Periodic Inspection and Testing of Electrical Installations – Sample Test (2391-051)

Version 1.3 – July 2018

Version and date	Change detail	Section
1.3 **July 2018**	• **Modified questions/answers to suit BS 7671:2018**	All

Candidate	Name	**Date**	DD/MM/YY

1 What would be the **correct** procedure to confirm that the existing electrical installation in a dwelling is suitable for the additional wiring of an extension?

a) A visual inspection of the wiring and condition of the accessories.
b) A full review of the original electrical installation certificate.
c) Certification of the additional wiring on completion of the extension.
d) A periodic inspection and test of the existing installation.

Response: _____

2 What is the purpose of a periodic inspection and test relating to the safety of the building?

a) There is no risk of electric shock and burns.
b) There is no risk of fire caused by the electrical installation.
c) That the electrical installation is not damaged.
d) That there are no defects or non-compliances present.

Response: _____

3 What is the **minimum** level of IP protection for the opening shown as Item A in Figure 1?

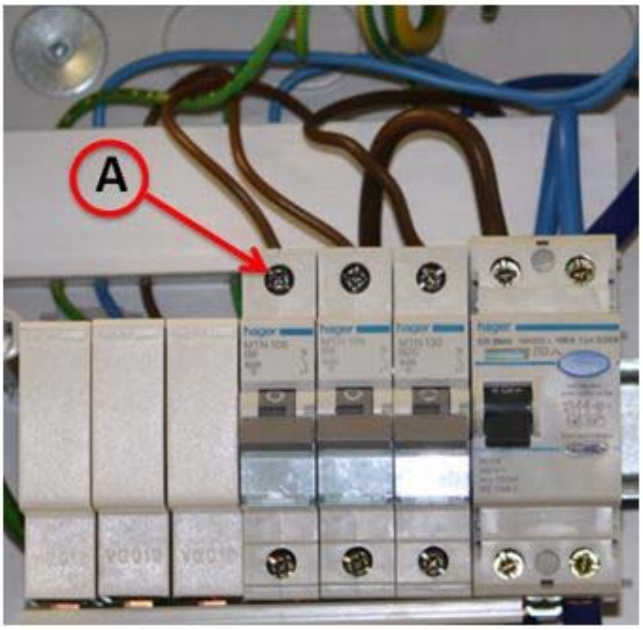

Figure 1

a) IP4X
b) IPX4
c) IP2X
d) IPX2

Response: _____

4 What is the **minimum** level of IP protection for the accessible top surface of a consumer unit?

a) IP4X
b) IPX4
c) IP2X
d) IPX2

Response: _____

5 Which publication gives detailed information for carrying out testing of electrical installations?

a) HSE GS 38
b) IET Guidance Note 3
c) IET Guidance note 1
d) HS(G)141

Response: _____

6 What would be agreed with the client and recorded as a limitation for a periodic inspection and test?

a) No insulation resistance testing between live conductors to be carried out.
b) The installation can be isolated and a full range of tests to be carried out.
c) The finalised report is to be provided to the client electronically.
d) Only calibrated test instruments are to be used.

Response: _____

7 Which statutory document includes the requirements for working on live conductors?

a) The Electricity Safety Quality and Continuity Regulations.
b) The Construction (Design and Management) Regulations.
c) The Health and Safety at Work Act.
d) The Electricity at Work Regulations.

Response: _____

8 What action should the inspector take, **both** before and after testing, to confirm isolation of the supply?

a) Switch the main isolator on and off.
b) Lock the main switch on the open position.
c) Confirm the operation of the approved voltage indicator.
d) Attach a warning label at the isolator stating 'do not switch on'.

Response: _____

9 Questions 9 to 11 relate to the following scenario.

An inspection is to be carried out at the termination of the circuit conductors inside a terminal box, as shown in Figure 2.

Which human sense is **best** used to confirm the terminals are suitably tightened?

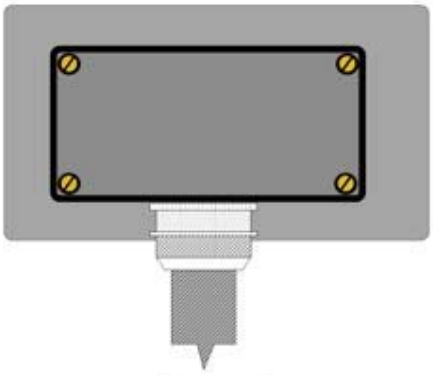

Figure 2

a) Touch.
b) Sight.
c) Smell.
d) Hearing.

