

**AMATEUR RADIO EXAMINATION
- QUESTION PAPER -**

INDEX NO.	AMR-09-2015-								
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IC COLOUR

DAY : SUNDAY
DATE : 20TH SEPTEMBER 2015/ 6 ZULHIJAH 1436H
TIME : 0930 - 1130 (2 HOURS)
VENUE : B13, AITI BUILDING, KG. ANGGEREK DESA

**TO ALL CANDIDATES
PLEASE READ CAREFULLY THE INSTRUCTIONS BELOW
BEFORE YOU START YOUR EXAMINATION PAPER**

1. This examination paper contains **60 multiple choice questions** and is separated into 2 sections. Section A contains **30 multiple choice questions**, and Section B also contains **30 multiple choice questions**, please answer all.
2. To answer, please **circle** the letters A, B, C or D that have been provided in the Answer Sheet.
3. Participants need to pass in both sections (Section A and B). Failure in either section will be counted as an automatic Fail.
4. Allowed writing material is **BLUE** or **BLACK** pens only. Pencils and other writing materials are prohibited.
5. **Strike** answers that are to be changed. The use of erasers, blanco or the likes is prohibited.
6. Mathematical work is allowed only on the question paper. Doing mathematical work on other paper is **prohibited**.
7. Examination Paper and Answer Sheet are to be returned to the invigilator, even if no questions are answered.
8. Participants are **prohibited** to speak, borrow writing materials or calculators or the likes during the whole duration of the exam.
9. Identification Card or passport is to be placed on the table for the whole duration of the examination. Participants are not allowed to leave their seats without permission from invigilators.
10. If it is found that participants are not following instructions, orders or warnings during the examination, their names will be recorded for further action or immediate disqualification.

SECTION A

*This section contains 30 questions. Answer **all**.*

1. Section 68 of the Telecommunication Order 2001 states that any person who establishes, installs, maintains, provides or operates a telecommunication system or service within Brunei Darussalam without a license granted shall be guilty of an offence. Which of the following statement of conviction is CORRECT should a person do commit an offence?
 - A. Any person guilty of an offence under this section shall be liable on conviction to a fine not exceeding \$10,000, imprisonment for a term not exceeding 1 year or both.
 - B. Any person guilty of an offence under this section shall be liable on conviction to a fine not exceeding \$50,000, imprisonment for a term not exceeding 3 years or both.
 - C. Any person guilty of an offence under this Order or any regulations made thereunder for which no penalty is expressly provided shall, in addition to the forfeiture of any article seized, be liable on conviction to a fine not exceeding \$10,000, imprisonment for a term not exceeding 3 years of both.
 - D. No fine is liable at all.

2. With regards to AITI rules and regulation, amateur radio equipment is only permitted to be operated
 - A. Within the frequency range stated in the license
 - B. Within the permitted range of frequency in the radio equipment
 - C. One time only
 - D. Using a radio transceiver

3. In what Region and Zone is Brunei Darussalam located?
 - A. Region 28, Zone 3
 - B. Region 38, Zone 2
 - C. Region 3, Zone 38
 - D. Region 3, Zone 28

4. For a foreigner to obtain a temporary amateur radio licence in Brunei Darussalam, what are the requirements?
 - A. A local guarantor, applicant must produce a valid foreign amateur radio licence and a copy of applicant valid passport.
 - B. Applicant has to sit for AITI amateur radio exam.
 - C. Foreigners are not allowed to hold a local amateur radio licence.
 - D. Foreign guarantor, applicant must produce a valid foreign amateur radio licence and a copy of applicant valid passport.

5. Before beginning a transmission, an operator should
 - A. sharpen his/her pencil
 - B. measure transmitter input power
 - C. notify AITI
 - D. listen on transmitting frequency to be used

6. All operations regarding station usage need to be recorded in a log book. What details are required to be included in the log book for amateur radio operators everytime they are on air?
 - A. Date, frequency band and emission, station callsign which with you are communicating, start and end of conversation time, signal report, QSL
 - B. Date, frequency band and emission, power output, conversation time, signal report, statement.
 - C. Date, station callsign which with you are communicating with, frequency band and emission.
 - D. Date, station which with you are communicating with, frequency band, emission and power output

7. The amateur radio license classes in Brunei are:
 - A. Novice, Advances
 - B. Standard, Advanced
 - C. Class 1, Class 3
 - D. Novice, Technician

8. "QRL?" is the Q-code for
 - A. Where is your location?
 - B. Who is calling me?
 - C. have you a message for me?
 - D. Are you busy?

