



- 1.** When operating the Radio Equipment from an aircraft, the Licensee shall
- 1A2.8097
- A.** obtain the Captain's permission.
  - B.** maintain a log in accordance with Ofcom regulations.
  - C.** not be required to keep a log while the aircraft is on the ground.
  - D.** maintain a log of all transmissions as required by the Civil Aviation Authority.
- 2.** In an international disaster you are permitted by your licence to
- 1C1.7590
- A.** encrypt your messages so they can only be understood by the intended recipient.
  - B.** ignore the requirement to transmit your callsign as frequently as is practicable.
  - C.** operate outside the UK amateur bands to contact an amateur in another country.
  - D.** send a message to an overseas station on behalf of a person who is not an amateur.
- 3.** The holder of an amateur radio Intermediate licence must make sure that the station
- 1D1.1147
- A.** is always capable of efficient communications with other stations.
  - B.** is not left connected to an antenna when unattended.
  - C.** is capable of using all modes of transmission permitted by the licence.
  - D.** does not cause any undue interference to any wireless telegraphy.
- 4.** A reason for utilising a remotely controlled radio transceiver is that
- 1E1.2185
- A.** it can be sited in another country overseas.
  - B.** Intermediate licensees can use the internet to control it.
  - C.** it can be sited in a location less subject to interference.
  - D.** It can be operated by other amateurs.



- 5.** Transmitting is NOT usually permitted by the Intermediate licence
- 1F1.2160
- A.** whilst a passenger in a car.
  - B.** from a train.
  - C.** from a boat on an inland river.
  - D.** whilst in France.
- 6.** An amateur has completed all the EMF compliance checks required by the licence. The feeders are replaced with an alternative which has a lower loss. Which statement below correctly describes the way forward?
- 1G1.7991
- A.** Since the losses have reduced the compliance checks should be repeated to confirm the station remains compliant.
  - B.** Since the losses have reduced the compliance checks need not be repeated and the station remains compliant.
  - C.** Nothing relevant has changed; the station remains compliant.
  - D.** The EIRP has reduced so the station remains compliant.
- 7.** Three resistors are connected in series,  $R_1=100\Omega$ ,  $R_2=1.5k\Omega$   $R_3=10k\Omega$ . What is the total resistance of the series circuit?
- 2C1.1229.1
- A.**  $11.6k\Omega$
  - B.**  $111.5k\Omega$
  - C.**  $111.5\Omega$
  - D.**  $10k\Omega$ .
- 8.** Batteries have a physical property known as their 'internal resistance'. One effect of this is to
- 2C3.5411.1
- A.** increase the EMF of the battery in proportion to the current drawn
  - B.** act as an independent parallel resistance to the load on the battery
  - C.** increase the potential difference at the battery terminals as more current is drawn
  - D.** reduce the potential difference at the battery terminals as more current is drawn.



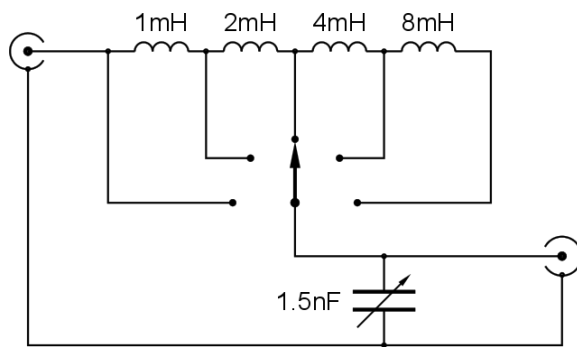
9. A device with two conducting plates separated by an insulating material is called

2D1.5421.1

- A. a capacitor
- B. an inductor
- C. a rectifier
- D. a diode.

10. In the switched inductance unit shown the switch selects how many coils are used. In the position shown the total inductance used is about

2D6.5463.1



- A. 2mH
- B. 15mH
- C. 3mH
- D. 1.5mH.

