

**AMATEUR RADIO EXAMINATION
- QUESTION PAPER -**

INDEX NO.	AMR-2-2012-								
IC NO.			-						

IC COLOUR

DAY : SUNDAY
DATE : 12th FEBRUARY 2012M / 19 RABIULAWAL 1433H
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. 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. 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

4. 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

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

6. The amateur radio license classes in Brunei are:
 - A. Novice, Advances
 - B. Standard, Advanced
 - C. Novice, Technician
 - D. Class 1, Class 3

7. What is the correct callsign prefix for Standard and Advanced Class Amateur Radio Licence respectively?
 - A. V89 and V85
 - B. V85 and V89
 - C. V8N and V8M
 - D. V8B and V8A

8. 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

9. 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

10. The maximum power output for Very High Frequency and High Frequency is
 - A. 400W
 - B. 10W
 - C. 150W
 - D. 50W

11. "QRZ?" is the Q-code for
 - A. Who is calling me?
 - B. shall I reduce my transmitting power?
 - C. have you a message for me?
 - D. Are you busy?

12. 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

13. 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
14. You installed a 144MHz transceiver for marine operation on your boat to operate as a mobile station. Under which of the following conditions is operating permitted?
- A. Not at all
 - B. Anywhere, provided the boat remains in Brunei Darussalam waters
 - C. On inland waterways and river but not in docks, estuaries or harbours
 - D. Only with special permission from the AITI
15. 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.
16. Station, Log book and license are required for random inspection done by
- A. Authority for Info-communications Technology Industry (AITI)
 - B. A certified Radio Organization
 - C. Royal Brunei Police Force
 - D. Registrar of Companies
17. The word "ARDF" should be spelt phonetically, using the phonetic alphabet
- A. Alfa Romeo Delta Fox
 - B. Amateur Radio Direction Finding
 - C. Alpha Romeo Delta Foxtrot
 - D. Alpha Radio Delta Foxtrot
18. If you trying to locate the position of the other operating station, which "Q" code signal you would send?
- A. QSP
 - B. QSO
 - C. QTX
 - D. QTH

19. 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 official
 - 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
20. 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
21. 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
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 should you use simplex operation instead of a repeater?
- A. When the most reliable communications are needed
 - B. When a contact is possible without using a repeater
 - C. When an emergency telephone call is needed
 - D. When you are traveling and need some local information
24. 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

25. 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.
26. 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
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 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
29. An activity wherein participants use radio direction finding techniques to locate one or more radio transmitters hidden within a designated area, is called?
- A. Fox Hunting
 - B. Fox Dancing
 - C. DXing
 - D. Echolink
30. In International Morse code, what is **SOS** ?
- A. .- .-.-
 - B. ... --- ...
 - C. --- ... ---
 - D. .. - ..

SECTION B

This section contains 30 questions. Answer **all**.

31. The relationship of 'Charge' is

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

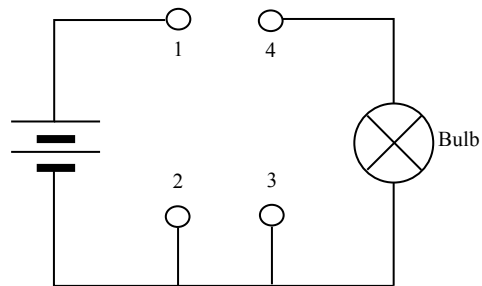
32. What is the Unit(s) for each of the components (Capacitor, Current, Resistor, Inductor) respectively?

- A. Farad, Ampere, Ohm, Henry
- B. Coulombs, Meter, Ohm, Henry
- C. Coulombs, Ampere, Ohm, Farad
- D. Farad, Ampere, Resistance, Henry

33. What is the voltage, for a circuit with a 3 Ohms resistor and current of 6 A?

- A. 18 V
- B. 0.2 V
- C. 9 V
- D. 2 V

34. 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. 3 and 4
- D. 1 and 4

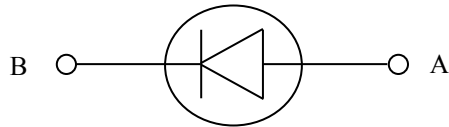
35. An electric current passing through a wire will produce around the conductor.

- A. An electric field
- B. A superconductor
- C. A magnetic field
- D. A semiconductor

36. 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. $c = f\lambda$

37. 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

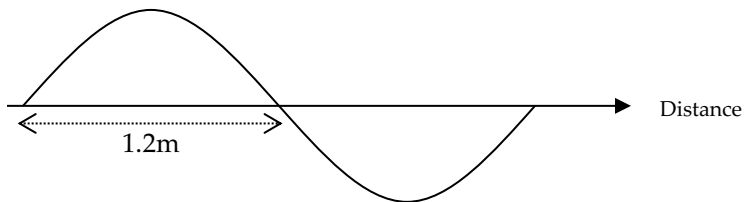
38. What is the time period of an alternating current if the frequency is 29 MHz?

