

**AMATEUR RADIO EXAMINATION
- QUESTION PAPER -**

INDEX NO.	AMR-6-2010-							
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DAY : SUNDAY
 DATE : 27th JUNE 2010M / 14 REJAB 1431H
 TIME : 0930 - 1130 (2 HOURS)
 VENUE : MULTIPURPOSE HALL, UNIVERSITI BRUNEI DARUSSALAM

**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. 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. 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

3. 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 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 tax 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.

4. 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.

5. 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.

6. 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

7. How many types of amateur radio licence does AITI issue?
 - A. Temporary, Standard and Advance
 - B. Temporary, Class and Exclusive
 - C. Trial, Standard and Advance
 - D. Station, Standard and Premium

8. Which of the statement below is CORRECT regarding installation of amateur radio equipment in 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.

9. During your amateur radio conversation, what you should you do when you hear 'BREAK'?
 - A. Stop you conversation, release your frequency immediately and be on standby to assist if necessary.
 - B. Stop your conversation and turn off your equipment.
 - C. Keep on communicating and disregard the message.
 - D. Report this to AITI immediately for assistance..

10. Salleh and his son Elham is having an amateur radio conversation. Which set of conversations below should they avoid:
 - A. Religion, Business, Politics, Racial and Ethnic Slurs.
 - B. Hobbies, Education, and Entertainment.
 - C. Sport, Personal details and Socializing.
 - D. Weather, Location and Q-Codes.

11. For signal strength scale, what is the scale for 'fairly good signal' and 'extremely strong signal'?
- A. 5 and 9
 - B. 1 and 9
 - C. 9 and 5
 - D. 1 and 5
12. A station 'Callsign' is sent for the purpose of identification at the start of transmission and end of transmission. It should...
- A. Be mentioned once after the first 60 minutes
 - B. Be mentioned once after the first 15 minutes
 - C. Be repeated every 15 minutes
 - D. Be repeated every 60 minutes
13. 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
14. For duplex, what is the frequency band used by an amateur radio for a "Very High Frequency" in Brunei Darussalam?
- A. 144.0000 MHz – 148.0000 MHz
 - B. 144.0125 MHz – 148.0000 MHz
 - C. 146.0125 MHz – 148.0000 MHz
 - D. 146.0000 MHz – 148.0000 MHz
15. For 6 meter band, which one of the following frequency band is correct?
- A. 50.000 – 54.000 MHz
 - B. 6.000 – 6.999 MHz
 - C. 24.89 – 29.700 MHz
 - D. 5.025 – 5.925 MHz
16. What is the 'Q' code for "Are you ready?" and "What is your location?"
- A. QRV and QTH
 - B. QRV and QTA
 - C. QRB and QTH
 - D. QSA and QTB
17. What does 'CQ' and 'DX' stands for?
- A. Calling all station and Wait
 - B. Calling all station and Distance foreign countries
 - C. Call quit/Closing down and Digital signal transmission
 - D. Station call interference and Distance foreign countries

18. 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
19. 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
20. What do you understand by 'Squelch'?
- A. A type of antenna
 - B. A function to reduce/increase the audio sensitivity when no desired signal is present
 - C. A type of conversation you have with 'Gaelic' native speakers
 - D. An equipment used to increase your transmitting signal
21. 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
22. 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
23. The maximum output power permitted for an amateur radio station is
- A. 150 Watts
 - B. 100 Watts
 - C. 50 Watts
 - D. 25 Watts
24. What is the meaning of the term half-duplex operation?
- A. Transmitting and receiving on the same frequency
 - B. Transmitting and receiving over a wide area
 - C. Transmitting on one frequency and receiving on another
 - D. Transmitting one-way communications

25. 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.
26. 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
27. An amateur radio licensee should renew their licence every?
- A. No renewal required
 - B. 3 months
 - C. 12 months
 - D. 24 months
28. 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
29. What are the requirements for applying an Amateur Radio licence upgrade (ie. V89 – V85)?
- A. The licence holder must fill up the Amateur Radio Callsign Application form and submit a minimum six (6) month logbook.
 - B. Licence holder must hold a valid Amateur Radio licence for at least three (3) years
 - C. To purchase an amateur HF radio equipment before applying.
 - D. No further process required upon passing your amateur radio examination.
30. What type of interference may come from a multi-band antenna connected to a poorly tuned transmitter?
- A. Harmonic radiation
 - B. Auroral distortion
 - C. Parasitic excitation
 - D. Intermodulation noise

SECTION B

This section contains 30 questions. Answer *all*.