11. A sinewave with a Peak-to-Peak value of 22V will have an RMS value of approximately

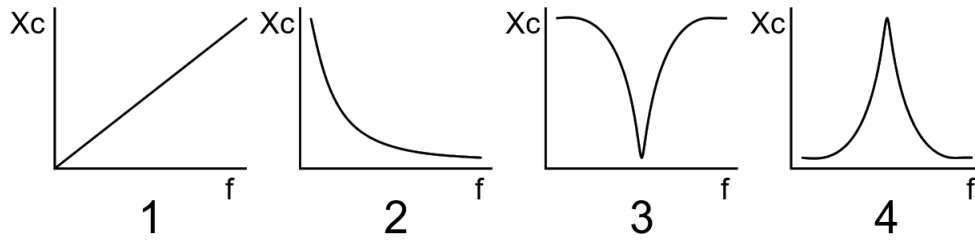
2E3.5487.1

- A. 31V
- B. 44V
- C. 8V
- D. 16V.



**12.** Which graph shows the change in reactance of a capacitor as the frequency increases?

2E4.7431.5



- A. Graph 1
- B. Graph 3
- C. Graph 2
- D. Graph 4.

**13.** A long perfectly matched open wire feeder is carrying a signal of wavelength 10m. At a particular instant in time the voltage at a point on the feeder is +10V. How much further along the feeder will the voltage be -10V at the same instant in time?

2E8.7385.2

- A. 10m
- B. At the transmitter
- C. Nowhere
- D. 5m.

**14.** What is the effect of using too few bits to represent each sample of an analogue signal?

2F1.7440.2

- A. The higher audio frequencies in the signal will be incorrectly captured
- B. The subsequent processing of the original signal will fail rendering it totally useless
- C. The digital signal will introduce distortion in the representation of the signal
- D. Some of the frequencies present in the signal will be incorrectly recorded.

**15.** Increasing the number of turns on the secondary winding of a transformer will

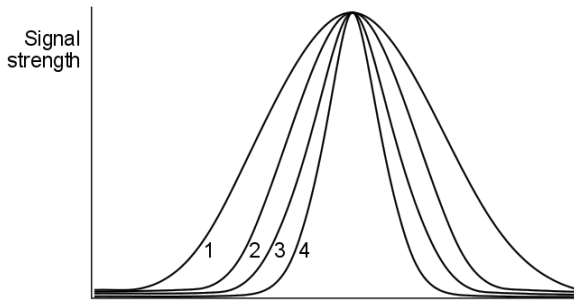
2G1.5548.1

- A. increase the current output of the transformer
- B. increase the power output of the transformer
- C. have no effect on the transformer's output
- D. increase the voltage output of the transformer.



**16.** Which tuned circuit has the greatest selectivity.

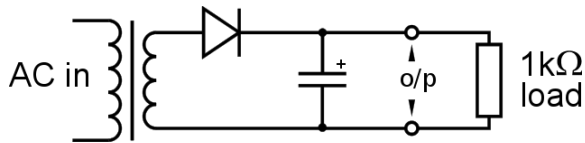
2H4.5578.4



- A. 4
- B. 1
- C. 3
- D. 2.

**17.** The purpose of the diode in the circuit diagram below is to

2I1.5600.1

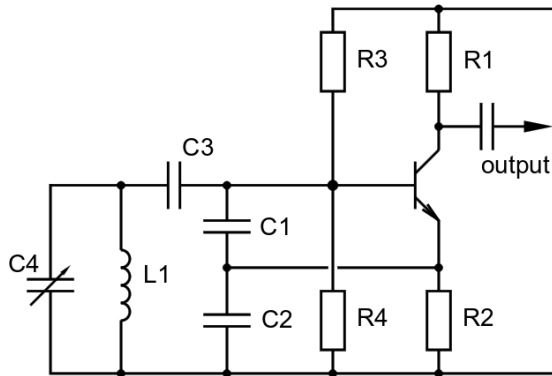


- A. allow current to flow only in one direction
- B. limit the current flowing to a safe level
- C. store a charge between successive half cycles
- D. change the AC supply voltage to a lower value.



**18.** What components are most important in determining the output frequency from this circuit?

2I5.7454.7



- A. The feedback signal set by R2
- B. The ratio of C1 and C2
- C. C1, C2 and C3
- D. L1 and C4.

