Communication

* Answer **ten** questions only. All questions carry equal marks.
* A minimum of 50% marks is required for pass.

Three hours

1. Describe the following semi-conductor devices giving an example of one application for each.
   (i) Field effect transistor (FET)
   (ii) Zenor Diode
   (iii) Silicon Controlled Rectifier (SCR)

2. Write short notes on the following.
   (i) Series Resonant circuits
   (ii) Low pass and High pass filters
   (iii) Balanced and unbalanced feeder lines.

3. Describe briefly the principal of operation of a super-heterodyne receiver by using a suitable block diagram.

4. List down the advantages and disadvantages of Single Side Band (SSB) and Double Side Band (DSB) amplitude modulations.

5. (i) Draw the circuit diagram of a half-wave diode rectifier.
   (ii) Draw the output waveform of the above circuit to an input sinusoidal signal. What happens to the output waveform when a smoothing capacitor is introduced at the output of the circuit.

6. (i) A halfwave dipole antenna has resonance frequency of 60 MHz. What is the length of the antenna?
   (ii) Draw the radiation pattern of a $\lambda/2$ dipole antenna on the horizontal and vertical planes.

7. A FM radio has an input voltage and frequency of 230 V and 50 Hz respectively. It has a rectifier circuit to convert AC to DC.
   (i) Propose a halfwave rectifier circuit to convert the AC voltage to a DC voltage.
   (ii) Sketch the output waveform.

8. (i) What is the relationship between inductive reactance and capacitive reactance when resonance occurs in a series circuit?
   (ii) A series circuit has a resistance of 50 Ω and inductuctance of 0.5H. A variable capacitor in series is connected across a 230 V, 50 Hz supply. Calculate the capacitance at resonance.

[*See page two.*

9. (i) Briefly explain the term standing wave ratio (SWR) of a transmission line.

(ii) A half-wave antenna is resonant at 30 MHz, what is its length?

(iii) What is the characteristic impedance of a half-wave dipole antenna?

10. Write short notes on the following.

(i) ground wave

(ii) ionospheric wave

(iii) tropospheric wave

11. (i) List at least **five** of the basic test instrument that are used in an Amateur Radio station for testing parameters.

(ii) Explain the usage of two of above mentioned instruments.

12. List the steps that have to be taken to minimize the damages due to lightning of an Amateur radio station.

* * *

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Department of Examinations, Sri Lanka

Question No.	Marks
1 – 8	
9 – 20	
21 – 23	
24 – 34	
35 – 50	
Total	
Marking Examiner	
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Examination for the Issue of Amateur Radio Operator's License
by the Telecommunications Regulatory Commission of Sri Lanka
(Novice Class) – 2017(2018)

(01) Basic Electricity, Radio and Electronic Theory

Two hours

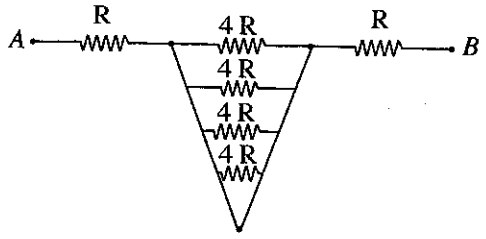
* Answer **all** questions on this paper itself.
* Pick out the correct answer and write its **number on the dotted line.**
* A minimum of 50% marks is required for pass.

Index No : .....

1. The unit of electric charge is
   (1) Volt. (2) Volt / metre (3) Coulomb (4) Cuolomb/Sq.metre (.....)

2. The conductance of a wire is directly proportional to:
   (1) the surface area of the conductor. (2) the resistivity of the material.
   (3) the length of the conductor. (4) the area of cross section of the conductor. (.....)

3. The effective resistance between *A* and *B* is the circuit shown below is

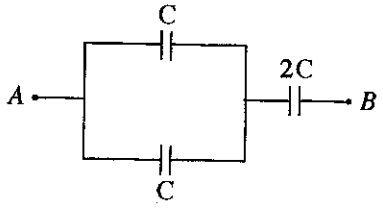


   (1) 2R.
   (2) 6R.
   (3) 3R.
   (4) 18R. (.....)

4. 20 dB power gain is an increase by
   (1) 2 times. (2) 10 times. (3) 20 times. (4) 100 times. (.....)

5. What is the energy stored in a 2H inductor carrying current of 2 A?
   (1) 8 W. (2) 2 W. (3) 4 J. (4) 2 J. (.....)

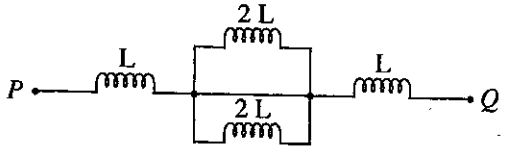
6. The total capacitance between *A* and *B* in the circuit shown below is



   (1) C.
   (2) 2 C.
   (3) $5C/2$.
   (4) 4 C. (.....)

7. The peak value of the 240 V, 50 Hz, main supply is
   (1) $240/\sqrt{2}$ V. (2) 240 V. (3) $240\sqrt{2}$ V. (4) $2\times240\sqrt{2}$ V. (.....)

8. The total inductance between *P* and *Q* in the circuit shown below is



   (1) 2 L.
   (2) 3 L.
   (3) $\frac{9L}{4}$.
   (4) 6 L. (.....)

[See page two

9. A transformer is laminated to
   (1) reduce eddy current loss. (2) reduce hysteresis losses.
   (3) increase exciting current. (4) increase magnetic flux. (.....)

10. Product detector is used for the detection of
   (1) AM signals only. (2) FM signals only.
   (3) SSB and CW signals. (4) PM signals only. (.....)

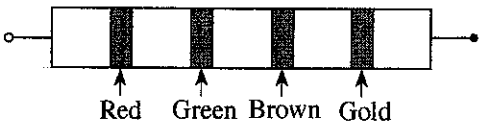
11. The reactance of 20 H smoothing choke at a frequency of 50 Hz is
   (1) 2π kΩ. (2) 2 kΩ. (3) 2π Ω. (4) 2 Ω. (.....)

12. For constant voltage, a capacitor will act as
   (1) a short circuit. (2) an open circuit.
   (3) a finite resistance. (4) a capacitive circuit. (.....)

13. When the antenna length is doubled the resonant frequency
   (1) becomes half. (2) becomes double.
   (3) remains the same. (4) cannot be predicted. (.....)

