

**AMATEUR RADIO EXAMINATION
- QUESTION PAPER -**

INDEX NO.	AMR-10-2009-						
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IC COLOUR

DAY : SUNDAY
 DATE : 18th OCTOBER 2009M / 29 SYAWAL 1430H
 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. 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 should a person do commit 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 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.
 - C. 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.
 - 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 3, 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
 - B. Declare the equipment to the Royal Brunei Custom and Excise officials
 - C. Pay import tax for the equipment
 - D. Bring the equipment directly to AITI officials

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

5. 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

6. Which of the statement below is CORRECT regarding installation of amateur radio equipment in a vehicle?
 - A. One unit of licensed radio equipment is only allowed for one vehicle unless stated otherwise in the license.
 - B. Radio equipment can be installed in any vehicle without any valid amateur radio license.
 - C. Installation of radio equipment and antenna is not required to meet the specifications and regulations of road and safety code.
 - D. One unit of licensed radio equipment can be transferred anytime from one to another vehicle.

7. As a correct etiquette, you should stop your QSO immediately and take the emergency call, when you hear....
 - A. "MAYDAY MAYDAY"
 - B. "FORE FORE"
 - C. "STOP STOP"
 - D. "HELLO"

8. 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. Within the first 30 minutes
 - B. Once after the first 15 minutes
 - C. Every 15 minutes
 - D. Once within 60 minutes

9. Station, Log book and license are required for random inspection done by
 - A. Authority for Info-communications Technology Industry (AITI)
 - B. A certified Radio Organisation
 - C. Royal Brunei Police Force
 - D. Registrar of Companies

10. What is the validity period of an Import Permit for an Amateur Radio equipment from the date of issue?
 - A. 2 months
 - B. 3 weeks
 - C. 7 days
 - D. 14 days

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. For 10 meter band, which one of the following frequency band is correct?
- A. 21.550 – 21.650 MHz
 - B. 28.000 – 29.700 MHz
 - C. 14.000 – 14.350 MHz
 - D. 17.068 – 17.168 MHz
13. What is the 'Q' code for "Who is calling me?" and "What is the correct time?"
- A. QRC and QTR
 - B. QRM and QRZ
 - C. QRC and QRL
 - D. QRZ and QTR
14. What is the 'Q' code for "Is the transmission being interfered with?" and "What is your location?"
- A. QSM and QSH
 - B. QRM and QTH
 - C. QRT and QRL
 - D. QRM and QRH
15. 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
16. What does the statement means: "Radio regulation defines amateur radio services as a secondary service whilst broadcasting services is the primary service" ?
- A. Each and every frequency band user has equal rights
 - B. Amateur radio services need to increase its transmission power to overcome any interference from broadcasting services
 - C. Amateur radio services are permitted to use the frequency band if it does not cause any interference to broadcasting services
 - D. None of the above
17. What is the difference between a callsign prefix, V89 and V88?
- A. V89 is a Standard Amateur Radio Licence and V88 is an Advance Amateur Radio Licence.
 - B. V89 is an Advance Amateur Radio Licence and V88 is a Standard Amateur Radio Licence.
 - C. V89 is a Temporary Amateur Radio Licence and V88 is a Special Amateur Radio Licence.
 - D. There is no difference between the two given prefixes.
18. Why is it necessary for a 'Directional High-Gain' antenna to be placed higher than the surrounding buildings?
- A. To prevent it from collapsing
 - B. To avoid the antenna from damaging nearby buildings with its RF power
 - C. For the antenna to receive greater universal wave and low wave
 - D. To avoid the antenna from directing its excess RF power to the people in nearby buildings

19. 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
20. What is the correct way to make a contact on a 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
21. 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 amo patch
22. What type of operation which transmit and receive on a different frequency?
- A. Simplex Operation
 - B. Duplex Operation
 - C. Multiplex Operation
 - D. All of the above
23. When you should use a repeater?
- A. When the signal received is not at satisfactory quality
 - B. When an emergency telephone call is needed
 - C. When you are traveling and need some local information
 - D. When your equipment is not operating
24. Which of the following uses the International Phonetic Alphabet?
- A. Alpha, Oskar, Foxtrot, Robin, India
 - B. Bravo, Charlie, Robin, Indon, Uniform
 - C. Foxtrot, Alpha, Uniform, Zulu, India
 - D. Bravo, Uniform, Radio, Alpha, Mike
25. What material is best for antenna conductor?
- A. Silicon
 - B. Steel
 - C. Aluminium
 - D. Copper

26. The type of communication for an amateur radio operator to test a transmission into a repeater without giving information on the station callsign is called a
- A. Invalid and unlicensed voice transmission
 - B. Transmission without communication, without voice being transmitted
 - C. Invalid and unknown transmission
 - D. A transmission test without a callsign information given
27. 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
28. What is meant by the term "OM" and "TX"?
- A. Operating Mode and Total Power
 - B. Operator Manual and Texting
 - C. Old Man and Texting
 - D. Old Man and Transmitter
29. What are the requirements for applying an Amateur Radio licence upgrade (ie. V89 – V88) ?
- A. To fill up the Amateur Radio Callsign Application form and submit a full 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**.

