

5357 Level 3 Electrotechnical / 2365 Level 2 and 3 Diploma in Electrical Installations (Buildings and Structures)

Sample papers

5357-001 Understand Health, Safety and environmental Considerations / 2365-601 Health and Safety in Building Services Engineering

Sample e-volve MC Test

- 1 What criteria does an employer have to meet when it becomes a legal requirement to have a written health and safety policy?
 - A. Limited company status.
 - B. Under instruction from the local authority.
 - C. When employing five or more people
 - D. After accident has happened on site.
- 2 Which regulation requires an employer to ensure a power drill they provide an employee is suitable for use?
 - A. Current edition of the Building Regulations.
 - B. Provision and Use of Work Equipment Regulations.
 - C. Personal Protective Equipment at Work Regulations.
 - D. Electricity Safety, Quality and Continuity Regulations.
- 3 Which framework covers the legal disposal of waste solvent glue?
 - A. The Electricity at Work Regulations.
 - B. The Environmental Protection Act.
 - C. The Hazardous Waste Regulations.
 - D. The Health and Safety at Work Act.
- 4 Which legislation allows local authorities to monitor construction sites to ensure the nuisances such as dust and noise are compliant with agreed limits?
 - A. The Health and Safety at Work Act.
 - B. The Electricity at Work Regulations.
 - C. The Hazardous Waste Regulations.
 - D. The Control of Pollution Act.

- 5 What is the **immediate** action required when a colleague has received a burnt hand when working in a kitchen?
- A. Send for help.
 - B. Place a dry dressing over the wound.
 - C. Isolate the supply of heat.
 - D. Place the wound under running water.
- 6 What is the **immediate** action to be taken when a worker has slipped on site and sustained a back injury?
- A. Apply emergency first aid.
 - B. Phone the emergency services.
 - C. Place them in the recovery position.
 - D. Try to diagnose the extent of their injuries.
- 7 Who **must** be notified immediately when an operative sustains a back injury from carrying a load?
- A. A solicitor.
 - B. Co-workers.
 - C. A health centre.
 - D. The supervisor.
- 8 What are the **most** common construction site pollutants of water courses and rivers?
- A. Cement and grout.
 - B. Oil and silt.
 - C. Cement and oil.
 - D. Grout and silt.
- 9 What regulations specify the requirements for disposal of low pressure sodium lamps?
- A. WEEE
 - B. HASWA
 - C. EAWR
 - D. COSHH

- 10 Why is it important to report asbestos **immediately** if it is suspected as being present?
- A. To prevent unnecessary exposure.
 - B. To ensure the job is not held up.
 - C. To prevent completion delay penalties.
 - D. To comply with RIDDOR.
- 11 What action is required when a work process is risk assessed as 'High' risk?
- A. Stop the activity immediately and complete set actions.
 - B. Continue working and complete corrective actions within a week.
 - C. Continue working and complete corrective actions within a month.
 - D. Stop the activity within a week and complete set actions.
- 12 What is the **most** appropriate action to reduce the risk of harm to workers when damaged asbestos is encountered in a building?
- A. Use barriers around the area in the building effected.
 - B. Issue all workers with dust masks and safety glasses.
 - C. Have the asbestos professionally removed immediately.
 - D. Use sheeting to cover the localised damaged area.
- 13 What item of PPE **must** be used when drilling a hole in a steel wall bracket using a pillar drill?
- A. Safety boots.
 - B. Leather gloves.
 - C. Safety goggles.
 - D. Hard hat.
- 14 What **must** the first aid provision for a construction site reflect?
- A. The competence of persons employed.
 - B. The probable injuries expected.
 - C. The distance from the hospital.
 - D. The number of first aiders.
- 15 Why is it important to replace first aid supplies each time they are used?
- A. To comply with COSHH regulations.
 - B. To comply with RIDDOR requirements.
 - C. To ensure accidents can be effectively prevented.
 - D. To ensure resources are always available in case of accidents

16 What certification defines an operative's competence to erect a mobile scaffold tower?

- A. EAWR
- B. PASMA
- C. HASWA
- D. ESQCR

17 What is the **main** risk to an electrician when safe isolation is **not** carried out on a live circuit being worked on?

- A. Electric shock caused by direct contact.
- B. Electrical shock caused by indirect contact.
- C. Electric shock caused by static discharge.
- D. Electrical shock caused by electromagnetic interference.

18



What type of hazardous substance is classified by the label shown in the image?

- A. Explosive.
- B. Harmful.
- C. Toxic.
- D. Oxidising.

19 What health and safety term defines the potential exposure of a worker to loud noise?

- A. A risk.
- B. A hazard.
- C. An accident.
- D. An occurrence.

20 What is the specific hazard when cables are run in thermal insulation?

- A. Fire.
- B. Burns.
- C. Explosion.
- D. Electric shock.

- 21 What term defines the situation where an electrician is working at height off a ladder?
- A. A risk.
 - B. A hazard.
 - C. An incident.
 - D. An accident.
- 22 What practice is employed to address the potential hazard of electrical shock from trailing leads for power tools on construction sites?
- A. Use of 110 V centre tapped supplies.
 - B. Use of 230 V single phase supplies.
 - C. Use of 400 V three phase supplies.
 - D. Use of 500 V DC single phase supplies.
- 23 Which type of fire extinguisher is **best** suited for use on live electrical fires?
- A. Water.
 - B. Dry powder.
 - C. Wet chemical.
 - D. Carbon Dioxide
- 24 Which building component is **most** likely to contain asbestos?
- A. A cistern.
 - B. Loft insulation.
 - C. Cavity wall insulation.
 - D. An unvented hot water cylinder.
- 25 What is the first action that **must** be taken when suspected asbestos is identified during refurbishment work of a dwelling?
- A. Obtain appropriate PPE.
 - B. Seal the suspected material with paint.
 - C. Remove the affected area and place in bags.
 - D. Stop work immediately.