Response: _____

10 Questions 9 to 11 relate to the following scenario.

An inspection is to be carried out at the termination of the circuit conductors inside a terminal box, as shown in Figure 2.

What is confirmed when inspecting the conductor insulation?

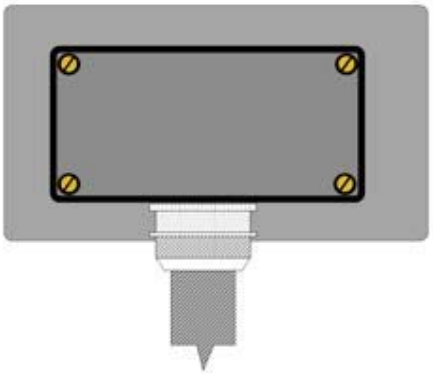

Figure 2

a) Suitable csa.
b) Correctly identified.
c) Terminals are tight.
d) Contained in the terminals.

Response: _____

11 Questions 9 to 11 relate to the following scenario.

An inspection is to be carried out at the termination of the circuit conductors inside a terminal box, as shown in Figure 2.

Which classification code would be given on the Schedule of Inspections for the situation shown in Figure 3?

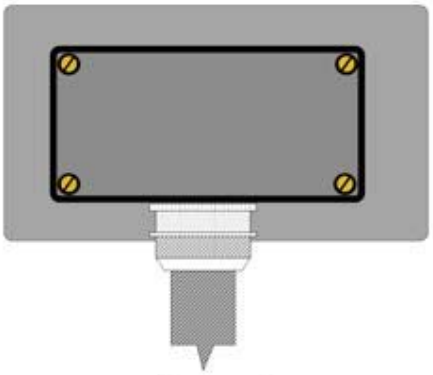

Figure 2

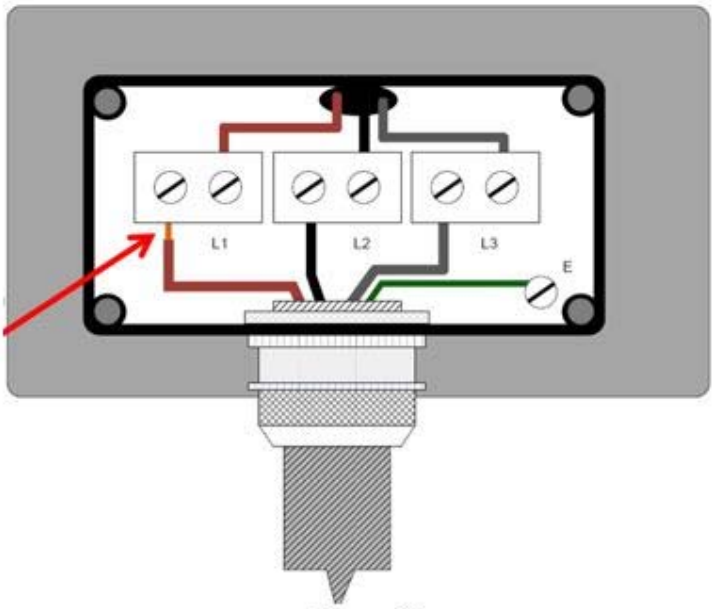

Figure 3

a) C1
b) C2
c) N/V
d) FI

Response: _____

12 Which classification code indicates that there is a non-compliance which is identified as 'improvement recommended'?

a) C1
b) C2
c) C3
d) FI

Response: _____

13 Which human senses would be **best** used to determine excess arcing at a contactor during a walk around survey?

a) Touch and smell.
b) Sight and hearing.
c) Smell and sight.
d) Hearing and smell.

Response: _____

14 Questions 14 to 17 relate to the following scenario.

A test is to be carried out to confirm the continuity of the main protective bonding conductor to the metallic water installation pipework in a commercial premises.

What is the risk if the installation is not safely isolated for this test?

a) Poor performance of connected equipment.
b) Electric shock from different potentials.
c) Possible loss of computer data.
d) Tripping hazards from the test method.

Response: _____

15 Questions 14 to 17 relate to the following scenario.

A test is to be carried out to confirm the continuity of the main protective bonding conductor to the metallic water installation pipework in a commercial premises.

