

**AMATEUR RADIO EXAMINATION
- QUESTION PAPER -**

INDEX NO.	AMR-10-2013-								
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IC COLOUR

DAY : SUNDAY
DATE : 6th OCOTBER 2013M / 1 ZULHIJAH 1434H
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. What is the definition of the Amateur Radio Service?
 - A. A radio communication service carried out by individual other than telecommunications service provider
 - B. A radio communication service carried out by non-professional people
 - C. A radio communication service carried out by technicians for the purpose of self-training of radio announcers
 - D. A radio communication service for the purpose of self-training, intercommunication and technical Investigations carried out by amateurs

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 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 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. 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. One time only
 - D. Using a radio transceiver

4. In what Region and Zone is Brunei Darussalam located?
 - A. Region 28, Zone 3
 - B. Region 38, Zone 2
 - C. Region 3, Zone 38
 - D. Region 3, Zone 28

5. An amateur radio station may only be used to communicate with:
 - A. another private network radio station
 - B. another broadcasting station
 - C. another amateur radio station
 - D. an illegal radio station

6. 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, frequency band and emission, station callsign which with you are communicating, start and end of conversation time, signal report, QSL
 - B. Date, frequency band and emission, power output, conversation time, signal report, statement.
 - C. Date, station callsign which with you are communicating with, frequency band and emission.
 - D. Date, station which with you are communicating with, frequency band, emission and power output
7. For a foreigner to obtain a temporary amateur radio license 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.
8. The maximum output power permitted from an amateur radio station is:
 - A. 300 Watt
 - B. 400 Watt
 - C. 500 Watt
 - D. 150 Watt
9. The amateur radio operator can do the following activities with their radios except:
 - A. communicate around the world
 - B. communicate with astronaut while orbiting the earth
 - C. provide broadcasting services to the public
 - D. provide assistance in emergencies and natural disasters situation by providing communications whenever normal communications service is failed or unavailable
10. In amateur radio 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. 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

12. 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
13. The content recorded on your station log book shall be preserved for a period of:
- A. at least 6 months
 - B. at least 1 year
 - C. at least 2 years
 - D. forever
14. Station, Log book and license are required for random inspection done by
- A. A certified Radio Organization
 - B. Royal Brunei Police Force
 - C. Authority for Info-communications Technology Industry (AITI)
 - D. Registrar of Companies
15. 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. Pay import tax for the equipment
 - C. Declare the equipment to the Royal Brunei Custom and Excise officials
 - D. Bring the equipment directly to AITI officials
16. 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
17. An amateur radio licensee should renew their licence every?
- A. No renewal required
 - B. 3 months
 - C. 12 months
 - D. 24 months
18. 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. Anywhere, provided the boat remains in Brunei Darussalam waters
 - B. On inland waterways and river but not in docks, estuaries or harbours
 - C. Only with special permission from the AITI
 - D. None of the above

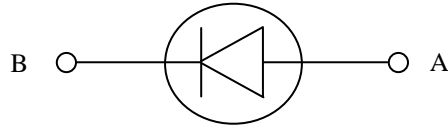
19. Which of the statement below is CORRECT regarding installation of amateur radio equipment in a vehicle?
- A. Radio equipment can be installed in any vehicle without any valid amateur radio license.
 - B. Installation of radio equipment and antenna is not required to meet the specifications and regulations 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.
20. 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
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 a mo patch
22. 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
23. In International Morse code, what is **AITI**?
- A. .- .- .- .-
 - B. .- .. - ..
 - C. ... --- ...
 - D. .. - ...-
24. If an amateur radio licensee is absence overseas, the base station may be used by:
- A. Any member of the immediate family to maintain contact with only the licensee
 - B. The immediate family to communicate with any amateur radio licensee
 - C. Any amateur radio licensee but with consent
 - D. None of the above
25. For 6 meter band, which one of the following frequency band is correct?
- A. 21.550 – 21.650 MHz
 - B. 21.000 – 21.450 MHz
 - C. 50.000 – 54.000 MHz
 - D. 14.000 – 14.350 MHz

