

**AMATEUR RADIO EXAMINATION
- QUESTION PAPER -**

INDEX NO.	AMR-6-2011-							
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IC COLOUR

DAY : SUNDAY
DATE : 19th JUNE 2011M / 17 REJAB 1432H
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. 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. 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.

4. 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.

5. Is an 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.

6. If an amateur radio licensee changes to their address and/or vehicle registration, the licensee should notify
 - A. Registrar of Society
 - B. Amateur Radio Clubs/Association
 - C. Relevant Government Ministry
 - D. Authority for Info-communications Technology Industry of Brunei Darussalam

7. Which one of the following prefix is valid for Brunei Darussalam amateur callsign?
 - A. V89, V85, V84
 - B. B89, B88, B85
 - C. V8A, V8B, V8M, V8N
 - D. V8V, 9W, 9M, V8L

8. 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.

9. What is the validity period of an Amateur Radio Station Licence?
 - A. 10 years
 - B. 1 year
 - C. 20 years
 - D. 5 years

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. Which of the following must be true before an amateur station may provide information during a disaster?
 - A. The information must directly relate to the immediate safety of human life or protection of property.
 - B. When AITI declare a state of emergency.
 - C. The exchange of such information must be approved by a local emergency preparedness official.
 - D. None of the above.

12. If a licensee loses his/her amateur radio licence, he or she should
- A. report to Royal Brunei Police Force
 - B. declare to AITI in written format
 - C. request to reprint his/her amateur radio licence
 - D. All of the above
13. You are having a conversation with an amateur radio user, and friends enter his room. You may also talk to them
- A. if they are a family member.
 - B. if you give permission.
 - C. if they also have a valid amateurs radio license.
 - D. but only on the calling channel.
14. Where does a Brunei Darussalam Amateur Radio licence allow you to operate?
- A. From anywhere in the world
 - B. From wherever the Amateur Radio Service is regulated as stated in the licence issued
 - C. From a country that shares a third party agreement with Brunei Darussalam
 - D. Only from the mailing address printed on your license
15. 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. Stop your QSO immediately and take the emergency call
 - 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
16. What is required by AITI during random amateur radio inspections?
- A. Station Log Book and a valid amateur radio licence
 - B. Station log book and a certificate from Radio Organisation
 - C. Station log book and a valid driving licence
 - D. A certificate from any Radio Organisation and a valid driving licence
17. For 15 meter band, which one of the following frequency band is correct?
- A. 28.000 – 29.700 MHz
 - B. 21.000 – 21.450 MHz
 - C. 14.350 – 21.000 MHz
 - D. 15.000 – 15.450 MHz
18. 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

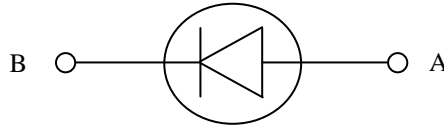
19. The maximum output power permitted for an amateur radio station is
- A. 150 Watts
 - B. 100 Watts
 - C. 50 Watts
 - D. 25 Watts
20. All amateur radio equipment in a station has to be maintained and used
- A. Not to interfere with other radio-communication services
 - B. With support from IEE
 - C. Approximately 20% of the approved maximum power
 - D. With complete discretion by AITI officials
21. The frequency 430-440MHz is allocated by AITI for amateur radio on secondary basis. What does secondary basis mean?
- A. User can operate their equipment regardless of existence of primary services.
 - B. Each and every frequency band user has equal rights
 - C. Amateur radio services need to increase its transmission power to overcome any interference from primary services
 - D. Amateur radio services are permitted to use the frequency band if it does not cause any interference to primary services
22. What should be done when installing an antenna on the surface of the earth?
- A. The antenna should be installed not to expose people to radio frequency radiation from the antenna's transmission
 - B. The antenna should not be installed higher than you
 - 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
23. Before any call or test transmission, an amateur radio operator should
- A. monitor the frequency to ensure that it will not cause interference.
 - B. not worry for any interference since the equipment used for amateur radio only.
 - C. contact AITI to make sure his/her operation will not be interrupted.
 - D. set the frequency to a lower setting to avoid any interference.
24. 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.