14. On a transmission line, Voltage Standing Wave Ratio (VSWR) is given by
   (1) $V_{max} \cdot V_{min}$. (2) V_{max} / V_{min}.
   (3) V_{min} / V_{max}. (4) $\sqrt{V_{max} \cdot V_{min}}$. (.....)

15. The value at the resistor given below



   (1) 25 Ω. (2) 250 Ω. (3) 2500 Ω. (4) 2.5 Ω. (.....)

16. In the following diagrams which represent the diode in forward biased condition
   (1) 5.6 V — 5.0 V
   (2) 5.0 V — 5.0 V
   (3) 12.0 V — 15.0 V
   (4) 0.0 V — 0.0 V (.....)

17. Copper and Aluminium are the most widely used to make
   (1) Diodes. (2) Conductors. (3) Transistors. (4) Insulators. (.....)

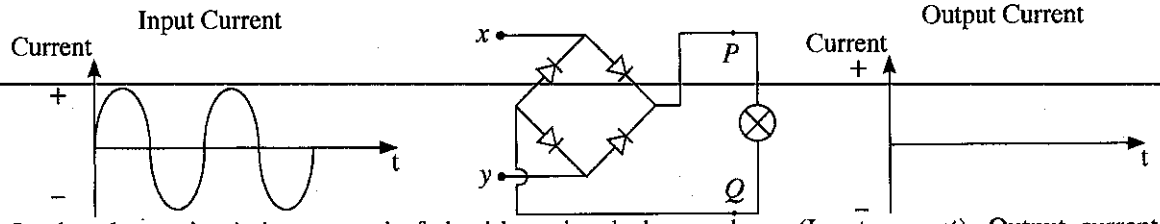
18. What value of a resistor is required to drop 150 V when the current flowing through it is 25 mA
   (1) 6 kΩ. (2) 0.6 kΩ. (3) 60 Ω. (4) 6 Ω. (.....)

19. A bipolar junction transistor has
   (1) one layer. (2) two layers. (3) three layers. (4) four layers. (.....)

20. A P–N junction allows current flow when it is
   (1) reversed biased. (2) away from P & N type semi conductor.
   (3) forward biased. (4) induced by a magnet. (.....)

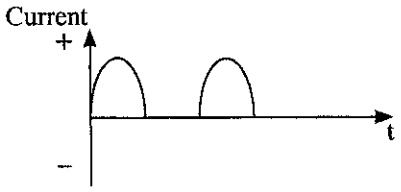
[*See page three*

21.

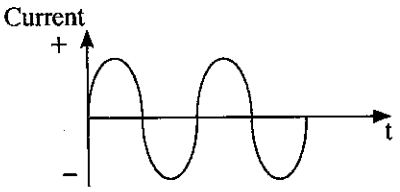


In the above circuit input x–y is fed with a signal shown above (Input current). Output current at PQ will be

(1)



(2)



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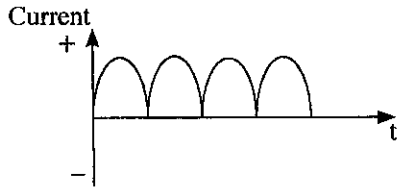

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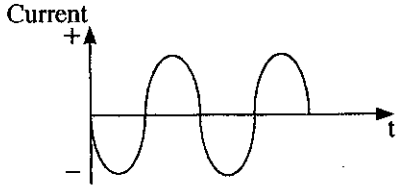
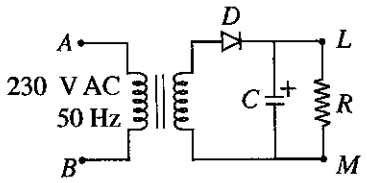


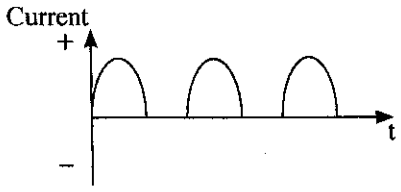
(.....)

22.

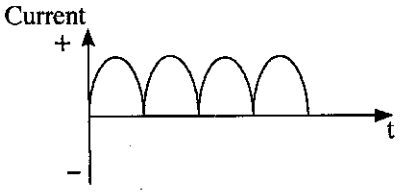


AB terminals are fed with 230 V AC 50 Hz voltage. D is a diode and C is a capacitor suitable for this circuit. What would be the current waveform between L and M.

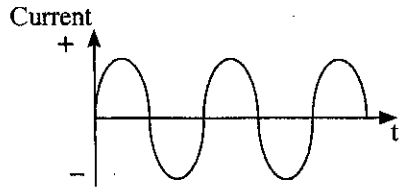
(1)



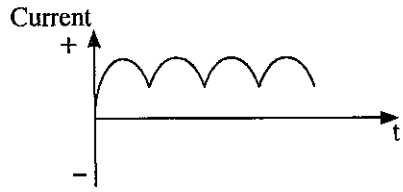
(2)



(3)



(4)

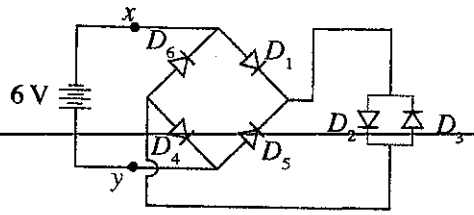


(.....)

23. A rectifier diode is used in direct current circuits to
(1) prevent the damages by supplying power from positive and negative terminals which are incorrectly connected.
(2) prevent damages by supplying power to a source with high voltage.
(3) prevent the damages by supplying alternate current.
(4) prevent the damages due to lightning. (.....)

[See page four

24.



All the Diodes in above circuit is 1.8 V LEDs which LEDs are lit up when a 6 V battery is connected to terminals X and Y

(1) D_1, D_2, D_4 (2) D_5, D_2, D_6 (3) D_1, D_3, D_4 (4) D_5, D_3, D_6 (.....)

25. Pure Silicon is a

(1) Insulator. (2) Conductor.
(3) Semi Conductor. (4) Inductor. (.....)

26. To troubleshoot an electronic instrument

(1) it is advisable to read user and service manuals first.
(2) it is advisable to use a multimeter first.
(3) it is advisable to use a voltmeter first.
(4) it is advisable to observe by opening metal box first. (.....)

27. Zener diodes are used in

(1) power supplies. (2) modulators.
(3) demodulators. (4) low pass filters. (.....)

28. The lowest layer in the ionosphere is

(1) F_1. (2) F_2. (3) E. (4) D. (.....)