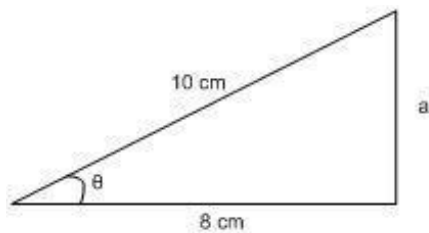
5357-003 Electrical Scientific Principles and Technologies / 2365-602 Principles of Electrical Science

Sample e-volve MC Test

1 What can $200 \text{ M } \Omega$ also be expressed as?

- A. $200 \times 10^{-9} \Omega$
- B. $200 \times 10^{-6} \Omega$
- C. $200 \times 10^6 \Omega$
- D. $200 \times 10^9 \Omega$

2



In the triangle shown, what is the length of side 'a'?

- A. 2 cm
 - B. 6 cm
 - C. 9 cm
 - D. 12 cm
- 3 What is the volume of a room that measures 3 m in width, 8 m in length, and the ceiling is 2.4 m high?
- A. 13.4 m^2
 - B. 13.4 m^3
 - C. 57.6 m^2
 - D. 57.6 m^3

4 What is the SI unit of measurement for temperature?

- A. °C (Centigrade).
- B. °F (Fahrenheit).
- C. °K (Kelvin).
- D. °T (Temps).

5 Hertz is the SI unit of measurement for what quantity?

- A. Resistivity.
- B. Frequency.
- C. Reactance.
- D. Capacitance.

6 What is the formula used to determine Impedance?

- A. $\sqrt{R^2 - X^2}$
- B. $\frac{R}{Z}$
- C. $\sqrt{R^2 + X^2}$
- D. $\frac{Z}{R}$

7

How must a voltmeter be connected to measure the potential difference across a load in a DC circuit?

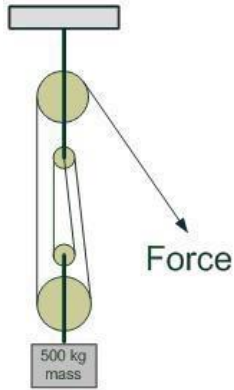
- A. In parallel with the load.
- B. In series with the load.
- C. Using an inverter.
- D. Using a rectifier.

8 Which one of the following formulae is used to determine weight?

- A. $mass \times gravity$
- B. $\frac{gravity}{force}$
- C. $gravity \times force$
- D. $\frac{gravity}{mass}$

- 9 Which device is a claw hammer being used as when extracting a nail from a piece of wood?
- A. A pulley.
 - B. A lever.
 - C. A winch.
 - D. A jack.

10



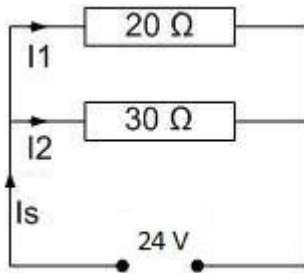
Approximately what force is needed to raise the 500 kg mass shown in the diagram?

- A. 125 N
 - B. 250 N
 - C. 500 N
 - D. 1250 N
- 11 What is stored energy also known as?
- A. Potential energy.
 - B. Kinetic energy.
 - C. Shear energy.
 - D. Idle energy.
- 12 What is the input of an electric motor with an output of 2.1 kW, that has an efficiency of 85%?
- A. 0.525 kW
 - B. 2.47 kW
 - C. 2.95 kW
 - D. 3.27 kW

- 13 What would be the approximate power required to raise a 500 kg mass to a height of 50 m in 90 seconds?
- A. 0.277 kW
 - B. 2.72 kW
 - C. 37.5 kW
 - D. 55.5 kW
- 14 What is the input of an electric motor with an output of 5 kW that has an efficiency of 80%?
- A. 4 kW.
 - B. 4.25 kW.
 - C. 6 kW.
 - D. 6.25 kW.
- 15 Which atomic part flows when current flows?
- A. Protons.
 - B. Centrons.
 - C. Neutrons.
 - D. Electrons.
- 16 Which one of the following is the best conductor?
- A. Gold.
 - B. Lead.
 - C. Brass.
 - D. Copper.
- 17 A conductor measuring 50 m in length has a resistance of 0.4 Ω . What would be its resistance if its length is reduced to 25 m?
- A. 0.2 Ω
 - B. 0.4 Ω
 - C. 0.6 Ω
 - D. 0.8 Ω

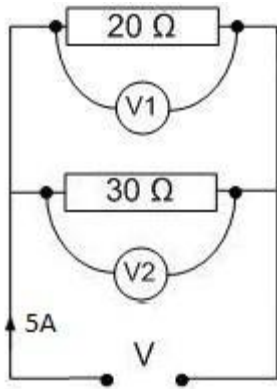
- 18 What is the length of a 4 mm^2 copper conductor having a measured resistance of 0.089Ω if the resistivity of copper is $0.0178 \mu\Omega\text{m}$?
- A. 20 m
 - B. 30 m
 - C. 40 m
 - D. 50 m

19



- What is the relationship between voltage and current across the resistors for the circuit shown?
- A. Same voltage, same current across each resistor.
 - B. Different voltage, same current across each resistor.
 - C. Same voltage, different current across each resistor.
 - D. Different voltage, different current across each resistor.
- 20 Which one of the following statements is correct for a series circuit?
- A. The voltage varies across the resistors but the current is constant.
 - B. The current varies across the resistors but the voltage is constant.
 - C. The resistance and current varies when the voltage is constant.
 - D. The voltage and current remains constant when resistance changes.

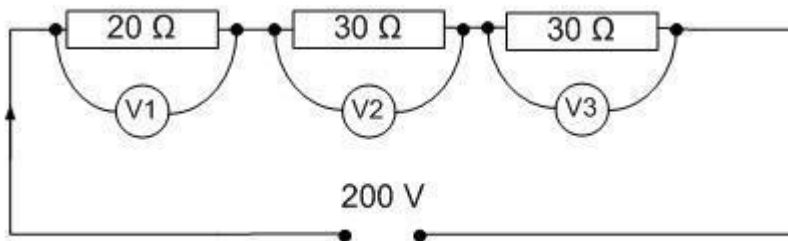
21



For the circuit shown, what would be the voltage reading of voltmeter (V_1)?