What is the purpose of the test of continuity of main protective bonding conductors?

a) To confirm extraneous conductive parts are connected to the MET.
b) To confirm there is a low earth return path for fault current.
c) To confirm exposed conductive parts are connected to the MET.
d) To confirm that a high current will flow in the event of an earth fault.

Response: _____

16 Questions 14 to 17 relate to the following scenario.

A test is to be carried out to confirm the continuity of the main protective bonding conductor to the metallic water installation pipework in a commercial premises.

What important check must be made with the instrument leads before a reading is taken?

a) Leads have a 3 mm exposed tip.
b) Leads are a minimum 10 mm^2.
c) Leads are nulled or zeroed.
d) Leads are fitted with finger guards.

Response: _____

17 Questions 14 to 17 relate to the following scenario.

A test is to be carried out to confirm the continuity of the main protective bonding conductor to the water installation pipework in a commercial premises.

Which test method is used for this test?

a) Earth fault loop impedance.
b) Linked $R_1 + R_2$ test.
c) Long lead test.
d) $Z_s - Z_e$.

Response: _____

18 A 10 mm^2 main protective bonding conductor is 37.5 m in length.

What is the expected measured resistance when testing the conductor?

a) 6.86 Ω
b) 0.70 Ω
c) 0.08 Ω
d) 0.07 Ω

Response: _____

19 What is the **most** likely cause of the measured value being much higher than the calculated value?

a) Heavy load on the installation.
b) Failure to null the test leads.
c) Higher than normal ambient temperature.
d) Leakage current from computer equipment.

Response: _____

20 Questions 20 to 23 apply to the following scenario.

An earth fault loop impedance test is to be carried out on a radial circuit to the local isolator, as shown in figure 4.

What **must** the inspector confirm before the test can be undertaken?

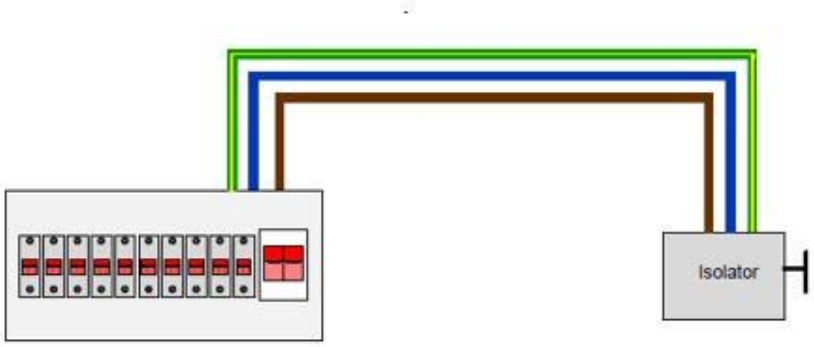

Figure 4

a) The cpc is disconnected from the MET and the main protective bonding is disconnected.
b) The cpc is connected to MET and the main protective bonding is disconnected.
c) The cpc is connected and all other earthing and bonding disconnected.
d) The cpc and all other earthing and bonding is connected.

Response: _____

21 Questions 20 to 23 apply to the following scenario.

An earth fault loop impedance test is to be carried out on a radial circuit to the local isolator, as shown in figure 4.

Why can this earth fault loop impedance test be carried out before a test for insulation resistance?

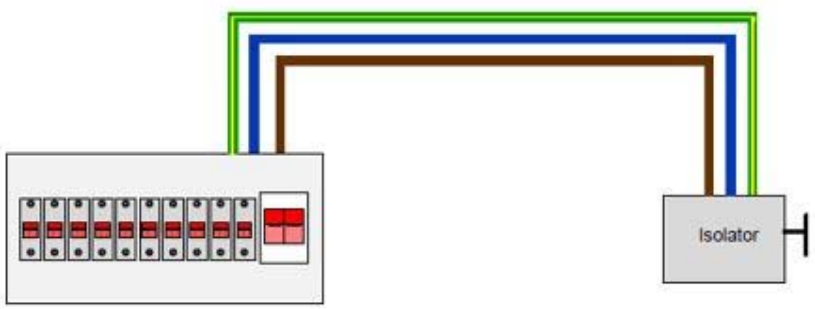

Figure 4

a) Because the installation is already energised and in service.
b) To maximise inconvenience for the users of the installation.
c) Dead tests are not required at a periodic inspection and test.
d) The test will confirm there is no degradation of the insulation.