31. What will be produced around the conductor when an electric current pass through a wire?

- A. Semi-conductor
- B. Electric field
- C. Magnetic field
- D. Force field

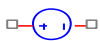

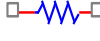
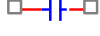
32. The relationships between, 'Voltage (V)', 'Resistor (R)' and 'Current (I)' is

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

33. Which instrument would you use to measure an electric current?

- A. Ammeter
- B. Thermometer
- C. Voltmeter
- D. Ohmmeter

34. What is the symbol for capacitor

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

35. The voltage through a 2 k Ω resistor is 10 V. What is the current across this resistor?

- A. 20 milliamps
- B. 5 amps
- C. 5 milliamps
- D. 0.5 amps

36. For AC measurement, the value of Voltage-Root-Mean-Square (V_{rms}) is

- A. 0.707 peak voltage (V_{pk})
- B. 0.5 peak voltage (V_{pk})
- C. 1.0 peak voltage (V_{pk})
- D. 0.333 peak voltage (V_{pk})

37. The wavelength of a signal in free space with a frequency of 100MHz is

- A. 3 meter
- B. 30 meter
- C. 3 millimeter
- D. 3 cm

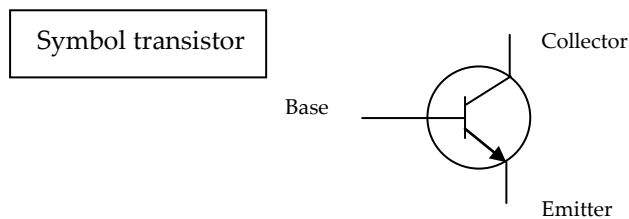
38. If ' λ ' is wavelength, ' c ' is speed of light and ' f ' is frequency, which formula listed below is correct?

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

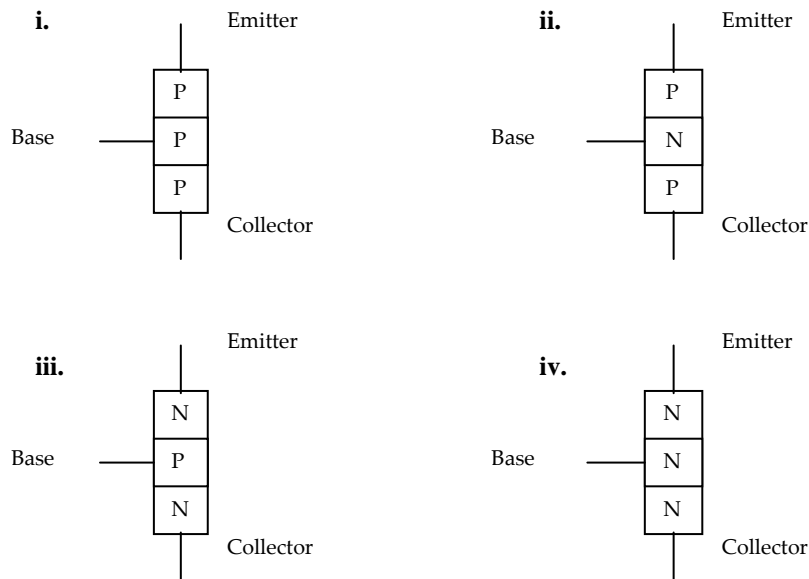
39. Which of the following of the components is used to make RF filters?

- A. Diode and Resistor
- B. Zener Diode and Zeti Diode
- C. Capacitor and LEDs
- D. Inductors and Capacitors

40.