- A. 20 V
- B. 30 V
- C. 50 V
- D. 60 V

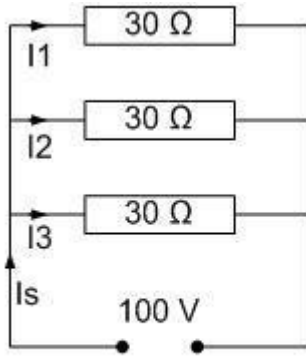
22



For the circuit shown, what would be the voltage reading of voltmeter (V_1)?

- A. 30 V
- B. 50 V
- C. 150 V
- D. 200 V

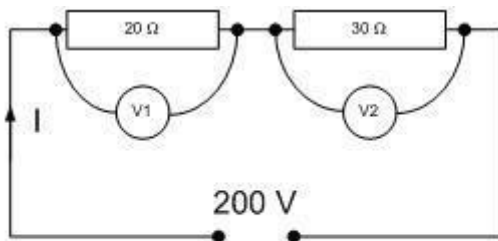
23



What would be the total supply current (I_s) for the circuit shown?

- A. 0.33 A
- B. 1.33 A
- C. 3.33 A
- D. 10.0 A

24



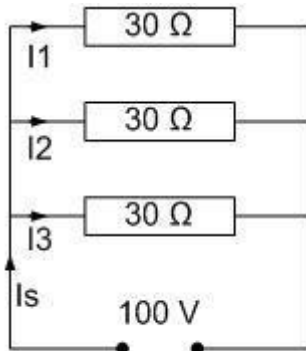
How would the current passing through the $20\ \Omega$ resistor be determined for the circuit shown?

- A. Dividing the supply voltage by $20\ \Omega$.
- B. Multiplying the supply voltage by $20\ \Omega$.
- C. It would be half the total supply current.
- D. It would be equal to the total supply current.

- 25 What would be the total circuit resistance if a parallel circuit contained five resistors all having a resistance of $50\ \Omega$?
- A. $0.1\ \Omega$
 - B. $5\ \Omega$
 - C. $10\ \Omega$
 - D. $50\ \Omega$

- 26 What would a circuit containing several resistors be classified as if the total resistance is found by adding all the resistors together?
- A. Series.
 - B. Transverse.
 - C. Parallel.
 - D. Reciprocal.

27



What is the power dissipated in the circuit shown?

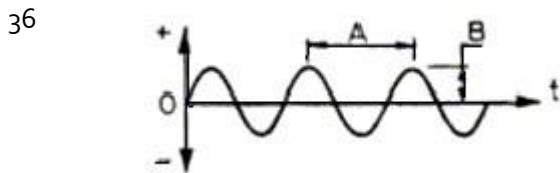
- A. $100\ \text{W}$.
- B. $300\ \text{W}$.
- C. $1\ \text{kW}$.
- D. $3\ \text{kW}$.

- 28 Voltage drop in a circuit is affected by the resistance of what cable part?
- A. The line conductor only.
 - B. The line and neutral conductors.
 - C. The line and earthing conductors.
 - D. The line, neutral and earthing conductors.
- 29 What would be the effect of placing a copper clad earth electrode into soil, close to a lead water pipe?
- A. Electrolysis.
 - B. Soil heating.
 - C. Short circuits.
 - D. Calcium build up.
- 30 What would be the effect of placing the south poles of two magnets together?
- A. The two magnets would be drawn together.
 - B. The two magnets would be pushed away from each other.
 - C. The strength of the magnets would be doubled.
 - D. The strength of the magnets would be halved.
- 31 Which unit is used to measure the strength of the magnetic field produced by a permanent magnet?
- A. Weber.
 - B. Henry.
 - C. Tesla.
 - D. Farad.
- 32 What would be the force exerted on a conductor 20 cm long, carrying a current of 2 A, when placed at right angles to a magnetic field of flux density 8 Tesla?
- A. 3.2 N
 - B. 16 N
 - C. 32 N
 - D. 48 N

- 33 What would be the effect on the magnetic field when reducing the amount of current flowing through a coil?
- A. The strength of the magnetic field will increase.
 - B. The strength of the magnetic field will decrease.
 - C. The strength of the magnetic field will vary.
 - D. The strength of the magnetic field will remain constant.

- 34 Which simple device consists of a coil of wire which is rotated within a magnetic field by an exterior force?
- A. Motor.
 - B. Rectifier.
 - C. Inverter.
 - D. Generator.

- 35 What would be the flux change in a coil that induces an EMF of 150 V and takes 10 ms for the current to fall to zero?
- A. 0.15 Wb.
 - B. 1.5 Wb.
 - C. 15 Wb.
 - D. 150 Wb.



What does the value B, indicate in the figure shown?

- A. Average value of the waveform.
 - B. Periodic time of the waveform.
 - C. RMS value of the waveform.
 - D. Peak amplitude of the waveform.
- 37 Which electronic component is used to amplify low level signals from PIR detectors, to higher levels that can trigger the alarm circuit?
- A. Thyristor.
 - B. Capacitor.
 - C. Transistor.
 - D. Resistor.

- 38 Which electronic component is used in a remote control device to pulse a pattern that a receiver recognises and responds accordingly?
- A. Zener Diode.
 - B. Photo Diode.
 - C. Thermionic Diode.
 - D. Light Emitting Diode.
- 39 Which electronic components resistance will vary significantly more than standard resistors with temperature?
- A. Thermistor.
 - B. Capacitor.
 - C. Transistor.
 - D. Inverter.
- 40 Which electronic component is a semiconductor that converts light into current?
- A. Zener Diode.
 - B. Photo Diode.
 - C. Capacitor.
 - D. Transistor.

5357-004 Understand Design and Installation Practices and Procedures

* This unit does not share content with 2365

Sample e-volve MC Test

- 1 Which document details the exact dimensions of particular luminaires?
 - A. Site Plans.
 - B. Manufacturer's data.
 - C. Wiring diagrams.
 - D. Design Specification.