Response: _____

22 Questions 20 to 23 apply to the following scenario.

An earth fault loop impedance test is to be carried out on a radial circuit to the local isolator, as shown in figure 4.

Why do the test leads used for this test have to comply with GS 38?

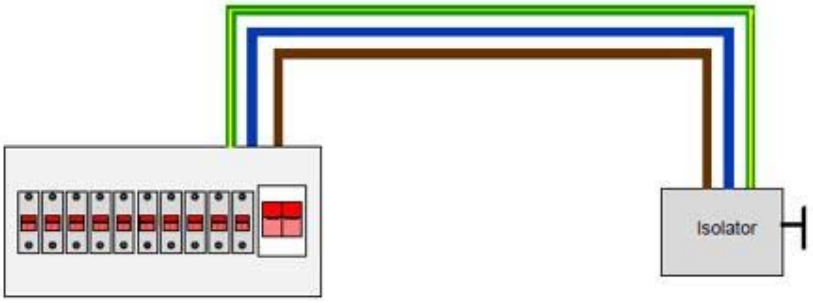

Figure 4

a) GS 38 is a statutory document.
b) To ensure the test results are accurate.
c) The test is at a voltage above 50 V AC.
d) Leads to GS 38 are required for all tests.

Response: _____

23 Questions 20 to 23 apply to the following scenario.

An earth fault loop impedance test is to be carried out on a radial circuit to the local isolator, as shown in figure 4.

Why would a test to confirm continuity of cpc be unnecessary once the earth fault loop impedance test is completed?

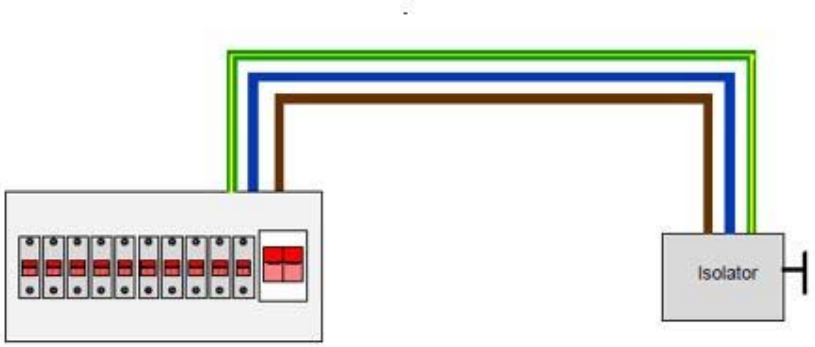

Figure 4

a) Reduces the time taken for the periodic inspection.
b) Earth fault loop impedance can confirm continuity of cpc.
c) Continuity can be proved during insulation resistance testing.
d) Dead tests are not required at a periodic inspection and test.

Response: _____

24 A distribution circuit is protected by a BS 88-3 fuse rated 32 A.

What is the **maximum** acceptable measured earth fault loop impedance for this circuit?

a) 1.28 Ω
b) 1.60 Ω
c) 1.70 Ω
d) 1.92 Ω

Response: _____

25 What is confirmed by an earth fault loop impedance test on a radial power circuit?

a) The line and cpc conductors are the right csa.
b) Fault protection is provided for the whole installation.
c) The circuit breaker can disconnect the maximum prospective fault current.
d) Automatic disconnection of supply will be achieved in the event of a fault.

Response: _____

26 Questions 26 to 29 relate to the following scenario

Voltage drop of a single-phase distribution circuit supplying a power distribution board in a remote building is to be verified as part of the periodic inspection and testing within a workshop complex. The installation forms part of a public 400/230 V TN-S system.

The circuit has a measured R_1+R_n value of 0.15 Ω and an I_b of 60 A. The circuit protective device has an I_n of 80 A, see Figure 5.

What is the **maximum** acceptable voltage drop for this distribution circuit if the highest circuit voltage drop on DB-3B is 5.0 V?