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

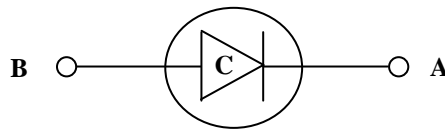


- A. i
- B. ii
- C. iii
- D. iv

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

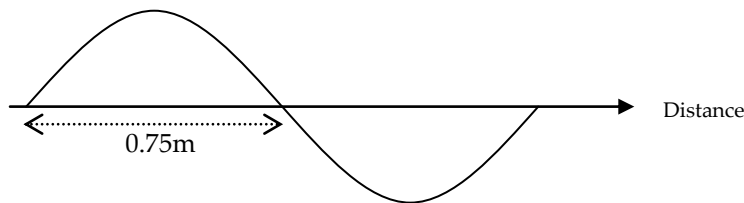
- A. PNP transistor
- B. Transformer
- C. Mega Cell Battery
- D. Resistor

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



- A. From A to B
- B. From A to C
- C. From A to B and B to A
- D. None of the above

43. What is the frequency of the signal shown below at speed 3×10^8 m/s, if both half-cycle are of equal length?

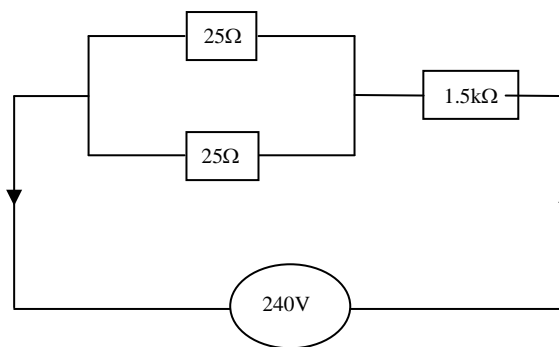


- A. 100 MHz
- B. 200 MHz
- C. 450 MHz
- D. 900 MHz

44. Which of the following is True about Capacitor?

- A. It is an electrical device that resists the flow of current
- B. A device that only allows a current to flow in one direction in a circuit
- C. Stores energy and produces a mechanical force between the conductors
- D. Used for filtering and smoothing of signals and are the major components in transformers

45. What is the current and total resistance of three resistors in the circuit shown below?



- A. 1512.5 Ohms and 240 A
- B. 1550 Ohms and 240 A
- C. 1512.5 Ohms and 0.16 A
- D. 1512.5 Ohms and 6.30A

46. 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

47. What is the function of an antenna tuner?
- A. To improve power efficiency between transceiver and antenna by matching the impedance
 - B. To tune the frequency
 - C. To maintain power transmission at a safe level
 - D. To provide excellent grounding to the equipment during lightning
48. Define the function of a Bandpass filter?
- A. Restrict high frequency
 - B. Restrict low frequency
 - C. Allow only data between two cutoff frequencies to pass
 - D. Allow data except between two cutoff frequencies to pass
49. For long distance propagation, the radiation angle of RF energy from antenna should be
- A. Less than 30 degrees
 - B. More than 30 degrees but less than 45 degrees
 - C. More than 45 degrees but less than 90 degrees
 - D. 90 degrees
50. 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
51. Process of modulation allows
- A. Voice and Morse code to be combined
 - B. Information to be conveyed over a carrier wave
 - C. Information to be removed from a carrier wave
 - D. None of the above
52. What is the ideal vertical antenna for $\frac{1}{2}$ wavelength for operating frequency of 148MHz?
- A. 1m
 - B. 5m
 - C. 50m
 - D. 30m
53. A power amplifier has a gain of 5. If you input 2W, the output would be?
- A. 0.2W
 - B. 10W
 - C. 0.4W
 - D. 5W
54. Groundwave is define as:
- A. radio waves traveling along the Earth's surface
 - B. radio waves that reflect off the ionosphere
 - C. radio waves that is absorb by the ground
 - D. none of the above

55. What is used to convert sounds from our voice into radio signals?
- A. Transmitter
 - B. Receiver
 - C. Speaker
 - D. Antenna
56. 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
57. The frequency band '3 MHz – 30 MHz ' is categorised under?
- A. Very high frequency
 - B. High frequency
 - C. Ultra high frequency
 - D. Low frequency
58. Define which antenna comprises of a center-fed driven element for transmitting or receiving radio frequency energy?
- A. Omni-directional Antenna
 - B. Half wavelength dipole
 - C. Yagi Antenna
 - D. Straight wire antenna
59. The purpose of a 2 meter repeater is to
- A. Provide amateur operation without the use of callsigns
 - B. Provide communication for emergency purposes
 - C. Make possible VHF contacts over longer distance
 - D. Experiment with frequency shift techniques
60. 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