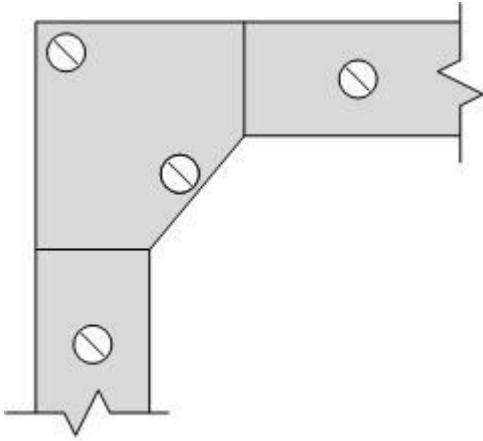
- 2 Which document is non-statutory?
 - A. IET Wiring Regulations.
 - B. Electricity Safety Quality and Continuity Regulations.
 - C. Electricity at Work Regulations.
 - D. Health and Safety at Work etc. Act.

- 3 How would a site supervisor be able to account for all persons on a site, should an evacuation happen due to a fire?
 - A. Ensure all deliveries are signed for.
 - B. Ensure all escape routes are securely locked.
 - C. Ensure all persons sign in when entering the site.
 - D. Ensure all persons park in designated bays.

- 4 What would be the **best** way to identify damage to building decorations before electrical work is undertaken?
 - A. Note the damage in the site diary.
 - B. Highlight the details on the invoice.
 - C. Take photographs after work is undertaken.
 - D. Take photographs before work is undertaken.

- 5 What is the **most** appropriate method of protecting soft furnishings from dust caused by drilling a hole into a ceiling?
- A. Vacuum clean furnishings after the work is done.
 - B. Remove furnishings and store off site.
 - C. Cover furnishings with a dustsheet.
 - D. Spray water over the area while drilling.
- 6 In which of the following **must** un-sheathed single-core insulated cable be installed?
- A. Metallic Trunking.
 - B. Metallic basket.
 - C. Metallic tray.
 - D. PVC capping.
- 7 What is the **most** appropriate cable to connect a 230 V handheld portable appliance, to a fixed wiring system?
- A. PVC covered MICC.
 - B. SPVC SWA.
 - C. Flexible cable.
 - D. Cat 6 cable.
- 8 What is an advantage of using SWA cable over flat profile cable?
- A. Cheaper to install.
 - B. No glands required.
 - C. Greater mechanical strength.
 - D. Greater flexibility.
- 9 What **must** be used on long straight runs of PVC conduit systems to avoid buckling and distortion?
- A. Crampet fixings.
 - B. Hospital saddles.
 - C. Expansion couplers.
 - D. Through boxes.

10



What type of trunking fitting is shown in the image?

- A. Internal 90° bend.
- B. External 180° bend.
- C. Flat 90° bend.
- D. Inside 180° bend.

11

What is classed as a cable containment system, suitable for un-sheathed cables?

- A. Metallic tray.
- B. Metallic basket.
- C. PVC conduit.
- D. PVC capping.

12

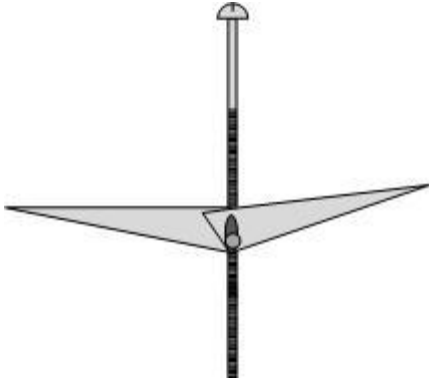
- 2 x 1.5 mm²
- 2 x 2.5 mm²
- 4 x 6 mm²

A conduit is 5 m in length and contains 2 bends. What size conduit is required for the stranded single-core cables shown in the image?

- A. 16 mm
- B. 20 mm
- C. 25 mm
- D. 32 mm

- 13 How many 6 mm² PVC single-core cables can be installed in a 100 x 75 mm trunking?
- A. 50
 - B. 100
 - C. 130
 - D. 150
- 14 Which of the following cables is **best** suited for temporary supplies in harsh locations, such as construction sites?
- A. Artic Flex.
 - B. MICC.
 - C. Flat profile twin & cpc.
 - D. Fire retardant cables.
- 15 What procedure should be followed if a power tool required for a task, is found with a damaged flex?
- A. Tape over the flex and carry out the task.
 - B. Carry out the task and report the problem afterwards.
 - C. Report the item to a supervisor and do not use the power tool.
 - D. Carry on regardless as everything is on an RCD.
- 16 What is used to ensure an accessory is level?
- A. Plumb line.
 - B. Chalk line.
 - C. Spirit level.
 - D. Laser level.
- 17 What is the **most** suitable hand tool for cutting lengths of cable tray?
- A. Hacksaw.
 - B. Cross cut saw.
 - C. Coping saw.
 - D. Keyhole saw.

18



What type of wall would the device in the image be used for?

- A. Concrete.
- B. Brick.
- C. Wooden.
- D. Plasterboard.

19



What is the conduit fixing device shown in the image?

- A. Spacer bar saddle.
- B. Distance saddle.
- C. U Clip.
- D. P Clip.

20

What is the **maximum** distance between supports for a horizontal insulating trunking, having a cross-sectional area of 800 mm²?

