

**AMATEUR RADIO EXAMINATION  
- QUESTION PAPER -**

INDEX NO.	AMR-09-2014-								
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DAY : SUNDAY  
DATE : 28<sup>TH</sup> SEPTEMBER 2014M / 3 ZULHIJAH 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. 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.
  
2. If an amateur radio licensee wants to terminate his/her licence, he or she must
  - A. inform AITI in a signed written format, stating valid reasons for termination including equipment status
  - B. inform Royal Brunei Custom and Excise Department in a signed written format, stating valid reasons for termination including equipment status
  - C. disconnect his/her amateur radio equipment.
  - D. inform his/her amateur radio association.
  
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. 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
  
5. 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
  
6. 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
  
7. 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.
8. After Ali passed his AMR examinations, he then purchased an amateur radio transceiver from Singapore, 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.
9. 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
10. 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
11. 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
12. 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
13. 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.
14. "QRZ" is the Q-code for
- A. Where is your location?
  - B. Who is calling me?
  - C. have you a message for me?

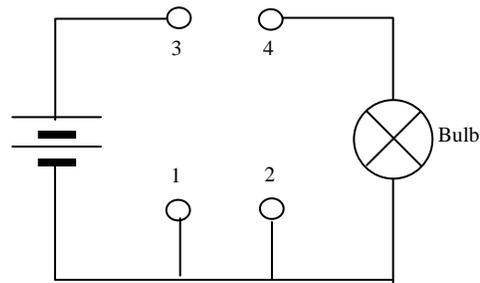
- D. Are you busy?
15. What is the minimum age allowed to take the radio amateur examination in Brunei Darussalam?
- A. 12 years
  - B. 14 years
  - C. 18 years
  - D. No minimum age limit
16. In what circumstances can an amateur radio broadcast information to the public?
- A. When an amateur radio operator is paid
  - B. It is entirely prohibited
  - C. When broadcasting is less than one hour
  - D. When broadcasting is more than 15 minutes
17. For 6 meter band, which one of the following frequency band is correct?
- A. 50.000 – 54.000 kHz
  - B. 50.000 – 54.000 MHz
  - C. 14.450 – 14.600 MHz
  - D. 14.450 – 14.600 kHz
18. 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
19. 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
20. 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
21. In Amateur Radio communications, what does '73' means?
- A. Hugs and Kisses
  - B. Attention to all radio amateur
  - C. Best regards
  - D. Hello
22. 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

23. 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
24. 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
25. 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
26. Before beginning a transmission, a good operator should
- A. sharpen his/her pencil
  - B. measure transmitter input power
  - C. notify AITI
  - D. listen on transmitting frequency to be used
27. What are the complete details inside the logbook for amateur radio operators everytime they are on air?
- A. Duration of conversation time, station callsign which with you are communicating with, frequency band and emission.
  - B. Duration of conversation time, station which with you are communicating with, frequency band, emission and power output, signal report, QSL.
  - C. Date, frequency band and emission, power output, conversation time, signal report, statement.
  - D. Date, frequency band and emission, power output, station callsign which you are communicating with, start and end of conversation time, signal report, QSL.
28. 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.
29. 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.

30. What is the validity period of a licence, temporary licence and an import permit for an Amateur Radio equipment from the date of issue respectively?
- A. 1 year, 1 month and 6 months
  - B. 1 month, 3 months and 14 days
  - C. 3 weeks 1 month and 6 months
  - D. 1 year, 3 months and 14 days

**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. The formula for Ohm's Law is

- A.  $V = I / R$
- B.  $V = I^2 / R$
- C.  $V = I^2 R$
- D.  $V = I R$

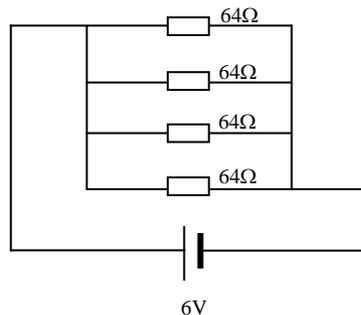
33. If ' $\lambda$ ' is wavelength, ' $c$ ' is speed of light and ' $f$ ' is frequency, which formula listed below is correct?

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

34. What is the symbol for Light Emitting Diode (LED)?

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

35. What is the total resistance of four 64 Ohms resistors arranged as shown below?



- A. 256 Ohms
- B. 16 Ohms
- C. 16k Ohms
- D. 1.6 Kilo Ohms

36. A Low-pass filter will

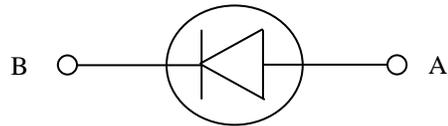
- A. suppress sub-harmonics
- B. passes frequency within certain range and reject attenuate frequencies
- C. passes low-frequency signals and attenuate signals with frequency higher than the cut-off frequency
- D. always eliminate interference

37. The wavelength of a signal in free space with a frequency of 53.35MHz is
- A. 2.03 meter
  - B. 5.62 meter
  - C. 2.03 km
  - D. 5.62 km

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

39. A standing wave ratio (SWR) meter 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

40. In the diagram below, indicate the current flow in the semi-conductor diode.



- A. From B to A
  - B. From A to B
  - C. From A to B and B to A
  - D. None of the above
41. An increase in power from 10 Watts to 20 Watts is equal to a gain of:
- A. 3 dB
  - B. -3 dB
  - C. -13 dB
  - D. 13 dB
42. 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
43. 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
44. For AC measurement, the value of Voltage-Root-Mean-Square (Vrms) is
- A. 0.5 peak voltage (Vpk)
  - B. 0.707 peak voltage (Vpk)
  - C. 1.0 peak voltage (Vpk)
  - D. 0.333 peak voltage (Vpk)

45. The relationship of 'Charge' is

- A.  $Q = V/R$
- B.  $Q = C/V$
- C.  $Q = CV$
- D.  $Q = C^2V$

46. Define which antenna comprises of a center-fed driven element for transmitting or receiving radio frequency energy?

- A. Omni-directional Antenna
- B. Yagi Antenna
- C. Straight wire antenna
- D. Half wavelength dipole

47. 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

48. A power amplifier has a gain of 3dB. If you input 44W, the output would be?

- A. 9.67 W
- B. 88 W
- C. 0.103 W
- D. 58 W

49. 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

50. Which of the following is correct? 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

51. Which components can amplify a small signal using low voltages?

- A. PNP transistor
- B. Transformer
- C. Mega Cell Battery
- D. Resistor

52. 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

53. What is the velocity of an electro-magnetic wave?

- A.  $200 \times 10^6$  metres/sec
  - B.  $300 \times 10^6$  metres/sec
  - C.  $0.3 \times 10^8$  metres/sec
  - D.  $3 \times 10^{-8}$  metres/sec
54. 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
55. 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
56. The unit Watt (W) is a measure for:
- A. RF electric field strength
  - B. RF energy
  - C. RF power
  - D. RF voltage
57. 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
58. What is the advantage of using a trap dipole antenna over a usual dipole?
- A. It has more gain
  - B. It operates on several bands
  - C. It is omni-directional
  - D. It is a broadband antenna
59. What will be produced around the conductor when an electric current passes through a wire?
- A. Semi-conductor
  - B. Electric field
  - C. Magnetic field
  - D. Force field
60. Which of the following of the components is used to make RF filters?
- A. Diode and Resistor
  - B. Zener Diode and Zeti Diode
  - C. Capacitor and LEDs
  - D. Inductors and Capacitors