

**AMATEUR RADIO EXAMINATION
- QUESTION PAPER -**

INDEX NO.	AMR-03-2014-								
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DAY : SUNDAY
DATE : 23rd MARCH 2014M / 21 JAMADILAWAL 1435H
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

1. Amateur Radio service is defined as
 - A. a radio-communications service in which a station is used for the purpose of self-training, intercommunication and technical investigations carried out by amateurs.
 - B. a radio station that is owned by a commercial entity. To be qualified as such, it must also be advertiser-supported and for-profit.
 - C. a conventional radio system uses a dedicated channel (frequency) for each individual group of users for public and commercial purposes.
 - D. a cellular service that can be used for voice and data

2. According to the Telecommunication Order 2001, any person who establishes, installs, maintains, provides or operates a radio-communication service or any radio-communication equipment in any place or on board any vessel, aircraft or in any vehicle in Brunei Darussalam without a licence granted shall be guilty of an offence. Which of the statement below is CORRECT?
 - A. Any person guilty of an offence 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 offences shall be liable on conviction to a fine not exceeding \$10,000, imprisonment for a term not exceeding 3 years of both.
 - C. Any person guilty of an offence shall be liable on conviction to a fine not exceeding \$50,000, imprisonment for a term not exceeding 3 years or both.
 - D. No fine is liable at all.

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

4. Two persons are having an amateur radio conversation. Which set of conversations below should they avoid:
 - A. Religion, Business, Politics, Racial and Ethnic
 - B. Hobbies, Education, and Entertainment.
 - C. Sport, Personal details and Socializing.
 - D. Weather, Location and Q-Codes.

5. What is the primary requirement for a VHF (Standard) licence holder to upgraded to a HF (Advance) licence?
 - A. Holding a standard licence for a minimum of six (6) months and to submit a logbook indicating active communication for the past six (6) months.
 - B. To sit and pass an HF licence written examination.
 - C. Holding a standard licence for a minimum of three (3) months and to submit a logbook indicating active communication for the past six (6) months.
 - D. To sit and pass an HF licence practical examination.

6. How much is the fee for the Amateur radio licence?
 - A. No fee is required
 - B. BND25 for a year
 - C. BND25 for a lifetime
 - D. BND5 for a year

7. What are the two (2) types of amateur radio licence issued by AITI?
 - A. Written Class and Practical Class
 - B. Advanced Class and Standard Class
 - C. Advanced Class and General Class
 - D. Standard Class and Trial Class

8. An amateur radio licensee shall purchase their equipment
 - A. from any company that sells radio equipments
 - B. from IT Unit, AITI
 - C. from a company with valid AITI Dealer Licence
 - D. from an amateur radio licensee

9. If you purchase amateur radio equipment from outside the country, without an import permit, 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 Officials and seek approval from AITI
 - B. Declare the equipment to the Royal Brunei Custom and Excise officials, seek approval from AITI and pay import duty for the equipment
 - C. Pay import tax for the equipment without seeking approval from AITI
 - D. Bring the equipment directly to AITI officials for approvals without having to pay for import tax.

10. If an amateur radio licensee wants to terminate his/her licence, he or she must
 - A. inform AITI in written format and states reasons for termination while also informing the status of equipment, which must be signed by licensee before licence is expired.
 - B. inform AITI in written format and states reasons for termination while also informing the status of equipment, which must be signed by licensee after licence has expired.
 - C. disconnect his/her amateur radio equipment.
 - D. inform his/her amateur radio association.

11. 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, station callsign which with you are communicating with, frequency band and emission.
 - B. Date, station which with you are communicating with, frequency band, emission and power output.
 - C. Date, frequency band and emission, station callsign which with you are communicating, start and end of conversation time, signal report, QSL
 - D. Date, frequency band and emission, power output, conversation time, signal report, statement.