- A. 0.5 m
- B. 1.25 m
- C. 1.75 m
- D. 2.0 m

- 21 What **must** be installed to protect a 230 V cable that is concealed in a wall to a depth of 20 mm and runs diagonally to an accessory?
- A. A 100 mA RCD.
 - B. A plastic capping.
 - C. An earthed metal conduit.
 - D. An un-earthed metal armour.
- 22 What is the **most** suitable method of repairing a ceiling plasterboard having a hole left by a recess downlight which has been removed?
- A. Apply cement to the wall and rub down to give smooth finish.
 - B. Cut a square of white paper and staple over the hole.
 - C. Insert a similar sized piece of plasterboard with support behind and finish by skimming with plaster.
 - D. Stick small pieces of wet toilet tissue to the sides of the hole and work towards the centre until complete.
- 23 What describes an overcurrent in an otherwise healthy circuit which is caused by mis-use or abuse of the circuit loading?
- A. An overload.
 - B. An earth fault.
 - C. A short circuit.
 - D. An open circuit.
- 24 What protective device operates by both magnetic and thermal trips?
- A. BS 88-2 devices.
 - B. BS 3036 semi-enclosed devices.
 - C. BS 1362 cartridge fuses.
 - D. BS EN 60898 circuit breakers.
- 25 What is the maximum earth fault loop impedance for a 32 A Type C circuit breaker as given in the IET On-site Guide?
- A. 0.44 ohms
 - B. 0.55 ohms
 - C. 0.79 ohms
 - D. 1.38 ohms

- 26 What is the rated short circuit capacity of a BS 3036 S1A fuse as given in the IET On-site Guide?
- A. 1 kA
 - B. 2 kA
 - C. 3 kA
 - D. 4 kA
- 27 A circuit has been poorly designed for selectivity between an appliance fuse and a circuit breaker protecting the entire final circuit.
- What is the **most** likely outcome should a single fault occur on the appliance?
- A. A fault would disconnect the appliance fuse only.
 - B. A fault would cause the loss of all equipment on the circuit.
 - C. A fault would cause no loss of any equipment.
 - D. A fault would cause the entire supply system to disconnect.
- 28 What should a water heater that is fitted to a 20 litre vessel be connected to?
- A. A fused spur on a ring-final circuit.
 - B. A dedicated circuit.
 - C. A lighting circuit.
 - D. An un-fused spur on a ring-final circuit.
- 29 What condition will the circuit be for a self contained, non-maintained emergency light, in normal situations?
- A. Permanently live.
 - B. Only live during a mains failure.
 - C. Switched by a firefighter's switch.
 - D. Permanently isolated.
- 30 What provides undervoltage protection on a rotating machine in a factory?
- A. A contactor connected in the machine supply circuit.
 - B. A circuit breaker protecting the machine circuit.
 - C. An RCD fitted to the supply circuit.
 - D. A surge protective device installed at the origin of the installation.

5357-005 Understand how to Plan and Oversee Electrical Work Activities

* This unit does not share content with 2365

Sample e-volve MC Test

- 1 A worker lacks motivation and turns up on site in a bad mood. What is the **first** method for an employer to address this situation?
 - A. Issue a formal letter.
 - B. Hold an informal discussion.
 - C. Leave the situation to resolve itself.
 - D. Provide the worker with simple tasks for the day.
- 2 A large delivery of electrical materials is expected. The vehicle will block road access and neighbouring properties for up to an hour while it is unloaded.
What is the **most** appropriate method of communicating this to the neighbouring properties?
 - A. No communication is necessary.
 - B. Verbally inform the neighbours when the vehicle arrives.
 - C. Post written notes informing the neighbours in advance.
 - D. Inform the neighbours verbally when they ask what is going on.
- 3 What method would be the **most** suitable for monitoring materials expenditure and use for a large housing development?
 - A. Written notes.
 - B. Spreadsheets.
 - C. Verbal communication.
 - D. Supplier websites and catalogues.
- 4 What **best** describes the process where relevant site representatives meet to discuss and agree a suitable alternative location of equipment due to an issue?
 - A. Instruction.
 - B. Confrontation.
 - C. Observation.
 - D. Negotiation.

- 5 What would be the **most** suitable way for a company to determine the competence of an electrician with regards to health and safety awareness?
- A. Check their ECS card.
 - B. Check their Competency Scheme Card.
 - C. Check with City & Guilds for information.
 - D. Check for part P registration.
- 6 What **must** be taken into consideration when allocating work for the inspection and testing stage of a new installation in a dwelling?
- A. The operatives' level of competence.
 - B. The presence of other trades on site.
 - C. The operatives' familiarity with the site.
 - D. Test instrument calibration certification.
- 7 What will be **immediately** affected if a sub-contractor has failed to meet a planned completion date?
- A. Material costs and delivery.
 - B. Compliance with BS 7671.
 - C. The existing critical path network.
 - D. Compliance with Building Regulations.
- 8 Which document is completed in order to make a formal change to an agreed contract?
- A. Defects letters.
 - B. Variation order.
 - C. Day worksheets.
 - D. Daily diary record.
- 9 What is the **main** purpose of the visitors' book?
- A. To monitor the performance of visitors.
 - B. To provide accurate site emergency/evacuation data.
 - C. To ensure and monitor the support by local building control.
 - D. To provide car registration details in case delivery vehicles are obstructed.

- 10 What colour are 110 V BS EN 60309-2 sockets and plugs?
- A. Black.
 - B. Blue.
 - C. Red.
 - D. Yellow.
- 11 What information would be taken from the programme of works?
- A. Type of accessories to be fitted.
 - B. Size of cable to be installed.
 - C. Rating of protected devices to be used.
 - D. Length of time temporary supplies are needed.
- 12 What is the **most** important consideration when checking the suitability of equipment from the material schedule, if they are to be installed in a bathroom?
- A. Their colour.
 - B. Their dimensions.
 - C. Their ingress protection.
 - D. Their fixing locations and type.
- 13 What would be checked to see if materials received are correct following an online order?
- A. Daywork sheet.
 - B. Delivery note.
 - C. Site diary.
 - D. Variation order.
- 14 What are the best resources for identifying labour and material requirements for a major contract?
- A. Supplier's catalogues and delivery schedules.
 - B. Installation specification and programme of works.
 - C. Manufacturer's installation instructions and user guides.
 - D. Building Regulations and local building control guidance.

- 15 What would be the **most** efficient delivery location for a large drum of SWA cable to a large factory site?
- A. The main site gate.
 - B. The point of installation.
 - C. A secure storage container off site.
 - D. The contractor's main office off site.
- 16 What is the **most** suitable method for storing drums of cable on a large housing development site?
- A. Keep in individual contractor's vans.
 - B. Keep in each dwelling for use as they are required.
 - C. Keep in a secure controlled container/building centrally.
 - D. No storage required as cable should only be ordered as and when required.