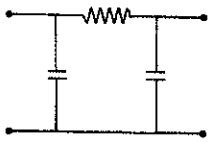
29. Generally dummy loads are made by

(1) sand. (2) non reactive resistors.
(3) clay. (4) copper. (.....)

30. The frequency above 1 GHz is generally referred to as

(1) High frequency. (2) very high frequency.
(3) ultra high frequency. (4) microwave. (.....)

31. The circuit shown in the figure is a



(1) high pass filter.
(2) band pass filter.
(3) low pass filter.
(4) norch filter. (.....)

32. 3 dB power gain is an increase by

(1) 10 times. (2) 3 times. (3) 30 times. (4) 2 times. (.....)

33. The energy stored in a capacitor 'C' is given by

(1) $\frac{1}{2}CV$. (2) $\frac{1}{2}\frac{C}{V^2}$. (3) $\frac{1}{2}\frac{V^2}{C}$. (4) $\frac{1}{2}CV^2$. (.....)

34. As the frequency rises the reactance of an inductor

(1) stay constant.
(2) increases.
(3) decreases.
(4) first increases and then decreases to initial value. (.....)

[See page five

35. The average value of a Sine Wave is
(1) zero. (2) one. (3) Peak value/$\sqrt{2}$. (4) $\sqrt{2}$ · peak value . (.....)

36. In a RLC parallel circuit, the current at resonance is
(1) zero. (2) one. (3) maximum. (4) minimum. (.....)

37. For ideal amplitude modulation, the modulation index must be
(1) zero. (2) unity.
(3) smaller than one. (4) greater than one. (.....)

38. The output signal of a balanced modulator is
(1) AM. (2) DSB. (3) SSB. (4) FM. (.....)

39. A voltage variable crystal oscillator is referred to as a
(1) VVC. (2) VCO. (3) VXO. (4) VVO. (.....)

40. The basic concept of FM is to vary the
(1) frequency of carrier signal. (2) frequency of modulating signal.
(3) frequency of intermediate signal. (4) frequency of oscillator signal. (.....)

41. The automatic gain control (AGC) circuits usually controls the gain of the
(1) mixer. (2) detector. (3) audio amplifier. (4) IF amplifier. (.....)

42. A best frequency oscillator (BFO) is used in the demodulation of
(1) AM signal. (2) SSB or CW signal.
(3) FM signal. (4) PM signal. (.....)

43. The impedance of an half wave dipole antenna is about
(1) 50 Ω. (2) 73 Ω. (3) 93 Ω. (4) 150 Ω. (.....)

44. The magnetic field of an antenna is perpendicular to the earth. The antenna polarization is
(1) vertical. (2) horizontal. (3) circular. (4) cross polar. (.....)

45. The power amplifier used to increase the power level of an FM signal is
(1) class *A*. (2) class *B*. (3) class *AB*. (4) class *C*. (.....)

46. A quarter wave antenna is resonant at 10 MHz, its appropriate length is approximately
(1) 3.75 m. (2) 15 m. (3) 7.5 m. (4) 30 m. (.....)

47. An advantage of SSB over AM and DSB is
(1) less power consumption. (2) more power consumption.
(3) less spectrum space. (4) more spectrum space. (.....)

48. The desirable standing wave ratio (SWR) of a transmission line is
(1) infinity. (2) two. (3) one. (4) zero. (.....)

49. Over modulation occurs when the modulating index *(M)*
(1) $M < 1$. (2) $M = 1$. (3) $M > 1$. (4) $M = 0$. (.....)

50. The following stage in a radio receiver provides the maximum adjacent channel selectivity
(1) frequency mixer. (2) audio amplifier. (3) RF amplifier. (4) IF amplifier. (.....)

* * *

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Department of Examinations, Sri Lanka

Question No.	Marks
1 – 10	
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Checked by	

Examination for the issue of Amateur Radio Operator's License by the Telecommunications Regulatory Commission of Sri Lanka (General Class) – 2017(2018)

(01) Fundamentals of Electricity and Radio Communications

Two hours

* Answer **all** questions on this paper itself.
* Pick out the correct answer and write its **number on the dotted line.**
* A minimum of **50%** marks is required for pass.

Index No : .....

1. The first odd harmonic of 144.69 MHz is
   (1) 48.23 MHz. (2) 289.38 MHz. (3) 434.07 MHz. (4) 723.45 MHz. (.....)

2. To prevent annoying other users on a band, a transmitter should always be tuned initially
   (1) on a harmonic. (2) into an antenna.
   (3) into a dummy load. (4) on a dipole. (.....)

3. A sine wave has an RMS value of 12 V, the peak to peak value of the wave is
   (1) 16.97 V. (2) 24 V. (3) 33.9 V. (4) 36.4 V. (.....)

4. Which of the following is an analog integrated circuit?
   (1) NAND Gate (2) Microprocessor
   (3) Frequency counter (4) Linear Voltage Regulator (.....)

5. The period of a 1 GHz wave is
   (1) 1 ms. (2) 1 μs. (3) 1 ns. (4) 1 ps. (.....)

6. How is a 3.9 kΩ resistor colour coded?
   (1) red, white, red, gold (2) red, green, orange, silver
   (3) orange, white, red, gold (4) orange, green, orange, silver (.....)

7. What are the two major categories for resistors?
   (1) low and high ohmic value (2) commercial and industrial
   (3) low and high power value (4) fixed and variable (.....)

8. A colour code of orange, orange, orange is for what ohmic value?
   (1) 22 kΩ (2) 3 300 kΩ (3) 44 000 kΩ (4) 33 kΩ (.....)

9. If the voltage applied to two resistors in series is doubled, how much will the total power change?
   (1) increase four times (2) decrease to half
   (3) double (4) no change (.....)

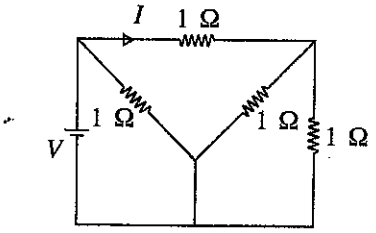
10. If ten resistors of equal value were wired in parallel, the total resistance would be
    (1) $^{10}/_{R}$. (2) $10 \times R$. (3) $10 + R$. (4) $^{R}/_{10}$. (.....)

[See page two

11. The power output from a transmitter increases from 1 W to 2 W. This is a dB increase of
(1) 1. (2) 3. (3) 30. (4) 6. (.....)