26. Which of the following uses the International Phonetic Alphabet?
- A. Alpha, Norway, Delta
 - B. Denmark, Oscar, Gordon
 - C. Alpha, Charlie, November
 - D. Bravo, Uniform, Gordon
27. What is the validity period of an Import Permit for an Amateur Radio equipment from the date of issue?
- A. 2 weeks
 - B. 2 months
 - C. 1 week
 - D. 1 year
28. 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
29. For special event such as Jamboree On The Air, AITI allocate callsign in the following prefix
- A. V84S
 - B. V85S
 - C. V88S
 - D. V89S
30. 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

SECTION B

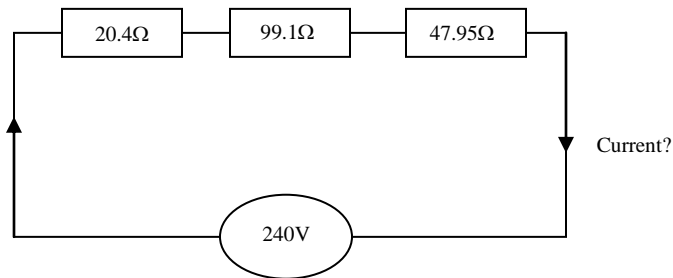
31. If ' λ ' is wavelength, ' c ' is speed of light and ' f ' is frequency, which formula listed below is correct?
- A. $\lambda = fc$
 - B. $f = \lambda/c$
 - C. $c = f^2\lambda$
 - D. $c = f\lambda$
32. Which instrument would you use to measure an electric voltage?
- A. Ammeter
 - B. Thermometer
 - C. Voltmeter
 - D. Ohmmeter
33. An electric power converter for DC power supply
- A. Converts energy from the mains into DC for operating electronic equipment
 - B. Is a diode-capacitor device for measuring mains power
 - C. Is a diode-choked device for measuring inductance power
 - D. Converts DC from the mains into AC of the same voltage
34. 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
35. 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
36. A 'line of sight' transmission between two stations uses mainly the:
- A. Ionosphere
 - B. Ground wave
 - C. Troposphere
 - D. Sky wave
37. Which components can amplify a small signal using low voltages?
- A. PNP transistor
 - B. Transformer
 - C. Mega Cell Battery
 - D. Resistor

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



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

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



- A. 40.2 A and 167.45 Ohms
- B. 1.43 A and 167.45 Ohms
- C. 622 mA and 389.26 Ohms
- D. 622 A and 389.26 Ohms

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

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

41. The relationship of 'Charge' is

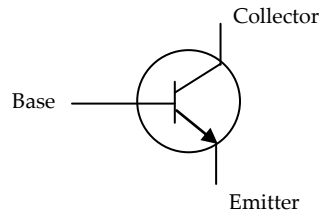
- A. $Q = V/R$
- B. $Q = C/V$
- C. $Q = CV$
- D. $Q = C^2V$

42. Which of the following is true about Capacitor?

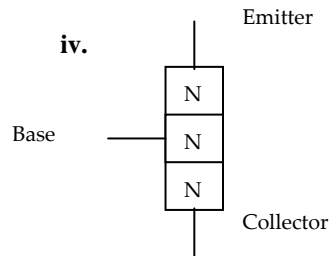
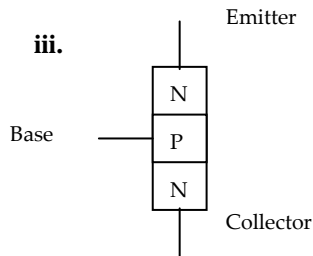
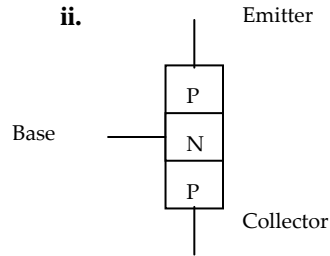
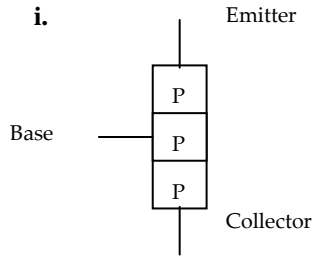
- A. It is an electrical device that resists the flow of current
- B. A device that only allows a current to flow in one direction in a circuit
- C. Stores energy and produces a mechanical force between the conductors
- D. Used for filtering and smoothing of signals and are the major components in transformers