5357-012 Understand Inspection, Testing and Commissioning / 2365-624 Electrical Installations: Inspection, Testing and Commissioning

Sample e-volve MC Test

- 1 Who, under the Electricity at Work Regulations, should the inspector ensure the safety of?
 - A. Themselves.
 - B. The client and others.
 - C. Both themselves and others.
 - D. Staff in other buildings owned by the client.

- 2 Where is the correct location to test that a lighting circuit is isolated and safe to work on?
 - A. At the supply intake position.
 - B. On the supply side of the circuit protective device.
 - C. At any convenient luminaire.
 - D. On the load side of the circuit protective device.

- 3 How many keys **must** be available for a lock that is used to securely isolate a protective device?
 - A. 1.
 - B. 2.
 - C. 3.
 - D. 4.

- 4 Why is safe isolation carried out?
 - A. To allow earth fault loop impedance testing.
 - B. To allow phase sequencing testing.
 - C. To stop RCDs operating when testing.
 - D. To stop contact with live parts.

- 5 Testing is to be carried out at the origin of a large, unoccupied building which has a standby generator. What must be done before tests are carried out?
- A. Check the operation of the standby supply.
 - B. All main protective bonding must be disconnected.
 - C. Temporary lighting must be installed for all escape routes.
 - D. The standby supplies must be isolated to ensure safe testing.
- 6 The implications of not carrying out a safe isolation could lead to prosecution. Which statutory legislation would be used for this purpose?
- A. COSHH.
 - B. ESCQR.
 - C. EAWR.
 - D. BS 7671.
- 7 Which document is statutory?
- A. BS 7671.
 - B. EAWR.
 - C. GN3.
 - D. GS38.
- 8 Which publication does **not** include model forms that can be used for certification and reporting purposes?
- A. HSE Guidance Note GS38.
 - B. The IET On-Site Guide.
 - C. IET Guidance Note 3.
 - D. BS 7671.
- 9 Which test would **not** apply to an electrical installation forming part of a TN-S system?
- A. Earth fault loop impedance.
 - B. Insulation resistance.
 - C. Earth electrode resistance.
 - D. Functional tests.

- 10 Which test could also indicate the supply polarity?
- A. External earth fault loop impedance.
 - B. Continuity of protective conductors.
 - C. Insulation resistance.
 - D. Continuity of ring final circuits.
- 11 What is the unit of measurement for recording continuity of protective conductor results?
- A. $m\Omega$.
 - B. Ω .
 - C. $k\Omega$.
 - D. $M\Omega$.
- 12 What unit of measurement must an insulation resistance tester indicate?
- A. $m\Omega$.
 - B. Ω .
 - C. $k\Omega$.
 - D. $M\Omega$.
- 13 What can be done in order to ensure that instrument readings are accurate?
- A. Check that serial numbers are present.
 - B. Ensure that instruments have BS numbers.
 - C. Ensure that the test lead fuses are removed.
 - D. Regularly check instruments against known values.
- 14 What does HSE guidance recommend for detachable test leads used on a single instrument?
- A. They must be over 3 m long.
 - B. They must be at least 2.5 mm^2 csa.
 - C. They must only have single insulation.
 - D. They must be different colours.
- 15 What would not be a requirement before using test instruments?
- A. Checking for damage before use.
 - B. Recording details of the instrument supplier.
 - C. Ensuring the instrument functions correctly.
 - D. Ensuring the supply is isolated before commencing dead tests.

- 16 What is the most likely reason for continuity of protective bonding conductor results being higher than expected?
- A. The lead resistance has not been subtracted from the result.
 - B. The lead resistance has not been added to the result.
 - C. The leads are too short to carry out the test correctly.
 - D. The leads are too long to carry out the test correctly.
- 17 What could be the reason for obtaining a satisfactory result, even if the conductor is broken, when testing the continuity of a main protective bonding conductor which is not disconnected at either end?
- A. Using an un-calibrated instrument.
 - B. The instrument is set on the wrong scale.
 - C. The test leads being too long.
 - D. The presence of parallel paths.
- 18 Which value would be obtained when a continuity of circuit protective conductors test, is measured at the furthest point on a radial circuit, using a temporary link between line and cpc at the distribution board?
- A. R_1
 - B. R_2
 - C. $(R_1 + R_2)$.
 - D. $(R_1 - R_2)$.
- 19 Which one of the following is **not** a reason for conducting a ring final circuit continuity test?
- A. To check that the cable insulation is sufficient.
 - B. To check the correct connection of each item on the circuit.
 - C. To check the circuit is in the form of a ring with no interconnections.
 - D. To check the continuity of the line, neutral and protective conductors.
- 20 What would be indicated by the readings below, during a test of ring final circuit continuity?
- Line – Line loop reading = 0.1Ω
- Neutral – Neutral loop reading = 0.1Ω
- cpc – cpc loop reading = 0.167Ω
- A. The cpc is a shorter length than the live conductors.
 - B. The cpc is the same csa as the live conductors.
 - C. The cpc is a larger csa than the live conductors.
 - D. The cpc is a smaller csa than the live conductors.

- 21 What would be the minimum acceptable value of insulation resistance for a 230 V lighting circuit?
- A. 0.5 M Ω .
 - B. 1 M Ω .
 - C. 2 M Ω .
 - D. 4 M Ω .
- 22 What would be the insulation resistance of cable, when the length is doubled, if the original value is 10 M Ω ?
- A. 2.5 M Ω .
 - B. 5 M Ω .
 - C. 10 M Ω .
 - D. 20 M Ω .
- 23 What should be confirmed during a test for polarity?
- A. Continuity of line conductors.
 - B. Continuity of protective conductors.
 - C. Outer metal contacts of ES lamps are connected to the line conductor.
 - D. Single-pole switches and devices are connected in the line conductor only.
- 24 Which instrument should be used for testing polarity of the incoming supply to an installation?
- A. A low resistance ohmmeter.
 - B. An insulation resistance tester.
 - C. An approved voltage indicator.
 - D. An earth electrode resistance tester.
- 25 The BS 7671 maximum tabulated earth fault loop impedance value for a protective device is 2.73 Ω . What is the **maximum** measured value of earth fault loop impedance permitted for a circuit protected by this device?
- A. 3.41 Ω .
 - B. 2.73 Ω .
 - C. 2.18 Ω .
 - D. 2.04 Ω .