25. 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.
26. Which organization oversees the frequency allocation for amateur radio band on a worldwide basis?
- A. International Amateur Radio Association
 - B. Federal Communications Commission of The United States of America
 - C. International Telecommunication Union
 - D. Asia-Pacific Telecommunity
27. Is an approved amateur radio equipment allowed to be modified?
- A. Any approved equipment is not allowed to be modified, unless with written approval from AITI.
 - B. With permission from the Royal Brunei Police Force and Royal Brunei Custom and Excise.
 - C. If the equipment is modified by a certified dealer.
 - D. Once you have obtained a licence and type approval for your equipment, you can immediately modify.
28. What is the 'Q' code for "Are you busy?" and "Who is calling me?"
- A. QSY and QTH
 - B. QRL and QRZ
 - C. QRQ and QSY
 - D. QRV and QTH
29. Which of the following uses the International Phonetic Alphabet?
- A. Alpha, Norway, Delta
 - B. Alpha, Charlie, Tango
 - C. Denmark, Oscar, Gordon
 - D. Bravo, Uniform, Gordon
30. Which of the statement below is CORRECT regarding installation of amateur radio equipment at a premise?
- A. One unit of licensed radio equipment is only allowed for one premise unless stated otherwise in the license.
 - B. Radio equipment can be installed in any premise without any valid amateur radio license.
 - C. Installation of radio equipment and antenna is not required to meet the specifications and regulations of building/residential code.
 - D. One unit of licensed radio equipment can be transferred anytime from one premise to another.

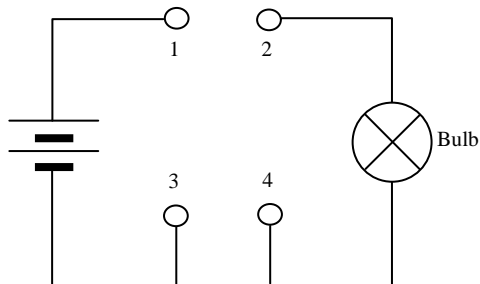
SECTION B

This section contains 30 questions. Answer *all*.

31. 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
32. A transformer is used to balance a transmission line of 2.0 Ohm with a 240 Ohm antenna. What is the ratio required for the transformer to do this?
A. 1 : 1
B. 1 : 120
C. 1 : 6
D. 1 : 36
33. To allow the bulb in the diagram to light correctly, a wire should be connected between points



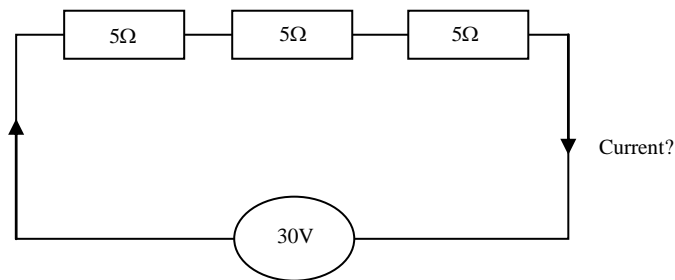
- A. 1 and 2
B. 1 and 3
C. 2 and 3
D. 2 and 4
34. What is used to convert sounds from our voice into radio signals?
A. Transmitter
B. Receiver
C. Speaker
D. Antenna
35. What is the velocity of an electro-magnetic wave?
A. 3×10^6 metres/sec
B. 3×10^8 metres/sec
C. 3×10^{-8} metres/sec
D. 3×10^{10} metres/sec