9. Which of the statement below is CORRECT regarding installation of amateur radio equipment in a vehicle?
 - A. Radio equipment can be installed in any vehicle without any valid amateur radio license.
 - B. Installation of radio equipment and antenna is not required to meet the specifications and regulations of road and safety code.
 - C. One unit of licensed radio equipment can be transferred anytime from one to another vehicle.
 - D. One unit of licensed radio equipment is only allowed for one vehicle unless stated otherwise in the license.

10. Station, Log book and license are required for random inspection done by
 - A. A certified Radio Organization
 - B. Royal Brunei Police Force
 - C. Authority for Info-communications Technology Industry (AITI)
 - D. Registrar of Companies

11. When should you use simplex operation instead of a repeater?
 - A. When the most reliable communications are needed
 - B. When an emergency telephone call is needed
 - C. When a contact is possible without using a repeater
 - D. When you are traveling and need some local information

12. If you purchase amateur radio equipment from outside the country, what is the right thing to do upon arrival at the custom's control post?
 - A. Bring in the said equipment without notifying Royal Brunei Custom and Excise official
 - B. Pay import tax for the equipment
 - C. Declare the equipment to the Royal Brunei Custom and Excise officials
 - D. Bring the equipment directly to AITI officials

13. In what circumstances can an amateur radio broadcast information to the public?
 - A. When an amateur radio operator is paid
 - B. It is entirely prohibited
 - C. When broadcasting is less than one hour
 - D. When broadcasting is more than 15 minutes

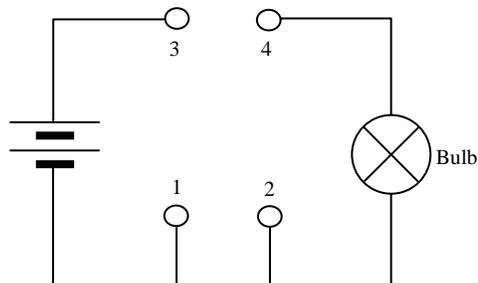
14. To avoid a direction high gain antenna from directing its excess RF power to the people in nearby buildings, what must be done?
- A. Place the antenna higher than surrounding buildings.
 - B. All equipment must be properly grounded.
 - C. Place the antenna lower or equal height to the surrounding buildings.
 - D. None of the above
15. What kind of amateur station simultaneously retransmits the signal of other stations on another frequency?
- A. Repeater Station
 - B. Beacon Station
 - C. Telex Station
 - D. Relay Station
16. An amateur radio licensee should renew their licence
- A. No renewal required
 - B. Annually
 - C. Quarterly
 - D. Bi-annually
17. The most common input/output frequency offset for repeaters in the 2-metre band is
- A. 1.6 MHz
 - B. 0.6 MHz
 - C. 5.0 MHz
 - D. 0.4 MHz
18. For 40 meter band, which one of the following frequency band is correct?
- A. 21.550 – 21.650 kHz
 - B. 21.000 – 21.450 MHz
 - C. 7000 – 7200 MHz
 - D. 7000 – 7200 kHz
19. You installed a 144MHz transceiver for marine operation on your boat to operate as a mobile station. Under which of the following conditions is operating permitted?
- A. Not at all
 - B. Anywhere, provided the boat remains in Brunei Darussalam waters
 - C. On inland waterways and river but not in docks, estuaries or harbours
 - D. Only with special permission from the AITI
20. What type of operation which transmit and receive on a different frequency?
- A. Simplex Operation
 - B. Multiplex Operation
 - C. Duplex Operation
 - D. All of the above
21. A station 'Callsign' is sent for the purpose of identification at the start of transmission and end of transmission. It should be repeated for
- A. Within the first 30 minutes
 - B. Once after the first 15 minutes
 - C. Every 15 minutes
 - D. Once within 60 minutes