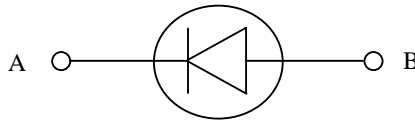
31. The relationships between 'Current (I)', 'Voltage (V)' and 'Resistance (R)' is

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

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

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

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

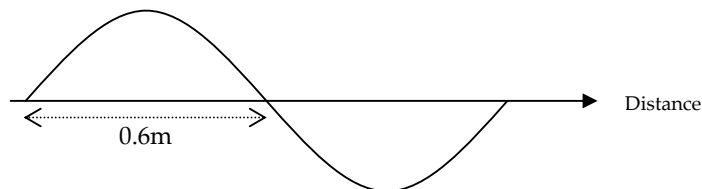


- A. From B to A
- B. From A to B
- C. From A to B and B to A
- D. None of the above

34. What is the time period of an alternating current if the frequency is 5 MHz?

- A. 0.2 ms
- B. 0.2 μ s
- C. 200 ms
- D. 20 μ s

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



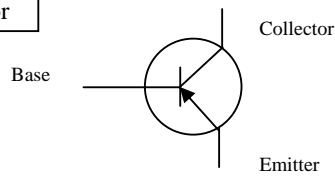
- A. 250 MHz
- B. 250 kHz
- C. 25 GHz
- D. 25 mHz

36. A transformer is used to balance a transmission line of 4.0 Ohm with a 2020 Ohm antenna. What is the ratio required for the transformer to do this?

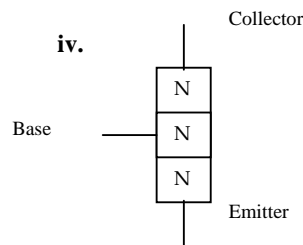
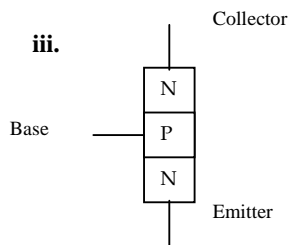
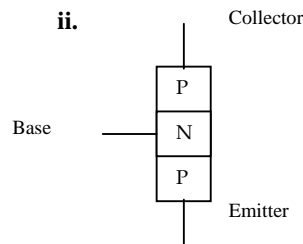
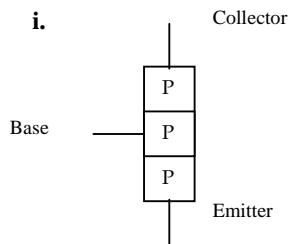
- A. 1 : 8080
- B. 1 : 505
- C. 1 : 1010
- D. 1 : 2020

37.

Symbol transistor



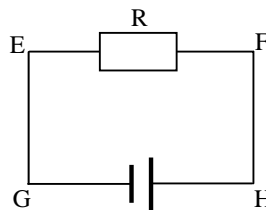
With reference to the transistor symbol above, which one is the correct answer?



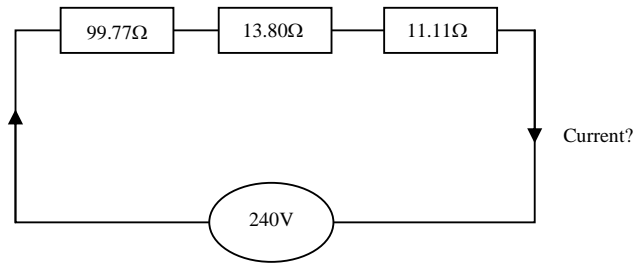
- A. i
- B. ii
- C. iii
- D. iv

38. Which direction is the electron flowing in the diagram below?

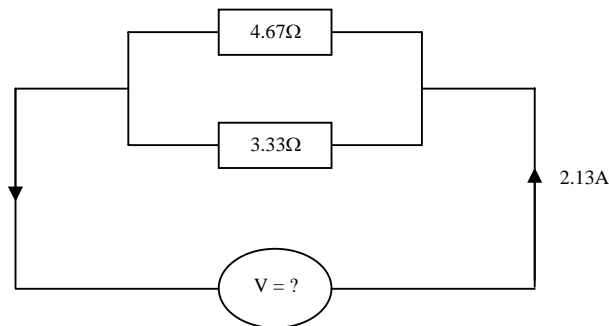
- A. From F to E
- B. From G to H
- C. From H -> F -> E -> G
- D. From G -> E -> F -> H



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



- A. 0.52 A and 74.86 Ohms
 B. 0.52 A and 124.68 Ohms
 C. 1.93 A and 74.86 Ohms
 D. 1.93 A and 124.68 Ohms
40. 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
41. What is the Voltage (V) and the total Resistance of 4.67 Ohms and 3.33 Ohms resistors connected in parallel as shown below, if a 2.13 A current flows through the circuit?