- 26 What would be recorded as I_{pf} when PEFC and PSCC at the origin of a three-phase installation are tested using a single-phase instrument, and values of 0.9 kA and 1.5 kA were measured respectively?
- A. 0.9 kA.
 - B. 1.5 kA.
 - C. 2.4 kA.
 - D. 3.0 kA.
- 27 What reading would be recorded on the electrical installation certificate if the prospective fault current for a single-phase electrical installation is measured between line to earth and line to neutral?
- A. The line to earth value doubled.
 - B. The line to neutral value doubled.
 - C. The lower of the two values.
 - D. The higher of the two values.
- 28 A test of prospective fault current at the origin of an installation has been carried out. What should the result be compared with?
- A. The breaking capacity of the main protective device.
 - B. The breaking capacity of the main isolator.
 - C. The nominal current rating of the main protective device.
 - D. The nominal current rating of the main isolator.
- 29 Where is the correct location to connect test leads, within an installation, in order to test an RCD?
- A. As close as possible to the RCD on the supply side.
 - B. At a suitably safe location on the supply side of the RCD.
 - C. As far away as possible from the RCD on the supply side.
 - D. At a suitably safe location on the load side of the RCD.
- 30 What could not be verified by the use of a rotating disc type instrument?
- A. Correct labelling/identification of plain conductors.
 - B. Phase sequence at the origin of the supply to an installation.
 - C. Disconnection of protective devices with the specified times.
 - D. Direction of rotation at the supply terminals of a three phase motor.

- 31 Which one of the following supplies would not require phase sequence testing?
- A. Two-wire TN-C-S.
 - B. Three-wire TN-S.
 - C. Four-wire TN-S.
 - D. Four-wire TN-C-S.
- 32 What is the purpose of operating the integral test button of an RCD?
- A. To confirm the function of the mechanical parts.
 - B. To ensure it disconnects at the specified fault currents.
 - C. To isolate the RCD prior to carrying out instrument tests.
 - D. To reset the RCD following the required instrument tests.
- 33 Who should be provided with the original copies of test documentation upon completion of a rewire of a rented domestic property?
- A. The client.
 - B. The tenant.
 - C. The local authority.
 - D. The insurance company.
- 34 Which document should the customer be provided with after the installation of a new shower circuit?
- A. An Electrical Installation Certificate.
 - B. An Electrical Installation Condition Report.
 - C. A Minor Electrical Installation Works Certificate.
 - D. A copy of the test equipment calibration certificate.
- 35 What are the options, when filling in the boxes on a Schedule of Inspection, for a new installation?
- A. ✓ : X : N/A : LIM.
 - B. ✓ : X : N/A.
 - C. ✓ : X : LIM.
 - D. ✓ : N/A.

5357-014 Understand Fault Diagnosis and Rectification / 2365-623 Electrical installations: fault diagnosis and rectification

Sample e-volve MC Test

- 1 What is the **most** appropriate method to protect against electric shock when carrying out fault diagnosis work?
 - A. Comply with COSHH.
 - B. Comply with the WEEE regulations.
 - C. Comply with the EaWR 1989.
 - D. Comply with ESQCR 2002.

- 2 Why would a method statement be used by an experienced operative before undertaking work on an installation to diagnose a fault?
 - A. To reduce the cost implications of the work to be undertaken.
 - B. Ensure effective billing of the work procedure or process.
 - C. Ensure Health and Safety requirements are considered.
 - D. To monitor customer satisfaction for trade reviews.

- 3 Which standard **must** test leads comply with in order to help avoid electric shock when undertaking fault finding and diagnosis work?
 - A. GN3
 - B. BS 7671
 - C. GS38
 - D. BS 3036

- 4 Which document should be completed when replacing an existing faulty fan isolator switch?
 - A. An Electrical Installation Certificate.
 - B. A Condition Report Inspection Schedule.
 - C. An Electrical Installation Condition Report.
 - D. A Minor Electrical Installation Works Certificate.

- 5 Who would an operative need to keep informed of serious faults found on the lighting circuits in a fully functioning commercial unit?
- A. Manufacturers of the test instruments.
 - B. Specialist equipment manufacturers.
 - C. The Health and Safety Executive.
 - D. The clients or their representative.
- 6 A client has reported that a number of space heaters have stopped working following extensive use during a cold spell. Which of the following items would be the **most** likely to be checked during testing for fault diagnosis purposes?
- A. Prospective short circuit current.
 - B. External earth fault loop impedance.
 - C. Phase sequencing and insulation resistance.
 - D. Circuit supply voltage and protective device status.
- 7 What is the **most** likely outcome following a small leakage between neutral and earth due to water ingress in the connections of a luminaire?
- A. High earth fault currents causing the main DNO fuse to operate.
 - B. Phase sequencing becoming reversed causing machinery faults.
 - C. High short circuit currents causing circuit fuses to operate.
 - D. Residual current flow to earth causing the operation of an RCD.
- 8 What is the **most** likely reason for the sound of arcing within a contactor, controlling heaters, each time the load is on and running?
- A. A loose connection.
 - B. A transient overvoltage.
 - C. A low resistance joint.
 - D. A dead short in the circuit.
- 9 Where is a short circuit in a cable most likely to be located?
- A. Where the containment has mechanical damage.
 - B. An over tightened termination in an accessory.
 - C. At the joint on the top of the circuit breaker.
 - D. Where ambient temperature decreases.