43. What is the unit prefixes for Giga, Kilo, Mega respectively?
- A. 10^9 , 10^6 , 10^3
 - B. 10^9 , 10^3 , 10^6
 - C. 10^6 , 10^3 , 10^9
 - D. 10^{-9} , 10^3 , 10^6
44. For AC measurement, the value of Voltage-Root-Mean-Square (Vrms) is
- A. 0.5 peak voltage (Vpk)
 - B. 0.707 peak voltage (Vpk)
 - C. 1.0 peak voltage (Vpk)
 - D. 0.333 peak voltage (Vpk)
45. 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
46. The unit Watt (W) is a measure for:
- A. RF electric field strength
 - B. RF energy
 - C. RF power
 - D. RF voltage
47. 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 a broadband antenna
 - D. It is omni-directional
48. A three-element Yagi antenna of rods of unequal length, please arrange the elements in descending order
- A. Driven element, reflector, director
 - B. Reflector, driven element, director
 - C. Director, driven element, reflector
 - D. Reflector director, driven element

49.



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



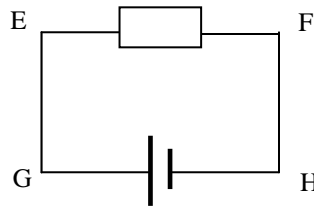
- A. i
- B. ii
- C. iii
- D. iv

50. A transformer is used to balance a transmission line of 3.0 Ohm with a 750 Ohm antenna. What is the ratio required for the transformer to do this?

- A. 1 : 250
- B. 1 : 753
- C. 1 : 2250
- D. 1 : 0.004

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

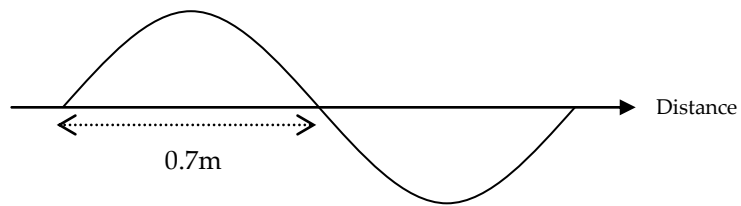
- A. From E to F
- B. From H to G
- C. From H -> F -> E -> G
- D. From G -> E -> F -> H



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. 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

54. 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. 300 MHz
- B. 21 Hz
- C. 429 MHz
- D. 214 MHz

55. 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

56. What is the basic unit of current?
- A. The ohm
 - B. The watt
 - C. The volt
 - D. The ampere

57. What is the symbol for resistor

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

58. What is the velocity of an electro-magnetic wave?
- A. 200×10^6 metres/sec
 - B. 300×10^6 metres/sec
 - C. 0.3×10^8 metres/sec
 - D. 3×10^{-8} metres/sec
59. A 50 hertz current in a wire means that
- A. a cycle is completed 50 times in each second
 - B. a potential difference of 50 volts exists across the wire
 - C. the current flowing in the wire is 50 amperes
 - D. the power dissipated in the wire is 50 watts
60. 2 resistors are connected in parallel and are connected across a 12 volt battery. If each resistor is 5 ohms, the total current is
- A. 8.3 ampere
 - B. 4.8 milliampere
 - C. 4.8 ampere
 - D. 0.83 ampere