36. Define the function of Low-pass filter and High-pass filter?
- Restrict high frequency and restrict low frequency
 - Restrict low frequency and restrict high frequency
 - Channeling high frequency and channeling low frequency
 - None of the above
37. Current is define as
- a measure of electromotive (EMF) force between two points
 - a measure of the flow of electrons through a conductor
 - material property that opposes the flow of electrons
 - the amount of energy per unit time expended by a system
38. For AC measurement, the value of Voltage-Root-Mean-Square (V_{rms}) is
- 0.707 peak voltage (V_{pk})
 - 0.5 peak voltage (V_{pk})
 - 1.0 peak voltage (V_{pk})
 - 0.333 peak voltage (V_{pk})
39. The relationship of 'Resistance' is
- $R = VI$
 - $R = V/I$
 - $R = I^2V$
 - $R = V^2I$
40. The relationship of 'Power' is
- $P = V/R$
 - $P = V^2R$
 - $P = I/V$
 - $P = I^2R$
41. What is the SI Unit for 'VOLTAGE' and 'RESISTANCE'?
- Volt and Resistor
 - Ampere and Ohm
 - Volt and Ohm
 - Henry and Ohm
42. What is the SI Unit for 'CURRENT' and 'CAPACITANCE'?
- Ampere and Coulomb
 - Coulomb and Ohm
 - Ampere and Farad
 - Coulomb and Farad
43. If 'T' is the Time and 'f' is the frequency, which listed below is the correct formula?
- $T = f$
 - $T = 1/f$
 - $1 = f^2T$
 - $1 = f/T$

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

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

45. What is the Current and the total Resistance of three 5 Ohms resistors connected in series as shown below?



- A. 450 A and 1.67 Ohms
- B. 450 A and 15 Ohms
- C. 2 A and 1.67 Ohms
- D. 2 A and 15 Ohms

46. What is the frequency of an alternating current if the time period is $0.75 \mu\text{s}$?









- A. 1.3 kHz
- B. 1.3 MHz
- C. 75 Hz
- D. 75 kHz

47. The wavelength of a signal in free space with a frequency of 95.9MHz is

- A. 3.128 meter
- B. 30.28 meter
- C. 5.95 millimeter
- D. 10.42 cm

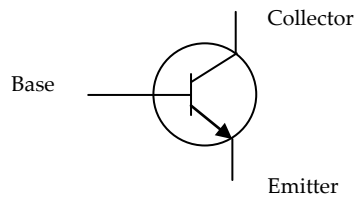
48. Which one of the following frequency would be the best for short distance communication in amateur radio ie. Borneo Island.

- A. 7040kHz
- B. 14320kHz
- C. 18072kHz
- D. 28500kHz

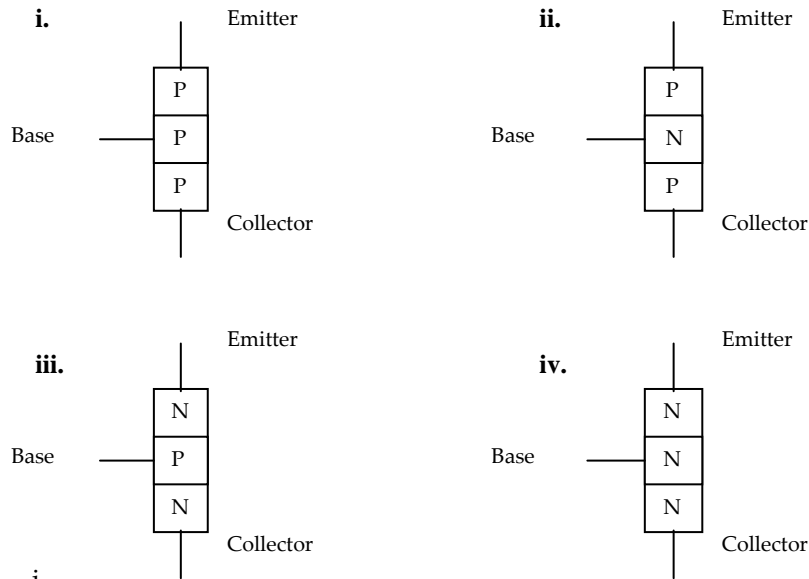
49. A power amplifier has a gain of 3dB. If you input 5W, the output would be?
- 0.2W
 - 10W
 - 0.4W
 - 5W
50. The main advantage of the yagi aerial as compared with dipole is
- Smaller physical dimensions
 - Increased forward gain
 - A wider beam width
 - A better match for the feeder
51. An electric current passing through a wire will produce around the conductor.
- An electric field
 - A superconductor
 - A magnetic field
 - A semiconductor
52. What are three good electrical conductors?
- Copper, gold, mica
 - Gold, silver, wood
 - Gold, silver, aluminium
 - Copper, aluminium, paper
53. What is the symbol for resistor and capacitor respectively?
-  A. 
 -  B. 
 -  C. 
 -  D. 
54. What is the function of a fuse?
- Burns open at higher currents than fuse rating
 - Produce a voltage across its terminal that is proportional to electric current
 - Ground electrical equipment
 - Decrease the frequency of the power voltage
55. Which antenna is not to be installed for an HF station?
- Dipole
 - Three element Quad
 - Three element Yagi
 - Satellite Dish

56.