- 10 What fault would an experienced operative suspect if the final socket-outlet on a radial circuit was not operating but the rest of the outlets on the circuit were?
- A. Open circuit at the origin of the circuit.
 - B. Short circuit at the origin of the circuit.
 - C. Open circuit at the final socket-outlet on the circuit.
 - D. Short circuit at the final socket-outlet on the circuit.
- 11 What is the most likely reason for 15 A re-wireable fuse, protecting a radial socket outlet circuit that is reported to 'blow every so often'?
- A. Transient overvoltage.
 - B. Open circuit in the line.
 - C. Occasional overloading.
 - D. Poor metering at the intake.
- 12 What precautions would an inspector need to consider when undertaking fault diagnosis work to stairway lighting, in an occupied multi-storey building that has back up supplies?
- A. Ensure that the emergency lights are functioning correctly.
 - B. Ensure the risk assessments are completed and followed.
 - C. Ensure the standby generators are connected to the DNO supply.
 - D. Ensure that all access equipment is non-metallic and tagged as 'safe'.
- 13 Which one of the following is the most likely test that will cause damage to sensitive equipment when testing to identify faults within an installation?
- A. A continuity of protective conductors test.
 - B. An earth fault loop impedance test.
 - C. A prospective fault current test.
 - D. An Insulation resistance test.
- 14 What is the main risk when an operative undertakes live fault diagnosis work on an old piece of equipment containing electronic components?
- A. Noxious fumes.
 - B. Electric shock.
 - C. That RCD testing may not be suitable.
 - D. That continuity testing may cause damage.

- 15 Why is it important to have a logical sequence in respect of the stages of fault diagnosis and correction?
- A. To ensure compliance with the EaWR 1989.
 - B. To avoid inconvenience to other contractors.
 - C. To ensure compliance with BS 7671.
 - D. To avoid wasting time and effort.
- 16 At what minimum voltage must an operative consider the use of GS 38 test leads?
- A. Between 4 V and 24 V DC.
 - B. < 50 V AC and > 120 V DC.
 - C. High voltage only.
 - D. > 50 V AC and > 120 V DC.
- 17 Which one of the following instruments is most appropriate when verifying the isolation of a three-phase AC supply to a motor?
- A. A clamp meter.
 - B. A phase rotation tester.
 - C. A loop / PSC tester compliant to GS 38.
 - D. An approved voltage indicator to GS 38.
- 18 What is the correct unit that would be displayed on an RCD tester when confirming compliance with additional protection?
- A. mA
 - B. $I_{\Delta N}$
 - C. ms
 - D. $m\Omega$
- 19 What is the **most** appropriate method of finding the location of an open circuit in the cpc of a radial socket-outlet circuit supplying a number outlets?
- A. Using a prospective earth fault test at the end of the circuit.
 - B. Using an earth fault loop impedance tester at the origin.
 - C. Using a continuity tester at the mid-point of the circuit.
 - D. Using an insulation resistance tester on the supply to the circuit.

- 20 What type of circuit would have a **minimum** acceptable insulation resistance value of $0.5 \text{ M}\Omega$ between live conductors?
- A. PELV.
 - B. FELV.
 - C. Reduced-Low voltage.
 - D. Low voltage.
- 21 What would be the approximate voltage drop on a 35 m long radial circuit that has a combined live conductor resistance of $0.54 \text{ }\Omega$ at $20 \text{ }^\circ\text{C}$, and a load current of 16 A?
- A. 35.54 V
 - B. 18.91 V
 - C. 10.36 V
 - D. 4.64 V
- 22 What is the most significant factor to consider when needing to replace a DOL starter switch on an old lathe in a small workshop?
- A. Ability to test the old parts.
 - B. Accessibility of old test data.
 - C. Provision of temporary supplies.
 - D. Availability of replacement parts.
- 23 What is the most significant factor when deciding upon whether to replace or repair a faulty component on a production line in a meat packing factory with a 24 hour, 7 day week shift pattern during the fault finding process?
- A. Supply earthing arrangements.
 - B. Access to welfare facilities.
 - C. Packing staff availability.
 - D. Loss of production.
- 24 Which one of the following is the main consideration when carrying out major fault diagnosis work in the freezer section in a supermarket?
- A. Emergency lighting and access equipment.
 - B. The cost of the replacement equipment.
 - C. Suitable high visibility and warm clothing.
 - D. Temporary power supplies for the freezers.

- 25 What is the main consideration after fault diagnosis and rectification work has been undertaken in a small 10 year old commercial installation?
- A. The designer has signed the original certificate.
 - B. Access to and size of the installation.
 - C. All diagnosis is undertaken out of hours.
 - D. All repairs are correctly certificated.
- 26 What testing must the home owner be encouraged to undertake quarterly, following the rectification of a fault on an RCD protecting a socket-outlet rated at 13 A for outdoor use?
- A. Earth fault loop impedance.
 - B. Insulation resistance.
 - C. Electrical separation.
 - D. Functional tests.
- 27 What test result would an experienced operative be looking for, when verifying continuity, following the successful replacement of a short main protective bonding conductor to metallic gas pipe within an installation due to damage?
- A. $< 1 \text{ k}\Omega$ but $> 1000 \Omega$
 - B. $> 1 \text{ k}\Omega$ but $< 1 \text{ M}\Omega$
 - C. $< 1 \text{ k}\Omega$ but $> 1 \Omega$
 - D. $> 10 \text{ m}\Omega$ but $< 1 \Omega$
- 28 Which test instrument setting would be used to test an RCD for Additional Protection?
- A. $0.5 \times I_{\Delta N}$
 - B. $1 \times I_{\Delta N}$
 - C. $2 \times I_{\Delta N}$
 - D. $5 \times I_{\Delta N}$
- 29 What is the correct symbol to verify on a data plate when checking to see if a new three-phase piece of equipment is compatible for supply voltage before it is installed?
- A. MV
 - B. mV
 - C. U_0
 - D. U

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Which one of the following regulations **must** be considered when disposing of compact fluorescent lamps?

A. RiDDOR.

B. COSHH.

C. WEEE.

D. EaWR.