

**AMATEUR RADIO EXAMINATION
- QUESTION PAPER -**

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DAY : SUNDAY
DATE : 4TH SEPTEMBER 2016/ 2 ZULHIJAH 1437H
TIME : 0930 - 1130 (2 HOURS)
VENUE : B13, AITI BUILDING, KG. ANGEREK 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. Which of the following statement is correct:
 - A. An amateur radio station may only be used to communicate with another private network radio station
 - B. An amateur radio station may only be used to communicate with another amateur radio station
 - C. An amateur radio station may only be used to communicate with another broadcasting station
 - D. An amateur radio station may only be used to communicate with an illegal radio station

2. 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 when a person commits 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.

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

4. How many types of Amateur Radio licence issued by AITI?
 - A. Three
 - B. Four
 - C. One
 - D. Two

5. The content recorded on your station log book must be preserved for a period of:
 - A. at least 1 year
 - B. at least 6 months
 - C. at least 2 years
 - D. forever

6. 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. None of the above.

7. What are the requirements for a non-local to obtain a temporary amateur radio license in Brunei Darussalam?
 - 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. None of the above

8. What details are required to be included in the log book for amateur radio operators everytime they are on air?
 - A. Date, station which with you are communicating with, frequency band and emission.
 - B. Date, vehicle number which with you are communicating with, frequency band, emission and power output.
 - C. Date, frequency band and emission, station callsign of the person you are communicating with, start and end of conversation time, signal report, QSL
 - D. Frequency band and emission, power output, conversation time, signal report, statement.

9. How much is the fee for the Amateur radio licence?
 - A. No fee is required
 - B. B\$25 for a year
 - C. B\$25 for a lifetime
 - D. B\$5 for a year

10. 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. What is this requirement for?
 - A. primary requirement for a VHF (Standard) licence holder to upgrade to HF (Advance) licence
 - B. secondary requirement for a VHF (Standard) licence
 - C. requirement for station licence approval
 - D. primary requirement for equipment approval and permit to enter the country

11. Is amateur radio equipment allowed to be modified?
 - A. Yes, with permission from the Royal Brunei Police Force and Royal Brunei Custom and Excise.
 - B. Yes, if the equipment is modified by a certified dealer.
 - C. No. Any 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.

12. What is the “Q” code when asking for your current location?
- A. QTH
 - B. QRT
 - C. QRZ
 - D. QRM
13. Which of the following is NOT an offence against the Telecommunication Order 2001:
- A. Selling radio equipment without a licence
 - B. Operating an unapproved radio equipment on an unlicence band
 - C. Operating an approved radio equipment with an expired operating licence
 - D. Operating another operator’s radio equipment where both users are licenced
14. With regards to AITI rules and regulation on amateur radio, the 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
15. Which of the following are required by AITI during an inspection?
- A. Station Log Book, Station Licence and equipment.
 - B. Station Log Book, Driving Licence and equipment
 - C. Station Log Book, Station Licence and FM Radio
 - D. Station Log Book, Import Permit, and equipment
16. In what circumstances can an amateur radio broadcast information to the public?
- A. When an amateur radio operator is paid
 - B. When broadcasting is less than one hour
 - C. When broadcasting is more than 15 minutes
 - D. It is entirely prohibited
17. The word “FREQUENCY” should be spelt phonetically, using the phonetic alphabet
- A. Foxtrot, Romeo, Echo, Queen, Unicorn, Echo, November, Charlie, Yanky
 - B. Foxtrot, Romeo, Echo, Quebec, Uniform, Echo, November, Charlie, Yanky
 - C. Foxtrot, Romeo, Echo, Quebec, Uniform, Echo, November, Charlie, Yankee
 - D. Foxtrot, Romeo, Echo, Queen, Uniform, Echo, November, Charlie, Yankee
18. 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