Symbol transistor



With reference to the transistor symbol above, which one is the correct answer?



- A. i
- B. ii
- C. iii
- D. iv

57. What is the purpose of repeater operation?

- A. to cut your power bill by using someone else's higher power system
- B. to help mobile and low-power stations extend their usable range
- C. to transmit signals for observing propagation and reception
- D. to communicate with station in services other than amateur

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

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

59. Radio Horizon is define as

- A. The line of sight between two transmissions
- B. The communications done in coastal areas
- C. The point where radio signals between two points are blocked by the curvature of the Earth
- D. The communications to the space-station during ideal weather condition

60. Ionization in D layer as shown in figure .1, below has the following properties:

- A. Recombines quickly after sunset
- B. Can stay ionized long after sunset
- C. No properties change after sunset
- D. Disperse quickly after sunset

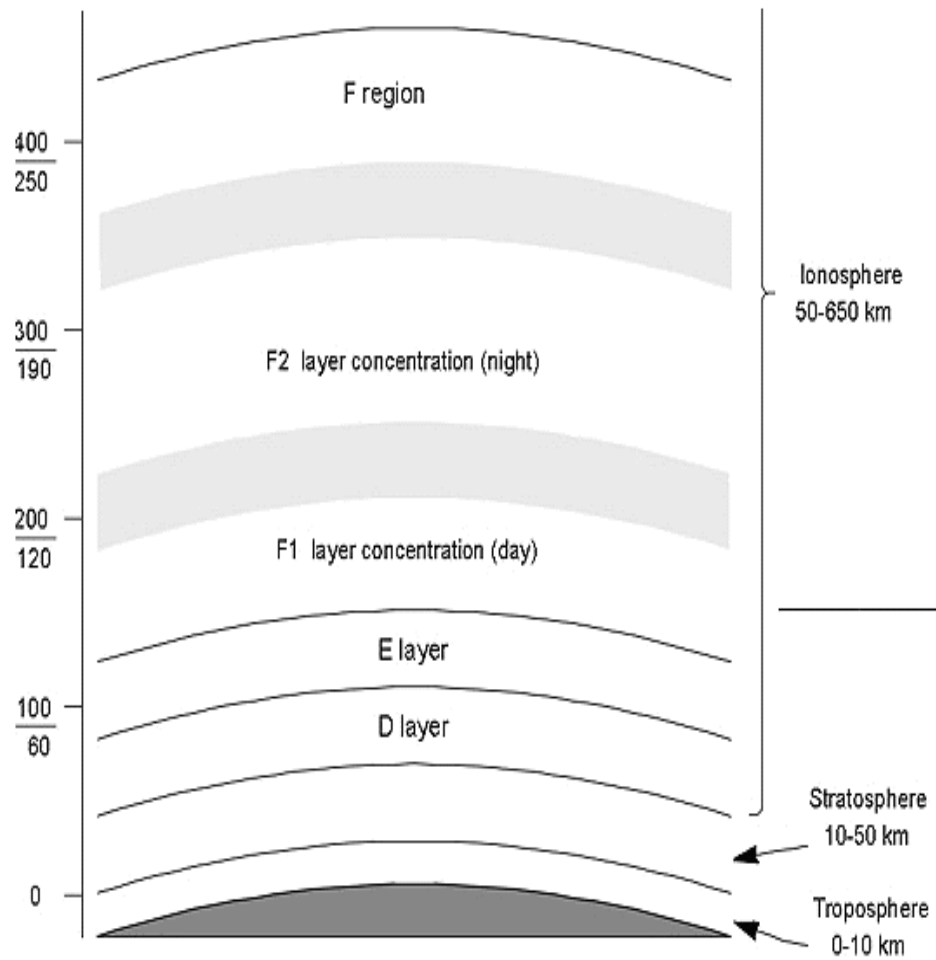


Figure .1