**19.** In a mains power supply unit the purpose of the reservoir capacitor is to

2J3.5647.1

- A. smooth the DC pulses
- B. reduce the 230V AC to 12V AC
- C. reduce the mains 230V AC to 12V DC
- D. change the AC to pulses of DC.

**20.** A key advantage of an integrated circuit is that it

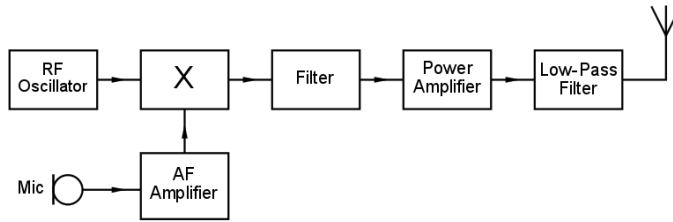
2I6.7457.4

- A. minimises the risk of RF interference from one circuit to the next
- B. allows each of the different functions to be repaired separately
- C. enables complete functions to be carried out using a single device
- D. reduces the effect of temperature variations in higher powered devices.



**21.** The diagram shows a block diagram of an AM transmitter. What is the block marked X?

3B1.5669.1



- A. Modulator
- B. Buffer amplifier
- C. Sideband filter
- D. IF amplifier.

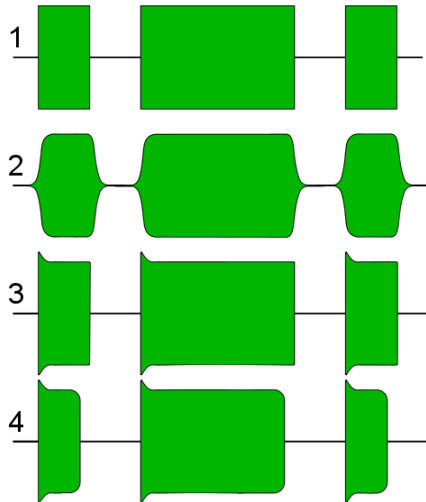
**22.** The RF output power of a transmitter is always

3F1.5717.1

- A. unaffected by the DC input power
- B. the same as the DC input power
- C. greater than the DC input power
- D. less than the DC input power.



**23.** The drawings show the transmitted waveform of a CW transmitter sending the letter R. Which waveform will result in the minimum transmitted bandwidth?  
3G4.5773.1



- A. waveform 2
- B. waveform 3
- C. waveform 4
- D. waveform 1.

**24.** Which ONE of the following will NOT affect the strength of an HF signal shown on the S meter?  
3H2.5804.1

- A. the time of year
- B. the AF gain control setting on the receiver
- C. the size of the antenna
- D. the polarisation of the antenna.

**25.** The local oscillator frequency

3I2.5819.1

- A. is twice the intermediate frequency
- B. is always fixed at a set value chosen by the designer of the radio
- C. is half the intermediate frequency
- D. differs from the wanted frequency by the value of the intermediate frequency.