22. If you are in contact with another station and you hear an emergency call for help on your frequency, what should you do?
- A. Stop your QSO immediately and take the emergency call
 - B. Tell the calling station that the frequency is in use
 - C. Call your local Fire and Rescue Department and inform them of the emergency
 - D. Direct the calling station to the nearest emergency net frequency
23. What type of interference may come from a multi-band antenna connected to a poorly tuned transmitter?
- A. Auroral distortion
 - B. Harmonic radiation
 - C. Parasitic excitation
 - D. Intermodulation noise
24. What is the correct callsign prefix for Standard and Advanced Class Amateur Radio Licence respectively?
- A. V85 and V89
 - B. V89 and V85
 - C. V8N and V8M
 - D. V8B and V8A
25. An activity wherein participants use radio direction finding techniques to locate one or more radio transmitters hidden within a designated area, is called?
- A. Fox Dancing
 - B. Fox Hunting
 - C. DXing
 - D. Echolink
26. Which of the following uses the International Phonetic Alphabet?
- A. Alpha, Norway, Delta
 - B. Denmark, Oscar, Gordon
 - C. Alpha, Charlie, Tango
 - D. Bravo, Uniform, Gordon
27. What is the validity period of an Import Permit for an Amateur Radio equipment from the date of issue?
- A. 14 days
 - B. 2 months
 - C. 1 week
 - D. 1 year
28. Which of the following is the correct code used in Amateur Radio communications for "Best Regards" ?
- A. 74
 - B. 77
 - C. 73
 - D. 88

29. Amateur radio services, as a secondary service, are permitted to use the frequency band if
- A. amateur radio user feels experienced enough
 - B. it only interferes with other primary services
 - C. it does not cause any interference to primary service
 - D. the primary service operates at a lower power and used at the same time
30. For signal strength scale, what is the scale for 'fairly good signal' and 'extremely strong signal'?
- A. 1 and 9
 - B. 5 and 9
 - C. 9 and 5
 - D. 1 and 5

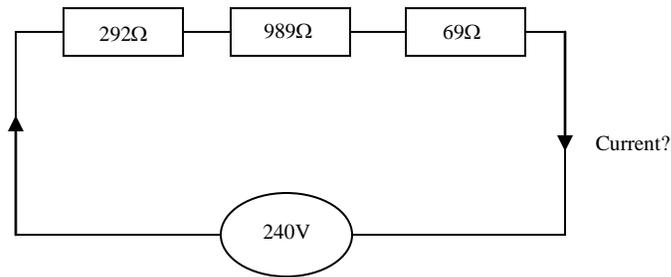
SECTION B

31. What is the voltage, for a circuit with a 3 Ohms resistor and current of 3 A?
- A. 6 V
 - B. 1.0 V
 - C. 9.0 V
 - D. 3 V
32. If ' λ ' is wavelength, ' c ' is speed of light and ' f ' is frequency, which formula listed below is correct?
- A. $\lambda = fc$
 - B. $f = \lambda/c$
 - C. $c = f^2\lambda$
 - D. $c = f\lambda$
33. Which instrument would you use to measure resistance value?
- A. Ammeter
 - B. Thermometer
 - C. Voltmeter
 - D. Ohmmeter
34. To allow the bulb in the diagram to light correctly, a wire should be connected between points



- A. 1 and 4
 - B. 1 and 2
 - C. 1 and 3
 - D. 3 and 4
35. What is the function of PNP transistor?
- A. To amplify high signal using low voltages
 - B. To amplify high signal using high voltages
 - C. To amplify a small signal using low voltages
 - D. To amplify a small signal using high voltages
36. For AC measurement, the value of Voltage-Root-Mean-Square (V_{rms}) is
- A. 0.5 peak voltage (V_{pk})
 - B. 0.707 peak voltage (V_{pk})
 - C. 1.0 peak voltage (V_{pk})
 - D. 0.333 peak voltage (V_{pk})