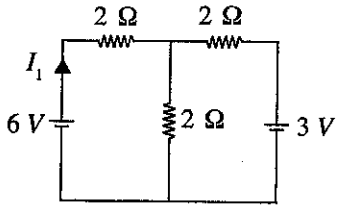
12. Approximately what frequency range can most humans hear?
(1) 20 – 20,000 Hz (2) 20,000 – 30,000 Hz
(3) 200 – 200,000 Hz (4) 0 – 20 Hz (.....)

13. In the circuit shown below if I = 2 A then find V.



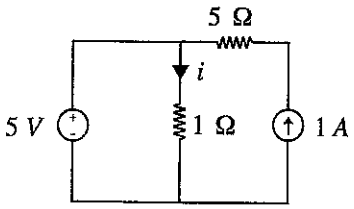
(1) 5 V
(2) 3 V
(3) 2 V
(4) 1 V (.....)

14. What is I_1 in the given circuit?



(1) 0.5 A
(2) 1 A
(3) 1.5 A
(4) 3 A (.....)

● Question No. 15 and 16 are based on following figure.



15. What is the value of i?
(1) 5 A (2) 0.5 A (3) 6 A (4) 12 A (.....)

16. In above question, power given by the 5 V source is
(1) 20 W. (2) 25 W. (3) 30 W. (4) 5 W. (.....)

17. Three Ohm (3 Ω) resistors are connected in the form of a triangle. What is the resistance between any two corners?
(1) $\frac{3}{4}$ Ohm (2) 3 Ohm (3) 2 Ohm (4) $\frac{4}{3}$ Ohm (.....)

18. If you make a quarter wave length vertical antenna for 21.125 MHz, how long would it be?
(1) 7.2 meters (23.6 ft) (2) 6.76 meters (22.2 ft)
(3) 3.36 meters (11.0 ft) (4) 3.6 meters (11.8 ft) (.....)

19. What are some advantages of a Yagi antenna with wide element spacing?
(1) high gain, lower loss and a low SWR
(2) high front to back ratio and lower input resistance
(3) shorter boom length, lower weight and wind resistance
(4) high gain, less critical tuning and wider bandwidth (.....)

[See page three

20. What is the low angle radiation pattern of an ideal half wave length dipole HF antenna in free space installed parallel to the earth?
(1) It is a figure–eight, off both ends of the antenna.
(2) It is a figure–eight, perpendicular to the antenna
(3) It is a circle. (equal radiation in all direction)
(4) It is two smaller lobes on one side of the antenna and one larger lobe on the other side.(.....)

21. When a signal is returned to earth by the ionosphere what is this called?'
(1) Earth–Moon–Earth propagation (2) Sky–Wave Propagation
(3) Tropospheric propagation (4) Ground wave propagation (.....)

22. What type of propagation usually occurs from one hand–held VHF transceiver to another nearby?
(1) line of sight propagation (2) tunnel propagation
(3) sky wave propagation (4) Auroral propagation (.....)

23. Which ionospheric region is closest to the Earth?
(1) The F region (2) The A region (3) The D region (4) The E region (.....)

24. What two sub–regions of ionosphere exist only in the day time?
(1) electrostatic and electromagnetic (2) D and E
(3) F_1 and F_2 (4) Troposphere and stratosphere (.....)

25. How long is an average sunspot cycle?
(1) 11 years (2) 17 years (3) 5 years (4) 7 years (.....)

26. How do sunspots change the ionization of the atmosphere?
(1) The more sunspots, the greater the ionization
(2) The more sunspots, less the ionization
(3) Unless there are sunspots, the ionization is zero
(4) they have no effect (.....)

27. What is solar flux?
(1) The radio energy emitted by the sun
(2) The density of the sun's magnetic field
(3) Number of sunspots
(4) Illumination level (.....)

28. If your transmitter sends signals outside the band it is transmitting, what is it called?
(1) Spurious emissions (2) Transmitter chirping
(3) Side tones (4) off–frequency emissions (.....)

29. What type of interference may come from a multi–band antenna connected to a poorly tuned transmitter?
(1) Harmonic radiation (2) Parasitic excitation
(3) Intermodulation (4) Auroral distraction (.....)

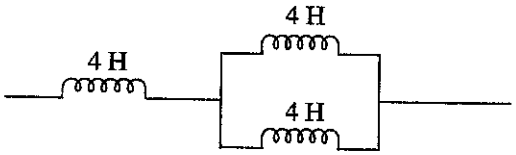
30. Ammeter should always have a
(1) high resistance. (2) low resistance.
(3) low voltage. (4) high voltage. (.....)

31. The electric energy consumed by a coil is stored in the form of
(1) an electrostatic field. (2) an electric field.
(3) a force field. (4) a magnetic field. (.....)

[See page four

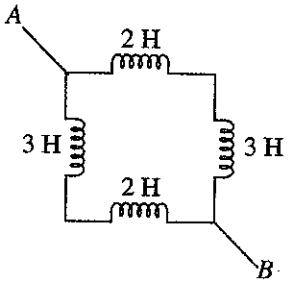
32. Which two values are plotted on a *B–H* curve graph?

(1) permeability and reluctance.
(2) flux density and magnetizing force.
(3) magnetizing force and permeability.
(4) reluctance and flux density. (.....)

33. 

Total inductance is

(1) 12 H.
(2) 6 H.
(3) 4 H.
(4) 4.5 H. (.....)

34. 

Total inductance is

(1) 2 H.
(2) 3 H.
(3) 2.5 H.
(4) 3.5 H. (.....)

35. A capacitor carries a charge of 0.1 C at 5 V. Its capacitance is

(1) 0.02 F. (2) 0.5 F. (3) 0.05 F. (4) 0.2 F. (.....)

36. Four capacitors each 40 μF are connected in parallel, the equivalent capacitance of the system will be

(1) 160 μF. (2) 10 μF. (3) 40 μF. (4) 5 μF. (.....)

37. When manufacturing a capacitor it is better to select a dielectric having

(1) low permittivity.
(2) high permittivity.
(3) permittivity same as that of air.
(4) permittivity more than that of air. (.....)

38. The absolute permittivity of a dielectric medium is represented as

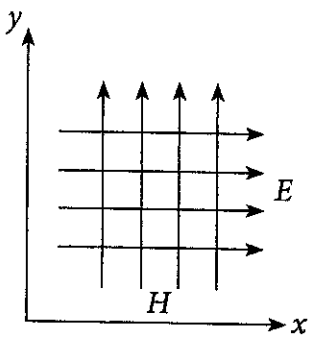
(1) ε_0. (2) ε_r. (3) $\varepsilon_r / \varepsilon_0$. (4) $\varepsilon_r\ \varepsilon_0$. (.....)