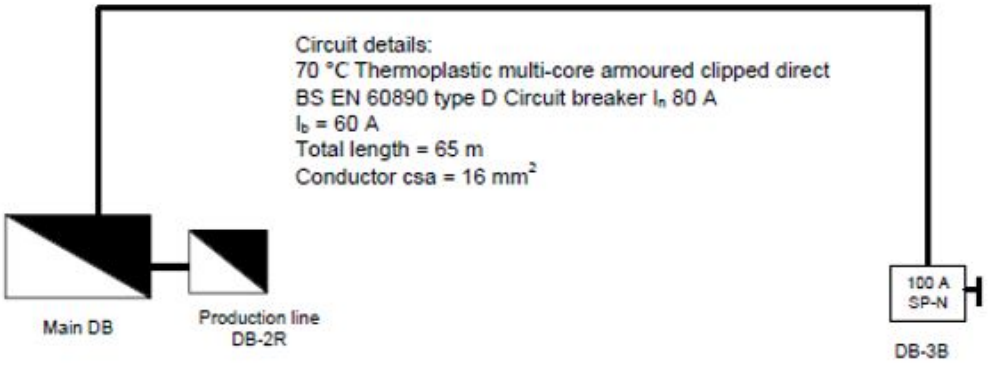

Figure 5

a) 11.5 V
b) 6.9 V
c) 6.5 V
d) 1.5 V

Response: _____

27 Questions 26 to 29 relate to the following scenario

Voltage drop of a single-phase distribution circuit supplying a power distribution board in a remote building is to be verified as part of the periodic inspection and testing within a workshop complex. The installation forms part of a public 400/230 V TN-S system.

The circuit has a measured R_1+R_n value of 0.15 Ω and an I_b of 60 A. The circuit protective device has an I_n of 80 A, see Figure 5.

Which are the cable characteristics that affect voltage drop?

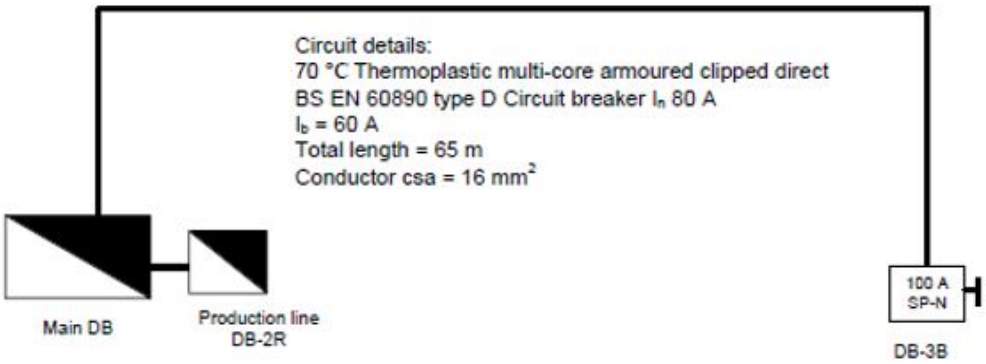

Figure 5

a) Length and type of insulation.
b) Length and cross-sectional area
c) Type of insulation and room temperature.
d) Ambient temperature and csa.

Response: _____

28 Questions 26 to 29 relate to the following scenario.

Voltage drop of a single-phase distribution circuit supplying a power distribution board in a remote building is to be verified as part of the periodic inspection and testing within a workshop complex. The installation forms part of a public 400/230 V TN-S system.

The circuit has a measured R_1+R_n value of 0.15 Ω and an I_b of 60 A.
The circuit protective device has an I_n of 80 A.

What is the voltage drop for this distribution circuit?

a) 10.8 V
b) 9.0 V
c) 7.2 V
d) 3.8 V

Response: _____

29 Questions 26 to 29 relate to the following scenario.

Voltage drop of a single-phase distribution circuit supplying a power distribution board in a remote building is to be verified as part of the periodic inspection and testing within a workshop complex. The installation forms part of a public 400/230 V TN-S system.

The circuit has a measured R_1+R_n value of 0.15 Ω and an I_b of 60 A.
The circuit protective device has an I_n of 80 A, see Figure 5.

Why is the test to confirm voltage drop carried out?