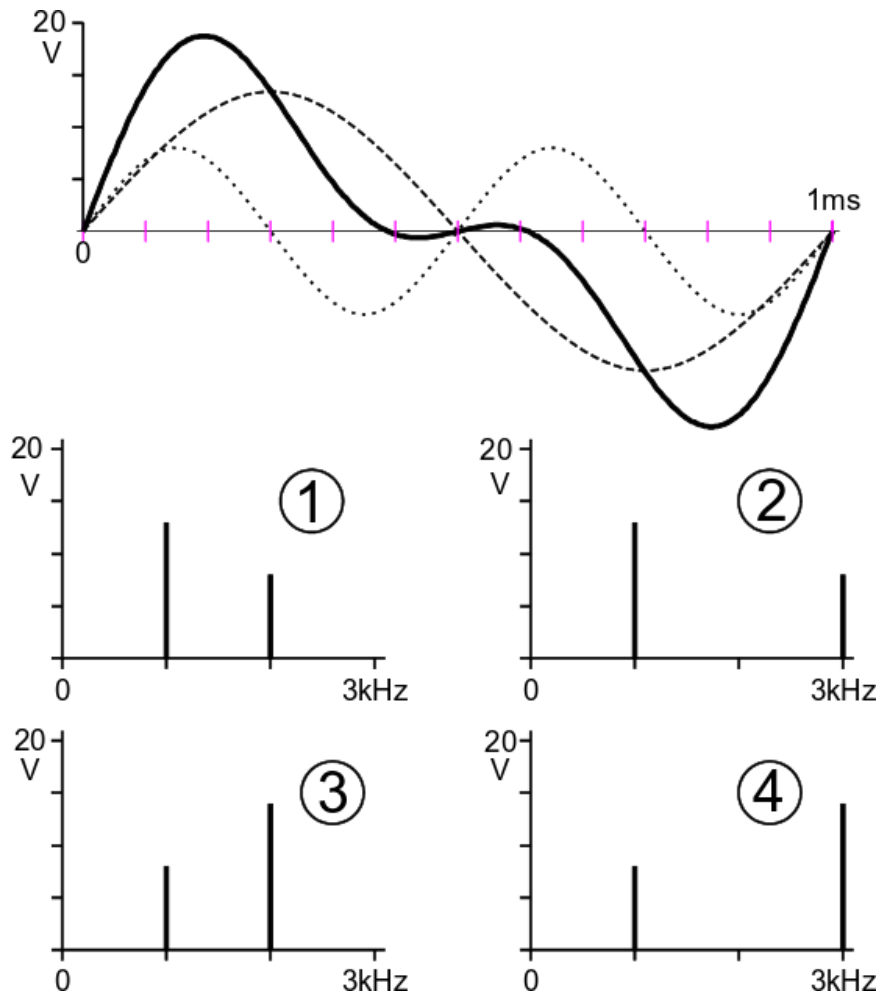
**26.** The volume from the loudspeaker of a radio receiver remains fairly constant even when the receiver is tuned between strong and weak signal. This is achieved by the

3L1.5874.1

- A. automatic frequency control (AFC)
- B. automatic level control (ALC)
- C. automatic gain control (AGC)
- D. signal level control (SLC).

**27.** A sine wave and a harmonic are shown at the top of the drawing. Below are four representations in the frequency domain. Which one corresponds to the waveform shown?

3M2.7569.6



- A. Graph 1
- B. Graph 4
- C. Graph 2
- D. Graph 3.



- 28.** A number of ferrite rings threaded over a length of coaxial cable could act as a
- 4B1.5909.1
- A.** impedance changer
  - B.**  $\lambda/4$  transformer
  - C.** harmonic filter
  - D.** balun.
- 29.** A Yagi antenna is quoted as having a gain of 7dB with respect to a dipole. This is the same as
- 4C4.8045.1
- A.** 2.15dBi.
  - B.** 4.85dBi.
  - C.** 7.85dBi.
  - D.** 9.15dBi.
- 30.** The capacitor in the trap of a trapped dipole antenna has become disconnected. What effect, if any, will this have?
- 4D2.5930.1
- A.** Difficulty will be experienced in achieving a match on the lower of the two designed frequencies
  - B.** Difficulty will be experienced in achieving a match on both of the designed frequencies
  - C.** Difficulty will be experienced in achieving a match on the higher of the two designed frequencies
  - D.** No effect will be readily apparent.
- 31.** An Antenna Tuning (or Matching) Unit can be used between the transmitter and feeder to allow
- 4F1.5946.1
- A.** the antenna to act as if it were balanced, even if it is fed with coaxial cable without a balun
  - B.** the losses on the feeder system to be minimised, by cancelling out the feeder reactance
  - C.** the standing wave ratio on the feeder to be optimised, which will reduce the power lost from reflections
  - D.** a suitable load to be presented to the transmitter, so that one antenna can be used on several bands.