19. 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.
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. 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. Every 30 minutes
 - B. Every 45 minutes
 - C. Every 15 minutes
 - D. Every 60 minutes
22. 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. Declare the equipment to the Royal Brunei Custom and Excise officials, seek approval from AITI and pay import tax for the equipment
 - B. Bring in the said equipment without notifying Royal Brunei Custom and Excise Officials and seek approval from AITI
 - 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.
23. 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
24. Amateur radio repeater frequencies in Brunei are assigned by
- A. Local amateur radio club
 - B. Authority for Info-communications Technology Industry of Brunei Darussalam
 - C. Ministry of Communications
 - D. International Amateur Radio Union (IARU)

25. When using a repeater to communicate, which of the following do you need to know about the repeater?
- A. Its input frequency and offset
 - B. The owner of the repeater
 - C. Its power level and location
 - D. Whether or not it has a mo patch
26. If you are in contact with another station and you hear an emergency call for help on your frequency, what should you do?
- A. Tell the calling station that the frequency is in use
 - B. Call your local Fire and Rescue Department and inform them of the emergency
 - C. Stop your QSO immediately and take the emergency call
 - D. Direct the calling station to the nearest emergency net frequency
27. Which of the statements 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.
28. The most common input/output frequency offset for repeaters in the 2-metre band is
- A. 5.0 MHz
 - B. 0.4 MHz
 - C. 1.6 MHz
 - D. 0.6 MHz
29. 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
30. The ionosphere is
- A. layers of reflective air at heights of 70 to 400km
 - B. another name for the air we breath
 - C. a type of spherical transmitting antenna
 - D. a piece of amateur radio test equipment

SECTION B

This section contains 30 questions. Answer *all*.

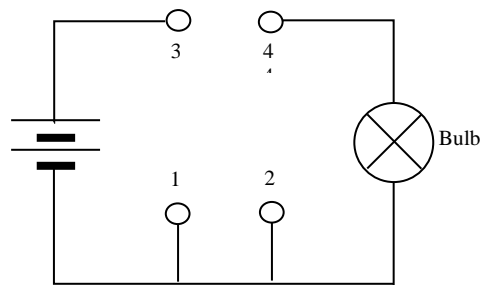
31. $V = IR$ is derived from

- A. Volt's Law
- B. Ohm's Law
- C. Current and resistance's Law
- D. Watt's Law

32. If ' c ' is speed of light and $c=f\lambda$, what does ' λ ' represent?

- A. wavelength
- B. time
- C. frequency
- D. velocity

33. 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

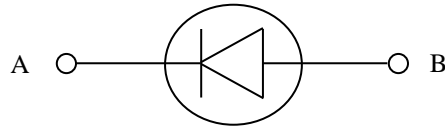
34. What is the symbol for Resistor?

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

35. A band pass filter will

- A. suppress sub-harmonics
- B. passes frequency within certain range and reject attenuate frequencies
- C. reduce harmonics
- D. always eliminate interference

36. 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
37. The time period of the frequency 10 kHz is 0.1 ms, which formula was use?
- A. $c=f\lambda$,
 - B. $P= IV$
 - C. $1/t$
 - D. $t/1$
38. A transformer is used to balance a transmission line of 2.0Ω with a ratio of 1 : 1000. What is the resistance value used by the transformer?
- A. 2000 m Ω
 - B. 500 Ω
 - C. 500 m Ω
 - D. 2 k Ω
39. Which is the correct units for the following components:
- Capacitor
 - Resistor
 - Inductor
- A. Coulombs, Meter, Ohm
 - B. Coulombs, Ampere, Farad
 - C. Farad, Ampere, Henry
 - D. Farad, Ohm, Henry
40. Which of the following are the correct modulations used for "Very High Frequency" and "High Frequency" respectively?
- A. Frequency modulation and amplitude modulation
 - B. Single band and multiple band
 - C. Amplitude modulation and frequency modulation
 - D. Quadrature amplitude modulation and phase modulation
41. Which of the following equipment that is used to convert sounds from our voice into radio signals
- A. Receiver
 - B. Speaker
 - C. Antenna
 - D. Transmitter