- A. 0.034 ms
- B. 34.4 μ s
- C. 29 ms
- D. 29 μ s

39. 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})

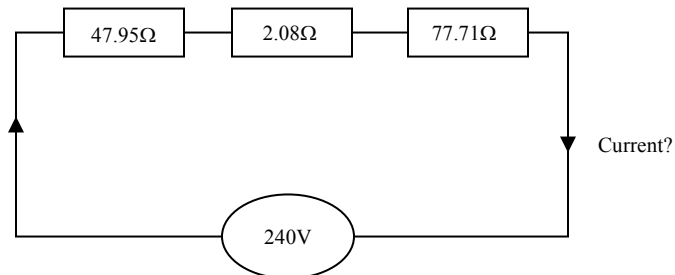
40. What is the frequency of the signal shown below at speed 3×10^8 m/s, if both half-cycle are of equal length?



- A. 125 MHz
- B. 250 kHz
- C. 25 GHz
- D. 25 mHz

41. Compared with an ordinary amplitude modulated signal a single-sideband signal
- A. occupies a wider bandwidth
 - B. occupies half the bandwidth
 - C. is distorted
 - D. is easier to tune in
42. A transformer is used to balance a transmission line of 5.0 Ohm with a 145 Ohm antenna. What is the ratio required for the transformer to do this?
- A. 1 : 8080
 - B. 1 : 29
 - C. 1 : 1010
 - D. 1 : 2020
43. 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

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

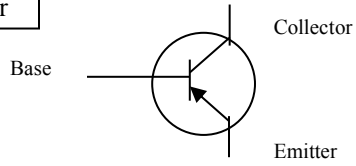


- A. 1.88 A and 127.74 Ohms
 - B. 1.88A and 42.58 Ohms
 - C. 451.2 A and 127.74 Ohms
 - D. 451.2 A and 42.58 Ohms
45. A standing wave meter (SWR) is used to check the
- A. Height of the tower
 - B. Efficiency of a transmitter
 - C. Resonant frequency of an aerial
 - D. Matching of the transmitter to the aerial system

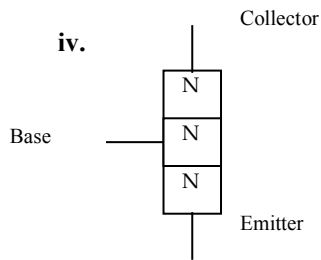
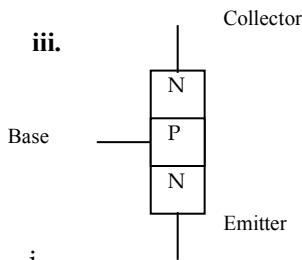
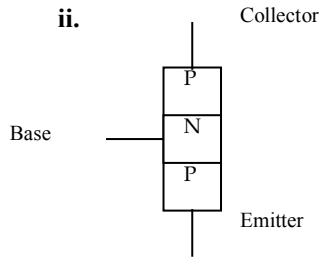
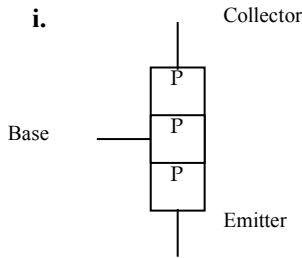
46. Define the function of a Low-Pass filter?
- A. Restrict high frequency and restrict low frequency
 - B. Restrict low frequency only
 - C. Channeling high frequency and channeling low frequency
 - D. Restrict high frequency only
47. What is the modulation used in “Very High Frequency” and “High Frequency” 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
48. 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
49. 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
50. 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
51. Which of the following principles is used when working with almost any electronic circuit?
- A. Ohm’s Law
 - B. Coulomb’s Law
 - C. Cole’s Law
 - D. Tesla’s Law
52. 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

53.

Symbol transistor



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



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

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

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

55. A power amplifier has a gain of 3dB. If you input 29W, the output would be?

- A. 58 W
- B. 9.67 W
- C. 87 W
- D. 0.103 W

56. The frequency of a Variable Frequency Oscillator (VFO) is determined by

- A. the supply voltage
 - B. the inductance and capacitance of the tuned circuit
 - C. the type of transistor used
 - D. the particular circuit udes
57. 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
58. 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,diriven element, reflector
 - D. Reflector director,driven element
59. What is the meter band for the frequency 21.000 – 21.450 MHz?
- A. 15 meters
 - B. 15 cm
 - C. 21 meters
 - D. 21 cm
60. 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