- 32.** The skip zone is the area
- 5A2.5984.1
- A.** beyond the skywave
  - B.** beyond the skywave but still within ground wave coverage
  - C.** beyond the ground wave and before the earliest point of return of the skywave
  - D.** from the transmitter to the limit of ground wave coverage.
- 33.** What happens to the F1 and F2 layers at night?
- 5B3.6018.1
- A.** They disappear
  - B.** They combine into a single layer
  - C.** They move nearer the magnetic poles
  - D.** They decrease in height.
- 34.** During daylight hours, an amateur band at a lower frequency such as 3.5MHz
- 5B4.6030.1
- A.** can sometimes support long-distance contacts by means of “sporadic-E” propagation
  - B.** is likely to be good for long-distance propagation regardless of the MUF
  - C.** is only suitable for ionospheric propagation if the MUF is high enough
  - D.** is unlikely to allow long-distance propagation, because of D-layer absorption.
- 35.** An amateur transmitter can cause stronger RF fields than electronic equipment can tolerate. If interference occurs it may be necessary to
- 6A3.6059.1
- A.** limit the transmitter power to below the maximum value specified in the licence
  - B.** check modulator stage in the transmitter
  - C.** fit harmonic filters to the transmitter
  - D.** confirm the transmitter is operating inside the amateur frequency bands.



- 36.** Which item is likely to cause interference over a wide and continuous range of frequencies
- 6B2.2117.1
- A.** a frequency modulated transmitter.
  - B.** a television.
  - C.** a computer.
  - D.** an electric drill.
- 37.** Signals from an HF transmitter can often be prevented from causing television interference by fitting a
- 6D1.6107.1
- A.** low-pass filter to the external TV aerial
  - B.** high-pass filter at the transmitter
  - C.** low-pass filter at the TV aerial socket
  - D.** high-pass filter at the TV aerial socket.
- 38.** Which ONE of the following would provide a good earth for a transmitter?
- 6E2.6134.1
- A.** A radiator or water pipe.
  - B.** The neutral connection on a 13A plug.
  - C.** A copper rod in the ground outside.
  - D.** The earth connection on a 13A plug.
- 39.** An Italian station will have a call sign prefix of
- 7A3.1447
- A.** VE
  - B.** EI
  - C.** W
  - D.** I
- 40.** When sending SSTV signals many amateurs use a
- 7F2.2424
- A.** Morse key.
  - B.** a desk mounted microphone.
  - C.** computer with a suitable interface.
  - D.** Side-swipe Morse key.



- 41.** A mains powered piece of radio equipment has a maximum input rating of 800W at 230V. The MOST appropriate fuse rating for the fuse to be fitted in the mains plug to the unit would be
- 8A4.6267.1
- A. 13A
  - B. 7A
  - C. 3A
  - D. 5A
- 42.** To help prevent cuts to yourself when using knives and files you should
- 8A4.6281.1
- A. Keep your hands away from the 'sharp end'.
  - B. Store them in a tool box.
  - C. Clean them after use.
  - D. Keep them sharp.
- 43.** When transmitting from a stationary vehicle it is essential to consider
- 8D1.8095.1
- A. the need to give your location correct to within 5km.
  - B. whether pedestrians might be inside the EMF compliance distance.
  - C. the possibility that passengers' voices may also be transmitted.
  - D. the risk of interference from the vehicle's ignition system.
- 44.** A digital meter
- 9A3.6349.1
- A. is operated from a keyboard.
  - B. moves a pointer over a scale.
  - C. contains a digital computer.
  - D. displays the reading as numbers.
- 45.** An antenna is fed from a 50 Watt transmitter through feeder with negligible feeder loss. The antenna has a gain of 9dB. What is the effective radiated power?
- 9B1.6373.1
- A. 450W.
  - B. 400W.
  - C. 100W.
  - D. 59W.
- 46.** To solder a wire to a small metal tag the soldering iron must heat the
- 9E1.7628.2
- A. solder and wire only.
  - B. tag and wire only.
  - C. solder only.
  - D. solder, wire and tag.



## Answers INTERMEDIATE MOCK PAPER 1

Question	Answer	Question	Answer	Question	Answer
1	A	17	A	33	B
2	D	18	D	34	D
3	D	19	A	35	A
4	C	20	C	36	D
5	D	21	A	37	D
6	A	22	D	38	C
7	A	23	A	39	D
8	D	24	B	40	C
9	A	25	D	41	D
10	C	26	C	42	A
11	C	27	A	43	B
12	C	28	D	44	D
13	D	29	D	45	B
14	C	30	C	46	D
15	D	31	D		
16	A	32	C		