37. What is the Current and the total Resistance of three resistors connected in series as shown below?

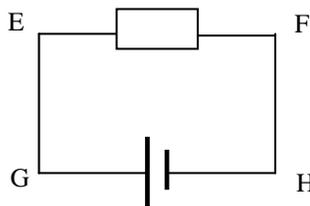


- A. 5.6 mA and 324 kOhms
 - B. 5.6 A and 324 kOhms
 - C. 178 mA and 1350 Ohms
 - D. 17.8 mA and 135 Ohms
38. What is the modulation used in “Very High Frequency” and “High Frequency” respectively
- A. Single band and multiple band
 - B. Frequency modulation and amplitude modulation
 - C. Amplitude modulation and frequency modulation
 - D. Quadrature amplitude modulation and phase modulation
39. Which one of the following is the correct application of the frequency 7040 kHz in amateur radio?
- A. Long distance communication ie. Hawaii
 - B. Short distance communication ie. Borneo Island
 - C. Repeaters
 - D. None of the above
40. Compared with an ordinary amplitude modulated signal a single-sideband signal
- A. occupies a wider bandwidth
 - B. is distorted
 - C. occupies half the bandwidth
 - D. is easier to tune in
41. What is the basic unit of current?
- A. The ohm
 - B. The watt
 - C. The volt
 - D. The ampere
42. What is the Unit(s) for each of the components (Capacitor, Ammeter, Resistor, Inductor) respectively?
- A. Coulombs, Meter, Ohm, Henry
 - B. Coulombs, Ampere, Ohm, Farad
 - C. Farad, Ampere, Resistance, Henry
 - D. Farad, Ampere, Ohm, Henry
43. The relationship of ‘Charge’ is
- A. $Q = V/R$
 - B. $Q = C/V$
 - C. $Q = CV$
 - D. $Q = C^2V$

44. Which of the following principles is used when working with almost any electronic circuit?
- Coulomb's Law
 - Cole's Law
 - Ohm's Law
 - Tesla's Law
45. Which of the following is true about Capacitor?
- It is an electrical device that resists the flow of current
 - A device that only allows a current to flow in one direction in a circuit
 - Stores energy and produces a mechanical force between the conductors
 - Used for filtering and smoothing of signals and are the major components in transformers
46. The unit Watt (W) is a measure for:
- RF electric field strength
 - RF energy
 - RF power
 - RF voltage
47. What is the function of an antenna tuner?
- To improve power efficiency between transceiver and antenna by matching the impedance
 - To tune the frequency
 - To maintain power transmission at a safe level
 - To provide excellent grounding to the equipment during lightning
48. A transformer is used to balance a transmission line of 16 Ohm with a 3200 Ohm antenna. What is the ratio required for the transformer to do this?
- 1 : 51200
 - 1 : 804
 - 1 : 200
 - 1 : 0.005

49. Which direction is the electron flowing in the diagram below?

- From E to F
- From H to G
- From H → F → E → G
- From G → E → F → H



50. Define the function of Low-pass filter and High-pass filter respectively?
- Restrict low frequency and restrict high frequency
 - Channeling high frequency and channeling low frequency
 - None of the above
 - Restrict high frequency and restrict low frequency
51. What is the velocity of an electro-magnetic wave?
- 200×10^6 metres/sec
 - 30×10^7 metres/sec
 - 0.3×10^8 metres/sec
 - 3×10^{-8} metres/sec

52. A standing wave meter (SWR) is used to check the

- A. Height of the tower
- B. Efficiency of a transmitter
- C. Resonant frequency of an aerial
- D. Matching of the transmitter to the aerial system

53. Current is define as

- A. a measure of electromotive (EMF) force between two points
- B. material property that opposes the flow of electrons
- C. a measure of the flow of electrons through a conductor
- D. the amount of energy per unit time expended by a system

54. The main advantage of the yagi aerial as compared with dipole is

- A. Smaller physical dimensions
- B. Increased forward gain
- C. A wider beam width
- D. A better match for the feeder

55. What is the symbol for resistor

- A. 
- B. 
- C. 
- D. 

56. What does Single-sideband modulation (SSB) means?

- A. It is a refinement of the technique of frequency modulation
- B. It is a refinement of the technique of amplitude modulation
- C. It is a form of digital modulation
- D. It is a spread spectrum modulation technique

57. Groundwave is define as:

- A. radio waves that reflect off the ionosphere
- B. radio waves traveling along the Earth's surface
- C. radio waves that is absorb by the ground
- D. none of the above

58. A 75 hertz current in a wire means that

- A. a cycle is completed 75 times in each second
- B. a potential difference of 75 volts exists across the wire
- C. the current flowing in the wire is 75 amperes
- D. the power dissipated in the wire is 75 watts

59. The process of modulation allows

- A. information to be removed from a carrier
- B. information to be impressed on to a carrier
- C. voice and Morse code to be combined
- D. None of the above

60. A three-element Yagi antenna of rods of unequal length, please arrange the elements in descending order
- A. Driven element, reflector, director
 - B. Reflector, driven element, director
 - C. Director, driven element, reflector
 - D. Reflector, director, driven element