39. At which angles does the front to back ratio specify an antenna gain?

(1) 0° and 180°.
(2) 90° and 180°
(3) 180° and 270°.
(4) 180° and 360°. (.....)

40. If the tower antenna is not grounded which method of excitation is/are applicable to it?

(1) series.
(2) shunt.
(3) both (1) and (2).
(4) none of the above. (.....)

41. 

In the diagram given below the polarization is

(1) vertical.
(2) horizontal.
(3) forwards.
(4) backwards. (.....)

[*See page five*

42. The output amplifier of an SSB transmitter must
(1) act as a switch. (2) be in a linear mode.
(3) be in the non–linear mode. (4) act as a multiplier. (.....)

43. FM signal is better than AM signal because
(1) less immune to noise. (2) less adjacent channel interference.
(3) amplitude limiters are used. (4) all are correct. (.....)

44. FM is disadvantageous over AM signal because
(1) much wider channel bandwidth is required.
(2) FM systems are more complex and costlier.
(3) adjacent channel interference is more.
(4) both (1) and (2). (.....)

45. In an AM wave useful power is carried by
(1) carrier. (2) side bands.
(3) both side bands and carrier. (4) none of the above. (.....)

46. In amplitude modulation, Band width is ..... the audio signal frequency.
(1) thrice (2) four times (3) twice (4) none of the above (.....)

47. Over modulation results in
(1) weakening of the signal. (2) excessive carrier power.
(3) distortions. (4) none of the above. (.....)

48. When the modulating signal controls the frequency of the carrier we get
(1) phase modulation. (2) amplitude modulation.
(3) frequency modulation. (4) none of the above. (.....)

49. In a series RLC circuit what is the power factor just below the resonance frequency?
(1) lagging (2) leading
(3) unity (4) zero (.....)

50. In a RLC circuit at resonance condition, the value of current is
(1) maximum. (2) minimum.
(3) zero. (4) none of the above. (.....)

* * *

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Examination for the Issue of Amateur Radio Operator's License by the Telecommunications Regulatory Commission of Sri Lanka (Advance Class) – 2017 (2018)

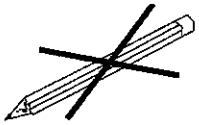
(02) Licensing Conditions, Operating Practices and Procedures

Two hours

Instructions to Candidates

Very Important :

Do not use Pencil to write answers.



* ***Answerscripts where the numbers are not written as indicated below will not be marked / evaluated.***

1 2 3 4

Write your Index Number here and on page 3 on the space indicated.

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Checked as correct

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Invigilator's Initials

Important :

* *This paper consists of **50** questions on **06** pages.*

* *Before answering the paper arrange all the pages in order.*

* *Answer **all questions on this paper** itself.*

* *The time allowed is **two hours.***

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

* *Commence answering only after the Centre Supervisor's announcement.*

* ***Instructions given should be strictly followed in answering this paper and marks will not be awarded for answers not in accordance with these instructions.***

* *Even if you are not attempting the paper hand it over to the Supervisor.*

* *Write the answers clearly and legibly in **blue** or **black** ink only and **not in pencil.***

* *It is an offence to remove this paper from the examination hall or turn out photocopies of the same.*

* ***Answer scripts with illegible figures, illegible handwriting, those where erasing fluid has been used and written in pencil will not be marked / evaluated.***

For Examiner's use only

Page No.	Question No.	Marks Awarded
2	1 - 10	
3	11 - 20	
4	21 - 31	
5	32 - 42	
6	43 - 50	
Total		

Final Score

In figures	
In words	

Marking Examiner	
Checked by	

[See page two

● For each of the questions from No. **1** to **50** select the **most correct** answer out of the four answers given and write its **number on the dotted line** provided.

1. The minimum examinations you must pass for an Advance Class amateur radio licence are
   (1) a written exam, a 5 word-per minute Morse code test and a practical exam.
   (2) a 5 word-per-minute Morse code test and a written exam.
   (3) a written exam.
   (4) a written exam and a practical exam. (.....)

2. The "S meter" on a receiver
   (1) indicates where the squelch control should be set.
   (2) indicates the standing wave ratio.
   (3) indicates the state of the battery voltage.
   (4) indicates relative incoming signal strengths. (.....)

3. The term "PTT" means
   (1) pust-to-talk. (2) piezo-electric transducer transmitter
   (3) phase testing terminal (4) phased transmission transponder (.....)

4. The "Q" signal "are you busy" is
   (1) QRM. (2) QRL. (3) QRT. (4) QRZ. (.....)

5. The designed output impedance of the antenna socket of most modern transmitters is nominally
   (1) 25 ohm. (2) 50 ohm. (3) 75 ohm. (4) 100 ohm. (.....)

6. The phrase "you are fully quieting the repeater" means
   (1) your signal is too weak for the repeater to reproduce correctly.
   (2) your signal into the repeater is strong enough to be noise free on the output frequency.
   (3) your modulation level is too low.
   (4) you are speaking to quietly into the microphone. (.....)

7. Changes in received signal strength when sky wave propagation is used are called
   (1) ground wave losses. (2) modulation losses.
   (3) fading. (4) sunspots. (.....)

8. In digital communication, BPSK stands for
   (1) binary phase shift keying. (2) base band polarity shift keying.
   (3) bandpass slective keying. (4) burst pulse signal keying. (.....)

9. The fundamental regulations controlling the Amateur services are to be found in
   (1) the International Radio Regulations from ITU.
   (2) the Radio Amateur's Handbook.
   (3) on the packet radio bulletin-board.
   (4) Sri Lanka Telecommunication Act. (.....)

10. The Amateur Radio license is issued to Amateur Radio operators in Sri Lanka under the
    (1) Sri Lanka Telecommunication Act.
    (2) ITU-Radio Regulations.
    (3) Radio Amateur's Handbook.
    (4) ITU Guide lines. (.....)

[See page three

11. An Amateur radio license allows licensee to
    (1) transmit on all VHF and UHF bands.
    (2) retransmit shortwave broadcasts.
    (3) repair radio communication apparatus.
    (4) transmit in bands allocated to the Amateur services. (.....)

12. Messages from an Amateur station in one of the following are expressly forbidden
    (1) ASCII. (2) International No. 2 code.
    (3) Baudot code. (4) secret cipher. (.....)