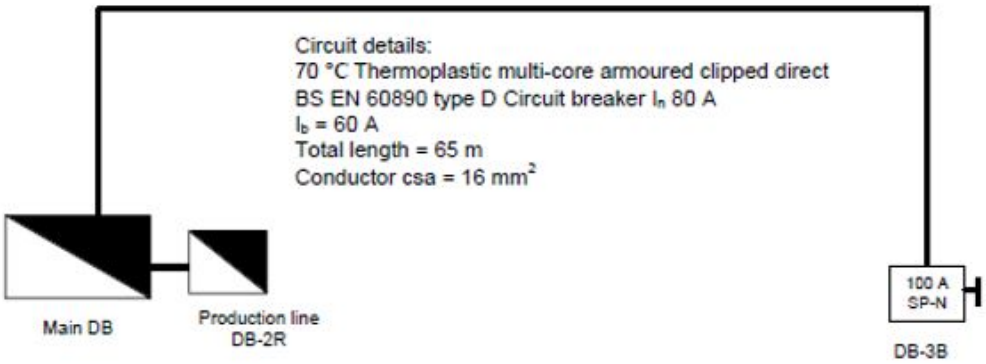

Figure 5

a) To confirm the cable operates at its maximum temperature.
b) To confirm correct operation of the protective device.
c) To confirm the circuits function as they are intended.
d) To confirm the circuit will not be overloaded.

Response: _____

30 Questions 30 to 34 relate to the following scenario.

Testing of the RCDs is to be undertaken on the installation which forms part of a TT system, as shown in Figure 6.

What is confirmed by testing the 100 mA RCD?

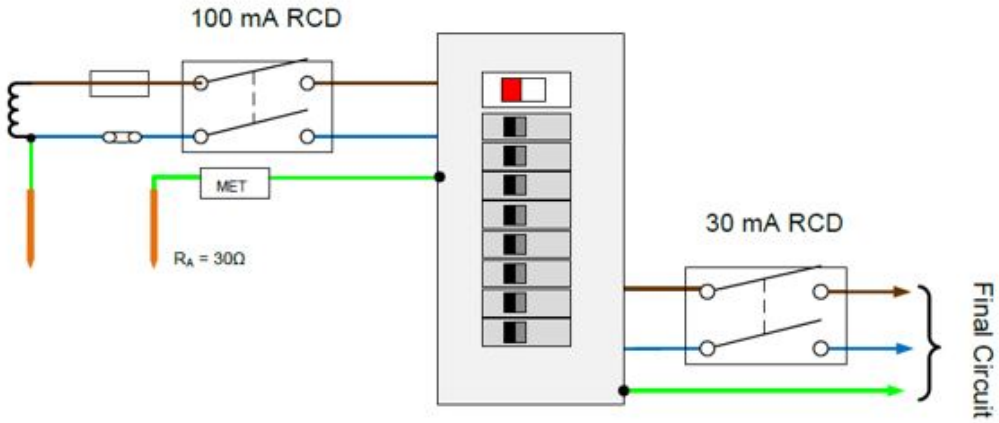

Figure 6

a) The RCD can provide overload protection.

b) That fault protection is provided for the installation.
c) The RCD can disconnect the short circuit current.
d) That additional protection is provided for the installation.

Response: _____

31 Questions 30 to 34 relate to the following scenario.

Testing of the RCDs is to be undertaken on the installation which forms part of a TT system, as shown in Figure 6.

What **must** be agreed with the users of the installation before the test of the 100 mA RCD can be carried out?

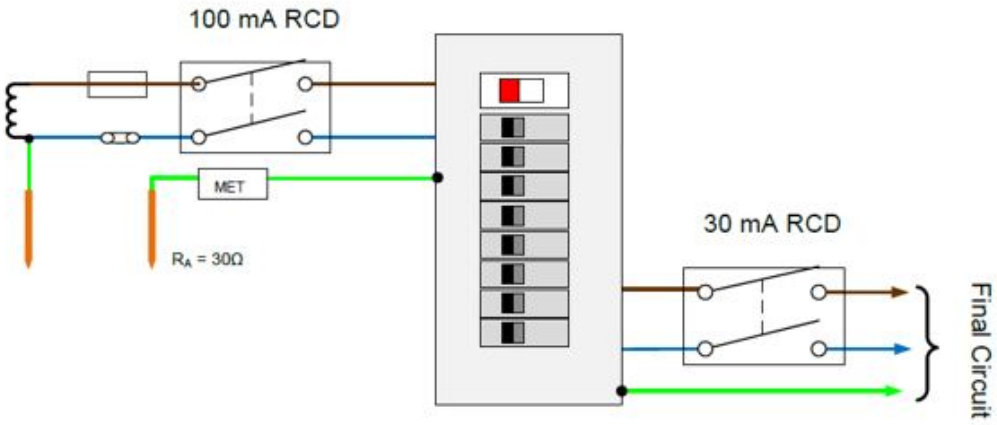

Figure 6

a) The test of protective bonding continuity is completed first.
b) The evacuation of all personnel from the building.
c) The earthing conductor can be disconnected.
d) The installation can be completely isolated.

