

## Foundation Licence Practice Test -- QUESTIONS



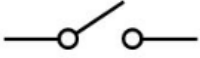





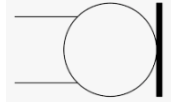
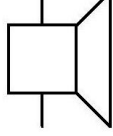
Based on the Foundation Manual and revised on 19 March 2023 to include Edition 4

### Note

If you don't have edition 4, read the additional material at [Resonance](#), [Decibel](#), [Signal Reports](#) and [Digital](#).

1. You get zapped touching a machine after walking on carpet. What sort of electric charge is this?
2. Complete the sentence. An electric current is .....
3. What is the difference between a conductor and an insulator?
4. If current moves only in one direction, how is this referred?
5. If current moves back and forth or is cyclic, how is this referred?
6. What does EMF stand for?
7. EMF goes by a common name as .....
8. What is the opposition to electron flow called and what unit is used?
9. DC circuits are polarity critical. What does this mean?
10. What voltage can a single carbon zinc cell generate?
11. Draw the Ohms law triangle and enter the units. Page 9
12. Define and explain each of the units.
13. Calculate the following:
  - a.  $E = 20\text{v}$        $I = 0.2\text{A}$       .....Ohms
  - b.  $I = 2\text{A}$        $R = 100\Omega$       ..... Volts
  - c.  $R = 1000\Omega$        $E = 500\text{v}$       ..... Amps
14. Resistors and other items are given a power rating. What unit is power measured in?
15. How is the value of a resistor displayed?
16. What is the formulae to calculate the power if the voltage and current are known?
17. Calculate the following:
  - a.  $E = 20\text{v}$        $I = 0.2\text{A}$       .....Watts
  - b.  $I = 2\text{A}$        $R = 100\Omega$       .....Watts
  - c.  $R = 1000\Omega$        $E = 500\text{v}$       ..... Watts

18. What do the following symbols represent? Page 75

<p>A </p>	<p>B </p>
<p>C </p>	<p>D </p>
<p>E </p>	<p>F </p>
<p>G </p>	<p>H </p>
<p>I </p>	<p>J </p>

19. In question 18 A, which side is positive?
20. How are conductors shown in a circuit?
21. Draw a circuit of a torch with a battery, closed switch and a lamp. Page 10
22. What do the following readings mean? E.g. 1kV means 1kilo volt or 1000v    a. 6mv  
 b. 10MΩ    c. 66μA
23. What is the unit of frequency?
24. What does the terms MF, HF VHF and UHF represent and what frequency range applies to theses?
25. What band would 2M or 144MHz band fall within?
26. Why do we have dedicated amateur bands?
27. Describe the wavelength of a signal.
28. Wavelength is calculated by dividing 300 by the frequency in MHz.  

$$\lambda = 300 / \text{frequency in MHz.}$$

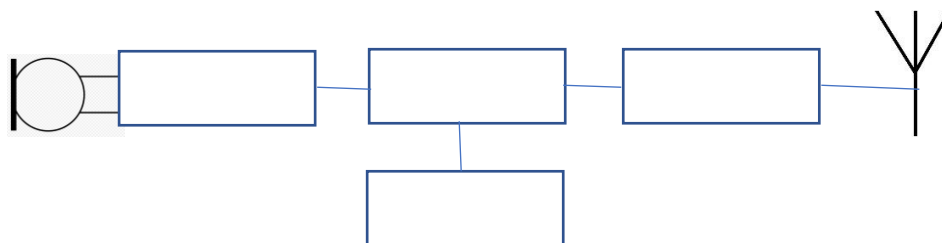
What is the wavelength of a 28MHz signal?

29. To transmit information over a distance, a carrier signal needs to be modulated in some way. The two common ways this is done is by AM and FM. What do these terms mean and how does it work?

30. What does the term USB LSB mean?
31. What is the maximum peak power level a Foundation licence holder can emit?
32. What does “frequency deviation” mean in regard to an FM signal?
33. When modulating a carrier signal with voice, what is the approx. audio frequency range of the modulating signal?
34. What is signal bandwidth?
35. What is a detector and a discriminator?
36. Three aspects of a receiver are sensitivity, selectivity and stability. What does each term mean?
37. Fill in the name of the parts of a simple receiver.



38. What is the final stage of a transmitter?
39. What do transmission lines do? These are also referred to as feedlines or feeders.
40. What are the two types of feedlines?
41. What instrument would you use to test the continuity of a cable?
42. Why should antennas be fitted with lightning protectors?
43. Name five types of antennae.
44. What does SWR stand for and what does it measure?
45. What does ATU stand for and what does it do?
46. What device would you use if you wanted to test the output power of the transmitter without sending a signal up the antenna?
47. Fill in the name of the parts for a transmitter.