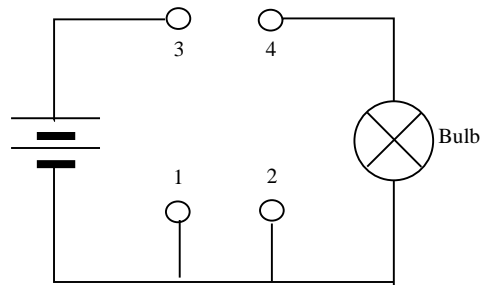
12. As an Authority responsible for radio frequency spectrum allocation, AITI has the right to
- A. allocate any frequency band to fixed and mobile services only.
 - B. allocate any frequency band to any services including Amateur Radio, Broadcasting, Fixed and Mobile services, etc.
 - C. allow any other authority to allocate frequency to any services
 - D. allow any user to utilise any frequency.
13. What is the correct way to make a contact on an Amateur Radio?
- A. Say your callsign and then the callsign station you want to contact three times
 - B. Say the other operator's name, then your callsign three times
 - C. Say the callsign of the station you want to contact, then your callsign
 - D. Say, "Mayday, Mayday" then your callsign
14. What is the frequency band used by an amateur radio for a "Very High Frequency" in Brunei Darussalam?
- A. 144.000 kHz – 148.000 kHz
 - B. 137.000 MHz – 156.000 MHz
 - C. 144.000 MHz – 148.000 MHz
 - D. 137.000 kHz – 148.000 kHz
15. 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. Using a radio transceiver
 - D. One time only
16. The maximum power output for Very High Frequency and High Frequency
- A. 400W
 - B. 10W
 - C. 150W
 - D. 50W
17. Which of the following operation of amateur radio is not permitted?
- A. For marine operation on your boat to operate as a mobile station.
 - B. For communication on your car
 - C. For your communication in your premise
 - D. For off-road car expedition
18. Is approved amateur radio equipment allowed to be modified?
- A. With permission from the Royal Brunei Police Force and Royal Brunei Custom and Excise.
 - B. If the equipment is modified by a certified dealer.
 - C. Any approved equipment is not allowed to be modified, unless with written approval from AITI.
 - D. Once you have obtained a licence and type approval for your equipment, you can immediately modify.

19. "QTH?" 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?
20. What is the minimum age allowed to take the radio amateur examination in Brunei Darussalam?
- A. 12 years
 - B. 14 years
 - C. 18 years
 - D. No minimum age limit
21. 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
22. For 20 meter band, which one of the following frequency band is correct?
- A. 21.550 – 21.650 MHz
 - B. 21.000 – 21.450 MHz
 - C. 14.450 – 14.600 MHz
 - D. 14.000 – 14.350 MHz
23. 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
24. What should be done when installing an antenna on the surface of the earth?
- A. The antenna should not be installed higher than you
 - B. The antenna should be installed not to expose people to radio frequency radiation from the antenna's transmission
 - C. The antenna can be installed on a wet surface
 - D. The antenna need to be painted to avoid human being and animals from colliding into the antenna
25. 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

26. For a foreigner to obtain a temporary amateur radio license 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.
27. 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
28. In Amateur Radio communications, what does '73' means?
- A. Hugs and Kisses
 - B. Attention to all radio amateur
 - C. Best regards
 - D. Hello
29. Amateur radio repeater frequencies in Brunei are assigned by
- A. Local amateur radio club
 - B. AITI
 - C. Ministry of Communication
 - D. International Amateur Radio Association
30. 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

Section B

31. To allow the bulb in the diagram to light correctly, a wire should be connected between points



- A. 1 and 2
- B. 3 and 1
- C. 3 and 4
- D. 2 and 4

32. $V = IR$ is derived from

- A. Cole's Law
- B. Ohm's Law
- C. Tesla's Law
- D. Tesco's Law

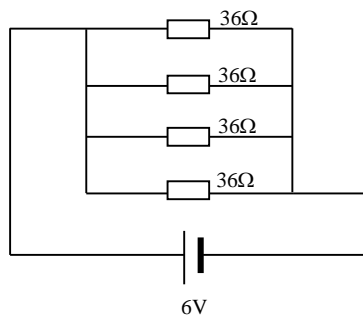
33. If ' λ ' is wavelength, ' c ' is speed of light and ' f ' is frequency, which formula listed below is correct?

- A. $\lambda = fc$
- B. $f = \lambda/c$
- C. $c = f^2\lambda$
- D. $c = f\lambda$

34. What is the symbol for capacitor?

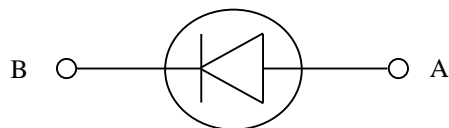
- A.
- B.
- C.
- D.