13. Amateur stations are often regarded as "frequency agile". This means
    (1) on a shared band operators can change frequency to avoid interfering.
    (2) operation is limited to frequency modulation.
    (3) operators can choose to operate anywhere on a shared band.
    (4) bandwidth is required on all transceivers. (.....)

14. The correct phonetic code for the callsign VK5ZX is
    (1) Victor, Kilowatt, five, Zulu, xray (2) Victor, Kilo, five, Zulu, xray
    (3) Victor, Kilo, five, Zanzibar, xray (4) Victoria, Kilo, five, Zulu, xray (.....)

15. The "split frequency" function on a transceiver allows the operator to
    (1) transmit on one frequency and receive on another.
    (2) monitor two frequencies simultaneously using a single loudspeaker.
    (3) monitor two frequencies simultaneously using two loudspeakers.
    (4) receive CW and SSB signals simultaneously on the same frequency. (.....)

16. The signal "'QRN" means
    (1) I am busy. (2) I am troubled by static.
    (3) are you trouble by static. (4) I am being interfered with. (.....)

17. The Amateur service may be briefly defined as
    (1) a private radio service for personal gain and public benefit.
    (2) a public radio service for public service communications.
    (3) a radio communication service for self training and hobby.
    (4) a private radio communication service. (.....)

18. An Amateur radio communication station is a station for
    (1) Commercial Radio Service.
    (2) Free Radio Service.
    (3) Private Mobile Radio Service
    (4) Amateur services including radio services for emergency communication (.....)

19. An Amateur radio license "authorizes the use of"
    (1) PMR radios. (2) a TV station.
    (3) Amateur radio apparatus only. (4) Aeronautical and marine equipment. (.....)

20. "Break-in keying" means
    (1) temporary radio service.
    (2) unauthorised entry to a radio station.
    (3) key-down changes the station to transmit key-up to receive.
    (4) the other station's key is down. (.....)

[See page four

21. The Q signal "your signals are fading" is
(1) QRX. (2) QSB. (3) QSL. (4) QSO. (.....)

22. Which of the following documents is to be kept at your Amateur station?
(1) your Amateur Radio license with its attached schedule
(2) a chart of the frequency bands for your class of license
(3) Radio Amateur's handbook
(4) the rules and regulations of the Amateur station (.....)

23. The term "Amateur third party communications" refers to
(1) a simultaneous communication between three parties.
(2) the transmission of commercial or secret messages.
(3) message of non-licensed people or organizations.
(4) point to multipoint communication. (.....)

24. Your responsibility as an Amateur radio license holder is to
(1) be present whenever the station is operated.
(2) allow another Amateur to operate your station upon request.
(3) be responsible for the proper operation of the station as per the radio communication regulations.
(4) transmit weather news from time to time. (.....)

25. The transmission of messages in a secret code by the operator of an Amateur station is
(1) permitted when communications are transmitted on behalf of a Government agency.
(2) permitted when communications are transmitted on behalf of a third party.
(3) permitted during amateur radio contents.
(4) not permitted under any circumstances. (.....)

26. "RIT" stand for
(1) receiver interference transmiter. (2) range independent transmission.
(3) receiver incremental tuning (4) random interference tester. (.....)

27. The signal "QRM" means
(1) your signals are fading. (2) I am troubled by static.
(3) your transmission is being interfered (4) my transmission is being interfered. (.....)

28. The minimum age level to apply amateur radio license
(1) 18 years. (2) 21 years. (3) 14 years. (4) 12 years. (.....)

29. Which of the following class of license is not issued by the Telecommunications Regulatory Commission of Sri Lanka?
(1) Novice class. (2) General class (3) Advance class (4) special class (.....)

30. Q code abbreviation "QRK" means
(1) Does my frequency vary (2) what is the readability of my signal
(3) what is the tone of my transmission (4) what is the strength of my signal (.....)

31. Having established communication on a frequency it is good practice to
(1) use any frequency. (2) stay on the same frequency.
(3) change to another frequency. (4) use an available frequency. (.....)

[See page five

32. An officer from the Telecommunications Regulatory Commission of Sri Lanka has the authority to check the
(1) station log book. (2) license.
(3) station log book and license. (4) equipment type. (.....)

33. Important entries in an Amateur Radio Station log book are
(1) date, month and year.
(2) beginning and end of transmission.
(3) frequency band and used class of emission.
(4) all the above are correct (.....)

34. A person allowed to operate a station without license can operate
(1) Voice only under the supervision of the licensee.
(2) Morse code and voice under the supervision of the licensee.
(3) voice only.
(4) Morse code only. (.....)

35. It is a good practice to call an Amateur Station
(1) by transmitting call sign only.
(2) by transmitting calls sign first and called station last.
(3) by transmitting call sign first, the calling station last.
(4) by the name of the person called. (.....)

36. Which of the following types message can be received by an Amateur licensee?
(1) Defence news. (2) Diplomatic messages.
(3) Standard frequency transmission. (4) Government news. (.....)

37. An Amateur station log book must be kept for
(1) mobile operation. (2) fixed operation.
(3) main station address only. (4) main and all temporary station address. (.....)

38. The time in the log book must always be in
(1) local time. (2) British standard time
(3) Universal standard time (4) 24 hour format (.....)

39. Abbreviation KN means
(1) beginning of transmission. (2) end of transmission.
(3) end of message. (4) invitation to any station to transmit. (.....)

40. To prevent annoying other users on a band, a transmitters should always be tuned initially
(1) into an antenna. (2) into a dummy load.
(3) into a dipole. (4) into other bands. (.....)

41. Before initiating a CQ, the signal QRL is often sent
(1) once only. (2) two or three times.
(3) five times. (4) ten times. (.....)

42. "Your keying is defective" is given by Q code
(1) QSZ. (2) QSB. (3) QSY. (4) QSD. (.....)

[See page six

43. For safety reasons all exposed metal work in an Amateur station should be
(1) connected to neutral. (2) connected to main earth.
(3) connected to a good RF earth. (4) left floating. (.....)

44. In the RST code, R represents
(1) received all signal. (2) readability of signal.
(3) relay message. (4) radio contest. (.....)

45. To stop unwanted radiation from an oscillator, it should be
(1) enclosed in a metal box. (2) left unscreened.
(3) not be RF decoupled. (4) place in an insulator box. (.....)

46. The licensee shall not transmit
(1) International Distress signal. (2) weather forecasts.
(3) Information related to hobbies. (4) personal information. (.....)