- A. 17.04 V and 1.94 Ohms
 B. 17.04 V and 8 Ohms
 C. 4.14 V and 1.94 Ohms
 D. 4.14 V and 8 Ohms
42. Define the function of a Low-Pass filter?
- A. Restrict high frequency and restrict low frequency
 B. Restrict low frequency only
 C. Channeling high frequency and channeling low frequency
 D. Restrict high frequency only

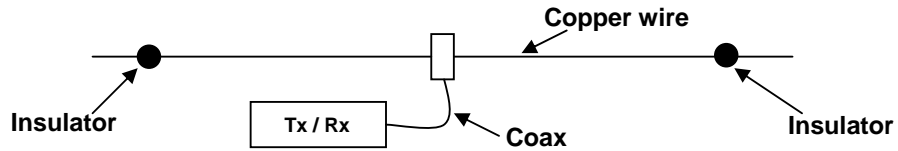
43. What is the modulation used in “Very High Frequency” and “High Frequency” respectively?
- A. Single band and multiple band
 - B. Amplitude modulation and frequency modulation
 - C. Frequency modulation and amplitude modulation
 - D. Quadrature amplitude modulation and phase modulation
44. The transmission power for transmitting amateur radio must not exceed
- A. 150 Watts
 - B. 125 Watts
 - C. 75 Watts
 - D. 175 Watts
45. 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
46. What is the frequency band for a ‘High Frequency’?
- A. 30 MHz – 300 MHz
 - B. 3000 kHz – 30000 kHz
 - C. 3 Hz – 30 kHz
 - D. 3 kHz – 30 kHz
47. 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
48. Which antenna can be installed for a VHF station?
- A. Yagi antenna
 - B. Horn antenna
 - C. Helix antenna
 - D. Satellite Dish
49. 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

50. What is the velocity of an electro-magnetic wave?
- A. 200×10^6 metres/sec
 - B. 3×10^8 metres/sec
 - C. 0.3×10^8 metres/sec
 - D. 3×10^{-8} metres/sec
51. 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
52. What is the Unit(s) for each of the components (Capacitor, Ammeter, Resistor, Inductor) respectively?
- A. Farad, Ampere, Ohm, Henry
 - B. Coulombs, Meter, Ohm, Henry
 - C. Coulombs, Ampere, Ohm, Farad
 - D. Farad, Ampere, Resistance, Henry
53. The relationship of 'Charge' is
- A. $Q = V/R$
 - B. $Q = CV$
 - C. $Q = C/V$
 - D. $Q = C^2V$
54. Which of the following principles is used when working with almost any electronic circuit?
- A. Ohm's Law
 - B. Coulomb's Law
 - C. Ampere's Law
 - D. Tesla's Law
55. What is the unit prefixes for Giga, Kilo, Mega respectively?
- A. $10^9, 10^3, 10^6$
 - B. $10^9, 10^6, 10^3$
 - C. $10^6, 10^3, 10^9$
 - D. $10^{-9}, 10^3, 10^6$
56. 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

57. The unit Watt (W) is a measure for:

- A. RF power
- B. RF electric field strength
- C. RF energy
- D. RF voltage

58. Below is a diagram of a Half wavelength for a dipole antenna.



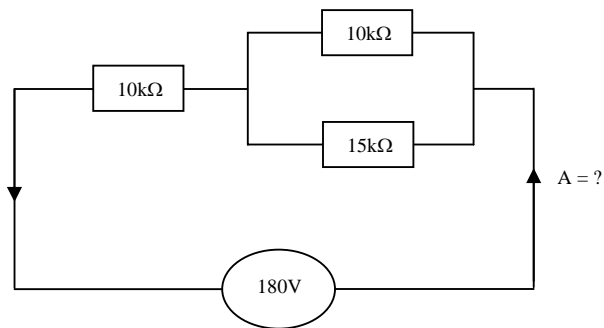
What is the length of the copper wire required for Half Wavelength dipole antenna for 17 meter on frequency 18077 kHz?

- A. 12 ft 9 inch
- B. 14 ft 6 inch
- C. 12 ft 6 inch
- D. 14 ft 9 inch

59. What is the meter band for the frequency 3.50-3.90MHz?

- A. 80 meters
- B. 80 cm
- C. 30 meters
- D. 30 cm

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



- A. 0.01125 ampere
- B. 0.00514 ampere
- C. 0.04800 ampere
- D. 11.2500 ampere