Response: _____

32 Questions 30 to 34 relate to the following scenario.

Testing of the RCDs is to be undertaken on the installation which forms part of a TT system, as shown in Figure 6.

What is the **maximum** test current to be applied by the RCD tester, when verifying that the RCD at the origin meets disconnection times?

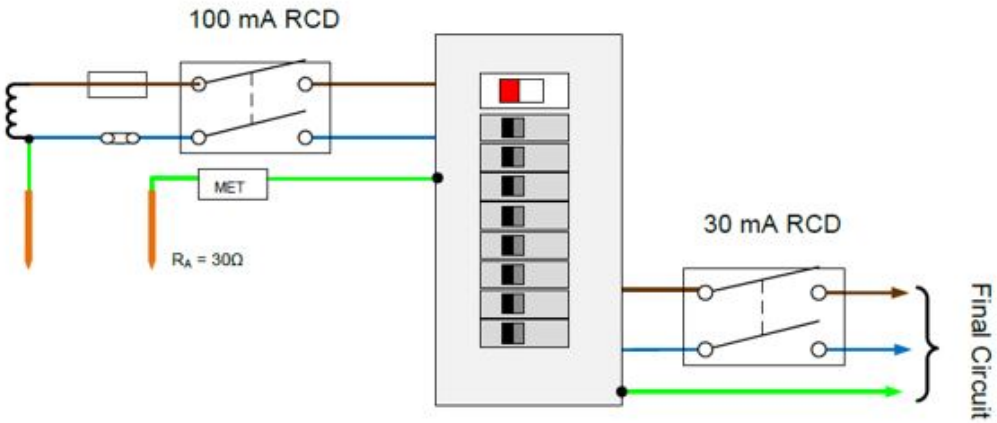

Figure 6

a) 400 mA
b) 300 mA
c) 100 mA
d) 50 mA

Response: _____

33 Questions 30 to 34 relate to the following scenario.

Testing of the RCDs is to be undertaken on the installation which forms part of a TT system, as shown in Figure 6.

When testing the 30 mA RCD at 5 I_n the RCD did not operate because the 100 mA RCD at the origin of the installation tripped out.

What is the most likely reason for this RCD tripping?

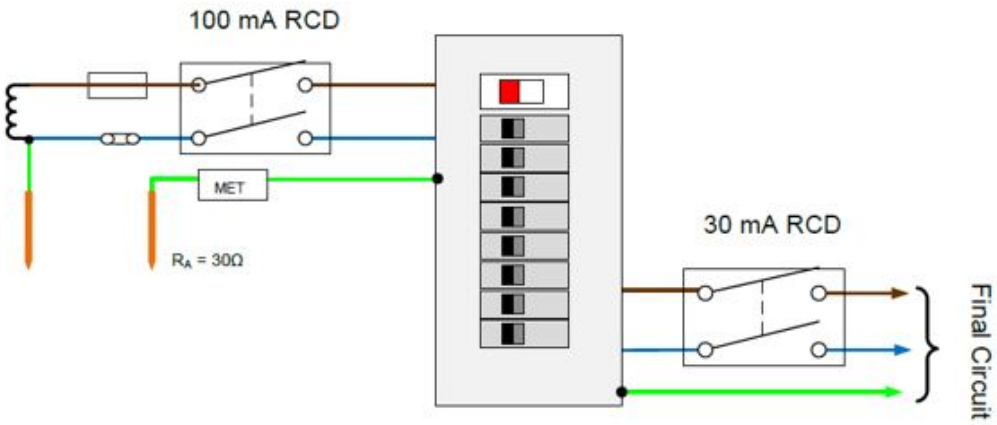

Figure 6

a) The 100 mA RCD has no time delay.
b) The 30 mA RCD is to sensitive.
c) The test voltage is too high.
d) The test current is too low.

Response: _____

34 Questions 30 to 34 relate to the following scenario.

Testing of the RCDs is to be undertaken on the installation which forms part of a TT system, as shown in Figure 6.

When testing the 30 mA RCD at I_n a disconnection time of 400 ms is recorded.

What classification code should the inspector record on the report?