42. Which of the following is true about Diode?
- 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
43. The wavelength of a signal in free space with a frequency of 146.08MHz is 2.05 meter, which formula do you use?
- $Q/\lambda = c$
 - $f/\lambda = c$
 - $\Omega/\lambda = c$
 - $c/\lambda = f$
44. A standing wave meter (SWR) is used to check the
- Height of the tower
 - Matching of the transmitter to the aerial system
 - Efficiency of a transmitter
 - Resonant frequency of an aerial
45. The correct formula for 'Charge' is:
- $Q = V/R$
 - $Q = CV$
 - $Q = C/V$
 - $Q = C^2V$
46. A power amplifier has a gain of -3dB. If you input 60W, the output would be?
- 30 W
 - 120 W
 - 120 kW
 - 30 kW
47. Which of the following is the correct value of Voltage-Root-Mean-Square (Vrms) for measuring AC?
- 1.0 peak voltage (Vpk)
 - 0.333 peak voltage (Vpk)
 - 0.5 peak voltage (Vpk)
 - 0.707 peak voltage (Vpk)
48. Which of the following is the correct arrangement for the three-element Yagi antenna of rods of unequal length in descending order?
- Driven element, reflector, director
 - Director, driven element, reflector
 - Reflector director, driven element
 - Reflector, driven element, director

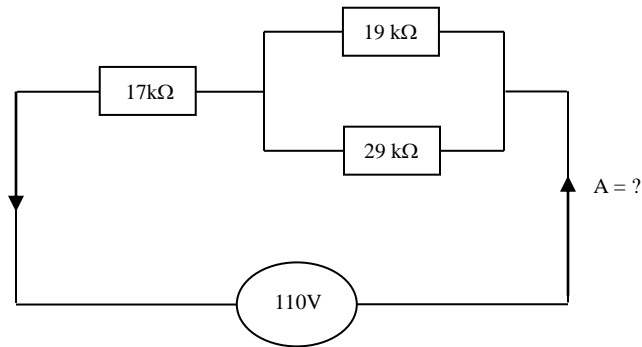
49. Which of the following is the correct function of an antenna tuner?
- A. To tune the frequency
 - B. To maintain power transmission at a safe level
 - C. To provide excellent grounding to the equipment during lightning
 - D. To improve power efficiency between transceiver and antenna by matching the impedance
50. What is the velocity of an electro-magnetic wave?
- A. 0.3×10^8 metres/sec
 - B. 3×10^{-8} metres/sec
 - C. 30×10^6 metres/sec
 - D. 300×10^6 metres/sec
51. Resistance is defined as
- A. a measure of the flow of electrons through a conductor
 - B. the amount of energy per unit time expended by a system
 - C. a measure of electromotive (EMF) force between two points
 - D. material property that opposes the flow of electrons
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. Before making an initial call an amateur should
- A. make an entry in the log book
 - B. listen on the frequency
 - C. log the frequency
 - D. check the transmitter power
54. Which of following is the correct component that can amplify a small signal using low voltages?
- A. PNP transistor
 - B. Transformer
 - C. Mega Cell Battery
 - D. Resistor
55. What is the unit prefixes for Giga, Kilo, Mega respectively?
- A. 10^9 , 10^6 , 10^3
 - B. 10^6 , 10^3 , 10^9
 - C. 10^{-9} , 10^3 , 10^6
 - D. 10^9 , 10^3 , 10^6

56. 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

57. 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

58. What is the total current in the circuit shown below?



- A. 0.00065 ampere
 - B. 0.00386 ampere
 - C. 1.69231 ampere
 - D. 464.750 ampere
59. You are talking to V89ABC by amateur radio and friends enter his room. You may also talk to them
- A. if they are a family members
 - B. if the V89ABC gives permission
 - C. if they are also amateurs
 - D. but only ont he calling channel
60. The output from the transmitter should be connected to the antenna by
- A. waterproof mains cable
 - B. screened audio cable
 - C. fuse wire
 - D. coaxial cable