47. The following amateur band is shared with another service in Sri Lanka
(1) 50 to 54 MHz. (2) 144 to 146 MHz.
(3) 7.0 to 7.1 MHz. (4) 430 to 440 MHz. (.....)

48. The frequency band 146 to 148 MHz is
(1) shared with other communication services.
(2) exclusively for police communications.
(3) exclusive for repeater operation.
(4) reserved for emergency communications. (.....)

49. The prime document for an Amateur radio station is
(1) an Amateur radio license. (2) station log book.
(3) Radio Amateur's handbook. (4) Telecommunication Act. (.....)

50. When experiencing interference to the Amateur station, the station operator
(1) must immediately be brought to the TRCSL for action.
(2) continue with steps taken to reduce the in interference.
(3) may continue to operate.
(4) not obligated to take any action. (.....)

* * *

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Examination for the Issue of Amateur Radio Operator's License by the Telecommunications Regulatory Commission of Sri Lanka (General Class) – 2017 (2018)

(02) Licensing Conditions, Operating Practices and Procedures

One hour

Instructions to Candidates

Very Important :

Do not use Pencil to write answers.

* ***Answerscripts where the numbers are not written as indicated below will not be marked / evaluated.***

1 2 3 4

Write your Index Number here.

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Invigilator's Initials

Important :

* *This paper consists of* ***25*** *questions on* ***03*** *pages.*

* *Before answering the paper arrange all the pages in order.*

* *Answer* ***all questions on this paper*** *itself.*

* *The time allowed is* ***one hour.***

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

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For Examiner's use only

Page No.	Question No.	Marks Awarded
2	1 - 12	
3	13 - 25	
Total		

Final Score

In figures	
In words	

Marking Examiner	
Checked by	

[See page two

● For each of the questions from No. **1** to **25** select the **most suitable** answer out of the four answers given and write its **number on the dotted line** provided.

1. The Q code for standby is
   (1) QRN. (2) QRM. (3) QRS. (4) QRX. (.....)

2. "COIL" using the phonetic alphabet would be
   (1) Charlie, Oscar, India, Lima
   (2) Charlie, Oceans, Indictable, London
   (3) Coil, Oscar, Italy, London
   (4) Charlie, Oscar, Italy, London (.....)

3. What does the Q signal "QTR" mean?
   (1) slow down (2) send faster (3) the time is (4) please standby for (.....)

4. What does the Q signal "QRO" mean?
   (1) quitting operation (2) zero beat may signal
   (3) you are sending too fast (4) increase power (.....)

5. What is the Q signal for "I have interference"?
   (1) QRQ (2) QRX (3) QRM (4) QRN (.....)

6. Using the phonetic alphabet "RADIO" would be
   (1) Romeo, Alpha, Delta, India, Oscar (2) Romeo, Alpha, Denmark, India, Oscar
   (3) Romeo, Alpha, Delta, Italy, Oscar (4) Romeo, Alpha, Delta, Italy, Oscar (.....)

7. In the RST code, T stands for
   (1) Temperature. (2) Tone. (3) Time. (4) Transmitter. (.....)

8. H3E is the designation for
   (1) Frequency modulation. (2) SSB with full carrier.
   (3) SSB with reduced carrier. (4) SSB with no carrier. (.....)

9. When calling a station, it is a good practice to
   (1) put your call sign first.
   (2) use your call sign only.
   (3) put the call sign of the station being called first.
   (4) use the call sign of the other station only. (.....)

10. In RST code, R5 means,
    (1) Unreadable.
    (2) Readable with considerable difficulty.
    (3) Readable with practically no difficulty.
    (4) Perfectly readable. (.....)

11. R3E is the designation for
    (1) SSB reduced carrier. (2) SSB full carrier
    (3) SSB with no carrier. (4) Vestigial SB. (.....)

12. SSB suppressed carrier transmission is denoted by
    (1) A3E. (2) F3E. (3) R3E. (4) J3E. (.....)

[See page three

13. The Q code for closing down is
(1) QRT. (2) QRC. (3) QRP. (4) QRZ. (.....)

14. Before commencing the transmission, the operator should
(1) listen to the my frequency to see if it is clear.
(2) Turn the AF gain down.
(3) Turn the my RF gain down.
(4) Detune the antenna. (.....)

15. Using the phonetic Alphabet HENRY would be;
(1) Hotel, Envica, Norway, Romeo, Yankal.
(2) Hotel, Echo, Nancy, Romeo, Yokohama.
(3) Hotel, echo, November, Romeo, Yankal.
(4) Hotel, Echo, November, Romeo, Yankal. (.....)

16. Amateur abbreviation "ANT" means
(1) About. (2) Around. (3) Antenna. (4) Ants. (.....)

17. Phonetic alphabet "XZ" is represented by
(1) Xmas, Zoo. (2) Xray, Zulu. (3) Xray, Zoo. (4) Xmas, Zulu. (.....)

18. The only general call allowed from an amateur station is
(1) A news bulletin. (2) A third party call.
(3) on VHF. (4) A CQ call. (.....)

19. It is good safety practice to
(1) use plastic piping for earth. (2) unearth all metal cases.
(3) have no master switch. (4) supply all mains power via a master switch. (.....)

20. The band plans should be observed because
(1) They are mandatory. (2) They are governed by international regulations.
(3) They are only for novice. (4) They an intended to aid opening. (.....)

21. Which of the following uses the International Phonetic Alphabet?
(1) Boston, Uruguay, Gordon (2) Belgium, Units, Gravity
(3) Bee, You, Gee (4) Bravo, Uniform, Gold (.....)

22. The station log may be maintained
(1) on a computer print out. (2) in lose leaf binder.
(3) on magnetic disc. (4) in pencil. (.....)

23. Amateur Abbreviation (CW) "NW" means
(1) NOW. (2) Norway. (3) Never. (4) Network. (.....)

24. When in communication with another station the call sign must be sent
(1) every 5 minutes. (2) every 10 minutes.
(3) At least every 5 minutes. (4) At least every 30 minutes. (.....)

25. You are having trouble with receptor due to static. The Q code used would be
(1) QSL. (2) QRX. (3) QRZ. (4) QRN. (.....)

* * *

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Examination for the Issue of Amateur Radio Operator's License by the Telecommunications Regulatory Commission of Sri Lanka (Novice Class) – 2017 (2018)

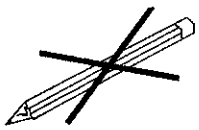
(02) Licensing Conditions, Operating Practices and Procedures

One hour

Instructions to Candidates

Very Important :

Do not use Pencil to write answers.