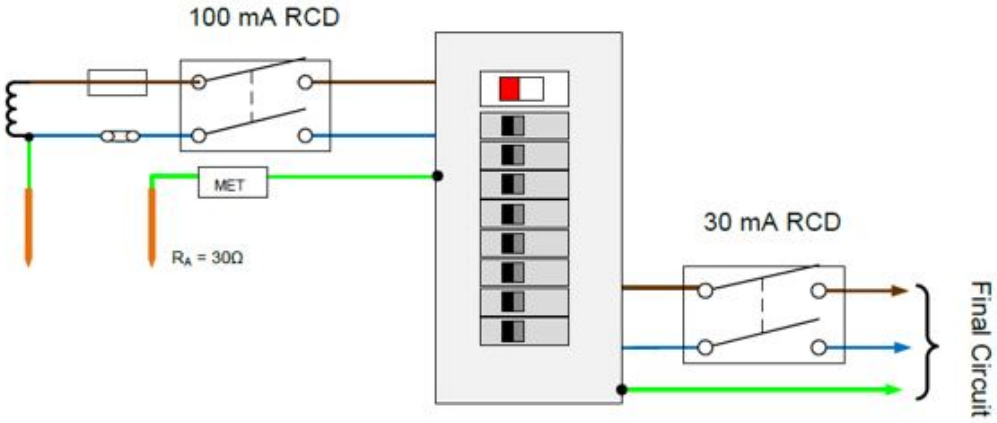

Figure 6

a) FI
b) C3
c) C2
d) C1

Response: _____

35 What is the **maximum** disconnection time for a 16 A final circuit on a TT installation?

a) 500 ms
d) 300 ms
c) 200 ms
d) 30 ms

Response: _____

36 What is the purpose of carrying out a test to determine the prospective fault current at the origin of a three-phase commercial installation?

a) The earth fault loop path can carry the fault current.
b) The protective devices can safely disconnect the fault current.
c) The overcurrent devices will disconnect the earth fault current.
d) The overcurrent devices are rated lower than the fault current.

Response: _____

37 The radial circuit, shown in Figure 7, is installed using-single core cables in PVC conduit. The installation is 5 years old and there have been no alterations or additions to the radial circuit.

Why would it be unnecessary to carry out a continuity of cpc for this circuit at periodic inspection and test?

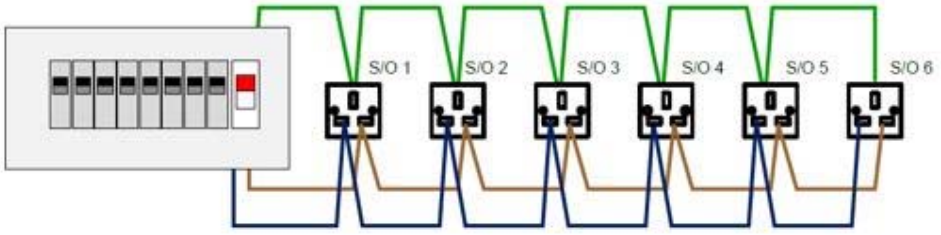

Figure 7

a) The circuit is installed in PVC conduit and so less likely to be damaged.
b) Continuity tests are only necessary if the circuit is in flat profile cable.
c) The circuit is only five years old so continuity testing is not required.
d) Continuity of cpc can be confirmed during a test of Z_s.

Response: _____

38 Insulation resistance testing has been carried out on a six-way lighting distribution board and the individual circuit results are shown in Table 1.

What is the value of insulation resistance between Live and Earth for the DB with all the lighting circuits connected?

Circuit	Live-Earth MΩ
Lights 1	200
Lights 2	50
Lights 3	50
Lights 4	169
Lights 5	198
Spare	

Table 1

a) 18 MΩ
b) 50 MΩ
c) 133 MΩ
d) 200 MΩ

Response: _____

39 What is the **most** appropriate classification code to be recorded if the insulation resistance for a circuit is measured at 0.90 MΩ between live conductors and Earth?

a) FI
b) C1
c) C2
d) C3

Response: _____

40 A test is to be carried out to determine the external earth fault loop impedance of an installation forming part of a TN-S system.

What is the **maximum** declared by the Distribution Network Operator for a TN-S supply?

a) 0.21 Ω
b) 0.35 Ω
c) 0.8 Ω
d) 21 Ω

Response: _____

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