48. What is a balun?

- 49.
50. With regards to antennas, what do the following terms mean?
  - Directivity
  - Gain
  - Beamwidth
  - Effective Radiated Power (ERP).
51. What do the terms horizontal, vertical and circular polarization mean with regards to antennas?
52. Convention has it that VHF, UHF and mobile signals are transmitted on a vertical antenna. What antenna polarisation should the receive antenna be?
53. Describe an isotropic antenna.
54. What are the four layers in the ionosphere that impact HF communications?
55. What happens to these layers during the night?
56. Why does sunspot activity impact HF radio communications?
57. The distance a VHF or UHF signal can travel under normal circumstances is defined by four factors. What are these?
58. What is Tropospheric ducting?
59. What is the MUF?
60. What is the radio squelch?
61. What does RIT stand for and how does this help the operator?
62. Can a Foundation licence holder modify their radio internals?
63. In the current Australian 240v wiring system, what colour is the earth wire?
64. Why is an earthing system, for both mains electrical and RF signals, so important?
65. What can happen if the antenna or the antenna tuner are not tuned correctly?
66. What equipment in your shack could give you an RF burn?
67. What is EMC and EMI
68. If your station causes interference, what should you do?
69. In an AM transmitter, what can happen if you over drive the AF stage of the transmitter?
70. What is a choke, why is it needed and how does it work?
71. What is the maximum power allowable for a Foundation licence?
72. On which bands is FM allowed with a Foundation licence?

73. What are the distress and urgency signals for both telephony and telegraphy?

Type	Telephony	Telegraphy
Urgency		
Distress		

74. Write the word “Antenna” using the phonetic alphabet.
75. What is CTCSS and DTMF?
76. What would be the call sign prefix for Tasmania and Northern Territory?
77. What is meant when you receive a signal from a VK3RNL?
78. What should you do, as a licenced amateur operator, if you change your address?
79. What is meant by QRN causing you to QSY?
80. Can any amateur transmit any entertainment or advertisements?
81. What does the giving of a signal report of 5/9 mean?
82. What is the third number in a signal report and when is it used?
83. You see someone being electrocuted, what should you do?
84. Why should your amateur station be secured at all times?
85. How do you calculate the wavelength of a frequency?
86. Define a wavelength.
87. How do you calculate the power in a circuit knowing the voltage and current?
88. What are the four ionospheric layers?
89. What is the difference between telegraphy and telephony?
90. What is the distress signal in telephony and telegraphy?
91. What is the urgency signal in telegraphy and telephony?
92. What are the three features in a receiver?
93. Signal reports can have three levels. What are they?
94. What is an RF burn and what can cause it?
95. What is an isotropic antenna?
96. Explain what SWR.
97. If an antenna is cut for a frequency range the SWR is higher only at the bottom end of the antenna frequency band, what can you do to fix this?

98. If an antenna is cut for a frequency range the SWR is higher only at the top end of the antenna frequency band, what can you do to fix this?
99. What are the colours of the wires in a 240v cable?

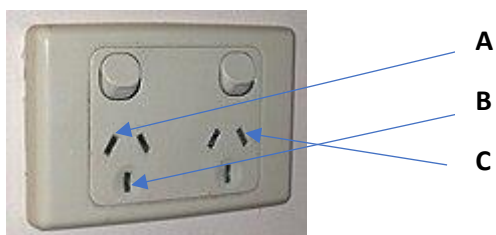
Connection	Current colours (SI Standard)	Old colours
Active		
Neutral		
Earth		

100. What is the purpose of the chassis earth?
101. Mark the three pins on the diagram below.



This Photo by

102. Mark the sockets on the diagram below.



103. To measure voltages at the power point, how would you set the multimeter range?

104. In question 99, if the power is on and you measured the voltages across the following pins, what would the readings be?

Pins	Voltage	Frequency
A - B		
A - C		
B - C		

**Extra questions for Edition 4**

Resonance

1. What is a capacitor?
2. What is an inductor?
3. What is capacitive or inductive resistance called?
4. All tuned circuits have a resistance. What is this combined resistance called?
5. What is back-EMF?
6. What does resonant frequency mean?
7. Draw the following diagrams.
  - Series tuned circuit.
  - Parallel tuned circuit.
8. Which component can be made variable to adjust a tuned circuit?

Digital Signals

1. What is an analogue signal?
2. What is a digital signal?
3. What is an ADC and how are they used?
4. What is a DAC and how are they used?
5. Explain duty cycle.

Decibel

How would you best describe the use of the decibel in amateur radio?

Signal Reports

1. Name the three parts to a morse code signal report.
2. Which of these is most common for amateur radio operators?
3. What is the scale for R in the report?
4. Where is the S report derived?
5. S9 is a measured voltage at the antenna. What is this voltage?

### Supplementary Questions for V10 of Syllabus

1. Can you contact a station outside the amateur bands if there is a distress call?
2. What type of messages are prohibited when passing messages for a third party?
3. On hearing a distress or urgency call, what should you do as the operator?
4. How often should you identify your station on air?
5. Can you transmit entertainment on amateur bands?
6. A Foundation licence is limited to 10 watts pX. What is pX?
7. If you move house, do you have to notify ACMA?
8. What does LCD stand for?
9. What is the voltage and frequency of the domestic electricity supply in Australia?
10. Effective Radiated Power (ERP) is calculated by the combination of two measurements. What are these two?
11. Why is the ionosphere important in HF transmissions?
12. Radio waves can be impacted through the following ways. Explain each one with respect to radio signals.  
Reflection, refraction, absorption and polarization. (Hint- check out Radio Propagation in Wikipedia)
13. Earthing points in a radio shack are important. The critical ones are electrical earth and signal earth. Why is this so important?
14. A fuse has two parameters and any replacement fuse must match the parameters of the blown fuse. What are the two parameters?
15. The syllabus states that it is desirable that a station has a switch clearly marked to isolate all power in the station. Why would this be so?
16. You find a person has touched wires and is being electrocuted. What are your actions?