* ***Answerscripts where the numbers are not written as indicated below will not be marked / evaluated.***

1 2 3 4

Write your Index Number **here.**

.....

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.....

Invigilator's Initials

Important :

- * *This paper consists of 25 questions on **04** pages.*
- * *Before answering the paper arrange all the pages in order.*
- * *Answer **all questions on this paper** itself.*
- * *The time allowed is **one hour.***
- * *A minimum of **50%** marks is required for pass.*
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- * *Even if you are not attempting the paper hand it over to the Supervisor.*
- * *Write the answers clearly and legibly in **blue** or **black** ink only and **not in pencil.***
- * *It is an offence to remove this paper from the examination hall or turn out photocopies of the same.*
- * ***Answer scripts with illegible figures, illegible handwriting, those where erasing fluid has been used and written in pencil will not be marked / evaluated.***

For Examiner's use only

Page No.	Question No.	Marks Awarded
2	1 - 11	
3	12 - 20	
4	21 - 25	
Total		

Final Score

In figures	
In words	

Marking Examiner	
Checked by	

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● For each of the questions from No. **1** to **25** select the **most correct** answer out of the four answers given, and write its **number on the dotted line** provided.

1. Q code abbreviation QRN means
   (1) Are you being interfered with? (2) Are you being troubled by static?
   (3) Are you busy? (4) Are my signals fading? (.....)

2. "Decrease power" is given by Q code
   (1) QRO (2) QRS (3) QRQ (4) QRP (.....)

3. Abbreviation for "end of message" is
   (1) VA. (2) CL. (3) AS. (4) AR. (.....)

4. Amplitude modulated single-side band full carrier is denoted by
   (1) H3E. (2) J3E. (3) A3E. (4) F3E. (.....)

5. 'Class of emission are designated by groups of a minimum of three characters. Its **second** character denotes
   (1) type of modulation of the main carrier.
   (2) nature of signal (s) modulating the main carrier
   (3) type of information to be transmitted.
   (4) type of oscillator (.....)

6. To prevent interference to other users of an amateur band, a transmitter should always be tuned initially into a
   (1) harmonic. (2) short antenna. (3) dipole antenna. (4) dummy load. (.....)

7. Having established contact to a calling frequency, it is a good practice to
   (1) stay on the same frequency. (2) use any frequency.
   (3) change to another frequency. (4) reduce the transmitting power. (.....)

8. In amateur transmission, it is permissible to use
   (1) secret code.
   (2) phone patched traffic.
   (3) the words of a third party publically spoken.
   (4) for transmitting news. (.....)

9. The amateur radio equipment shall not be used for
   I. transmitting advertisement
   II. communications of a business
   III. non experimental character
   out of above three statements
   (1) only I is correct (2) only I and II are correct
   (3) only II and III are correct (4) I, II and III are correct (.....)

10. When operating in "Maritime mobile" the license shall have the call sign with the suffix?
    (1) '/M' (2) '/MM' (3) '/MA' (4) '/MO' (.....)

11. During transmissions, amateur stations are required to transmit their call signs at intervals not exceeding
    (1) 2 minutes. (2) 3 minutes. (3) 5 minutes. (4) 7 minutes. (.....)

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12. Before initiation a 'CQ' call
    I. keep giving your call sign
    II. listen on the frequency
    III. send a series of V_s
    out of above three statements
    (1) only I is correct (2) only I and II are correct
    (3) only II and III are correct (4) I, II and III are correct (.....)

13. Which of the following represents a valid amateur station log?
    I. written an exercise book
    II. written a magnetic tape or disc
    III. written any electronic storage media
    out of above three statements
    (1) only I is correct (2) only I and II are correct
    (3) only I and III are correct (4) I, II and III are correct (.....)

14. Which of the following occurrences need **not** be entered into the station log book?
    I. station temporarily dismantled
    II. tests for interference
    III. station operated at temporary location
    out of above three statements
    (1) only I is correct (2) only I and II are correct
    (3) only II and III are correct (4) I, II and III are correct (.....)

15. At any time for a single transmission the licensee cannot transmit for continuous period of
    (1) more than 15 minutes. (2) more than 10 minutes.
    (3) more than 5 minutes. (4) more than 4 minutes. (.....)

16. Which of the following need **not** be entered in the station log book
    I. transmitter power
    II. test carried on
    III. EIRP
    out of above three statements
    (1) only I is correct (2) only II is correct
    (3) only III is correct (4) I, II and III are correct (.....)

17. The Novice class B licence **does not** authorise the use of the frequencies for transmitting
    (1) below 30 MHz. (2) above 30 MHz.
    (3) in the microwave range. (4) above 20 MHz. (.....)

18. In the RST code, R represents
    (1) Radio content. (2) Relay message.
    (3) Received all signals. (4) Readability of signal. (.....)

19. The licensee shall keep the log for inspection by an officer authorized by the Director General of Telecommunications Regulatory Commission from the date of last entry for at least
    (1) 1 month. (2) 3 months. (3) 6 months. (4) 1 year. (.....)

20. When transmissions are made it is always better to use
    (1) phone patched traffic. (2) Q - code.
    (3) plain language. (4) secret code. (.....)

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21. In amateur transmission, it is permissible to use
    I. plain language
    II. phonetic alphabet
    III. Q - code
    out of above three statements
    (1) only I is correct (2) only II is correct
    (3) only I and III are correct (4) I, II and III are correct (.....)

22. In the SRT Code, T represents
    (1) transmitter power. (2) tone.
    (3) time of transmission. (4) temporary station. (.....)

23. Abbreviation for "stand by" is
    (1) AR. (2) AS. (3) ST. (4) SB. (.....)

24. The correct phonetic alphabet for the word "NICE" is
    (1) NOVEMBER, INDIA, CHARLIE, ECHO.
    (2) NOVEMBER, ISACK, CHARLIE, ECHO.
    (3) NOVEMBER, INDIA, CHARLIE, EDWARD.
    (4) NELLY, INDIA, CHARLIE, ECHO. (.....)

25. The correct group using international phonetic alphabet is
    (1) KILO, LIMA, MIKE, ROMEO. (2) KILO, LIMA, MARY, ROBERT.
    (3) KING, LIONEL, MIKE, ROMEO. (4) KING, LIONEL, MARY, ROBERT. (.....)

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