35. What is the total resistance of four 36 Ohms resistors arranged as shown below?



- A. 144 Ohms
- B. 9 Ohms
- C. 0.42 Ohms
- D. 24 Ohms

36. A band pass filter will
- suppress sub-harmonics
 - passes frequency within certain range and reject attenuate frequencies
 - reduce harmonics
 - always eliminate interference
37. What is used to convert sounds from our voice into radio signals?
- Transmitter
 - Receiver
 - Speaker
 - Antenna
38. The unit for power is
- Farad
 - Ohm
 - Watt
 - Ampere
39. The wavelength of a signal in free space with a frequency of 147.73MHz is
- 2.03 meter
 - 7 meter
 - 0.49 meter
 - 3.54 km
40. The process of modulation allows is
- information to be impresses on to a carrier
 - information to be removed from a carrier
 - voice and Morse code to be combined
 - None of the above
41. A standing wave meter (SWR) is used to check the
- height of the tower
 - efficiency of a transmitter
 - resonant frequency of an aerial
 - matching of the transmitter to the aerial system
42. In the diagram below, indicate the current flow in the semi-conductor diode.



- From B to A
- From A to B
- From A to B and B to A
- None of the above

43. An increase in power from 13 Watts to 26 Watts is equal to a gain of:
- A. 3 dB
 - B. -3 dB
 - C. -13 dB
 - D. 13 dB
44. A three-element Yagi antenna of rods of unequal length, please arrange the elements in descending order
- A. Reflector, driven element, director
 - B. Driven element, reflector, director
 - C. Director, driven element, reflector
 - D. Reflector director, driven element
45. What is the modulation used in "Very High Frequency" and "High Frequency" respectively?
- A. Single band and multiple band
 - B. Amplitude modulation and frequency modulation
 - C. Frequency modulation and amplitude modulation
 - D. Quadrature amplitude modulation and phase modulation
46. Which one of the following is the correct application of the frequency 7040 kHz in amateur radio?
- A. Short distance communication ie. Borneo Island
 - B. Long distance communication ie. Hawaii
 - C. Repeaters
 - D. None of the above
47. 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})
48. The relationship of 'Charge' is
- A. $Q = V/R$
 - B. $Q = C/V$
 - C. $Q = CV$
 - D. $Q = C^2V$
49. What is the unit prefixes for Giga, Kilo, Mega respectively?
- A. $10^9, 10^6, 10^3$
 - B. $10^9, 10^3, 10^6$
 - C. $10^6, 10^3, 10^9$
 - D. $10^{-9}, 10^3, 10^6$

50. Compared with an ordinary amplitude modulated signal a single-sideband signal
- occupies a wider bandwidth
 - is distorted
 - occupies half the bandwidth
 - is easier to tune in
51. Current is define as
- a measure of electromotive (EMF) force between two points
 - material property that opposes the flow of electrons
 - a measure of the flow of electrons through a conductor
 - the amount of energy per unit time expended by a system
52. What is the voltage, for a circuit with a 4 Ohms resistor and current of 3 A?
- 7 V
 - 1.33 V
 - 0.75 V
 - 12 V
53. A power amplifier has a gain of 3dB. If you input 44W, the output would be?
- 9.67 W
 - 88 W
 - 0.103 W
 - 58 W
54. 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
55. What does Single-sideband modulation (SSB) means?
- It is a refinement of the technique of frequency modulation
 - It is a refinement of the technique of amplitude modulation
 - It is a form of digital modulation
 - It is a spread spectrum modulation technique
56. Groundwave is define as:
- radio waves that reflect off the ionosphere
 - radio waves traveling along the Earth's surface
 - radio waves that is absorb by the ground
 - none of the above

57. An electric power converter for DC power supply
- A. Converts energy from the mains into DC for operating electronic equipment
 - B. Is a diode-capacitor device for measuring mains power
 - C. Is a diode-choked device for measuring inductance power
 - D. Converts DC from the mains into AC of the same voltage
58. Which components can amplify a small signal using low voltages?
- A. PNP transistor
 - B. Transformer
 - C. Mega Cell Battery
 - D. Resistor
59. What is the advantage of a quarter-wave vertical ground-plane antenna for DX working on 21MHz?
- A. Small size
 - B. All-round radiation
 - C. Good matching to the feeder
 - D. Low radiation angle
60. What is the velocity of an electro-magnetic wave?
- A. 200×10^6 metres/sec
 - B. 300×10^6 metres/sec
 - C. 0.3×10^8 metres/sec
 - D. 3×10^{-8} metres/sec