

2382-15 Test Questions – Paper 4

1 Particular requirements are included in BS 7671 for electrical installations of:

- a) life installation covered by BS 5655
- b) equipment of fixed offshore installations
- c) distributors equipment
- d) locations containing bath or shower

2. Which one of the following types of installation is **NOT** included in the special installations recognised by BS 7671

- a) swimming pools
- b) petrol filling stations
- c) agricultural
- d) saunas

3. Which one of the following sets of regulations is non-statutory?

- a) Electricity Safety, Quality and Continuity Regulations
- b) Electricity at Work Regulations
- c) Building Standards Regulations
- d) BS 7671 Requirements for Electrical Installations

4. A d.c. voltage of 125 V between conductors is classified as:

- a) extra-low voltage
- b) low voltage
- c) reduced low voltage
- d) SELV

5. The type of system known as PME is also referred to as:

- a) TN-S
- b) TN-C
- c) TN-C-S
- d) IT

6. A circuit protective conductor connects:

- a) a gas pipe to the main earthing terminal
- b) a water pipe to the earth terminal of a switch in a bathroom
- c) the main earthing terminal to the earth terminal of a socket-outlet
- d) two water pipes in a bathroom

7. An external influence categorized as AG1 applies to a:

- a) quarry
- b) factory
- c) house
- d) workshop

8. A building constructed solely of wood would have an external influence category of:

- a) CA1
- b) CA2
- c) CA3
- d) CA4

9. A fire fighter's emergency switch should be provided for:

- a) factory low-voltage burglar alarm systems
- b) interior low-voltage discharge lighting installations
- c) exterior discharge lighting installations exceeding low-voltage
- d) factory fire alarm circuits operating at low-voltage

10. The protective conductor used within a final circuit has high protective conductor currents in excess of 10 mA when supplying more than one item of electrical equipment. The minimal cross-sectional area may be 4 mm², provided that:

- a) additional protection from the use of a residual current device is present
- b) the protective conductor has additional mechanical protection
- c) individual items of equipment are supplied through an isolating transformer
- d) the protective conductor is in the form of a complete ring

11. Installations should be arranged so as to avoid hazards in the event of a fault, and to facilitate safe operation, inspection, testing and maintenance. One method of complying with this is to:

- a) connect all circuits on the radial principle
- b) connect all circuits on the ring principle
- c) divide the installation into separate circuits
- d) divide the installation into bands of circuits

12. A domestic 30A radial final circuit is used to supply BS 1363 socket outlets. If the floor area to be served is 55m², the rating of the protective device and the live conductor's csa must not be less than:

- a) 20A and 4 mm²
- b) 30A and 2.5 mm²
- c) 20A and 2.5 mm²
- d) 30A and 4 mm²

13. Which one of the following is not a characteristic of the supply?

- a) nominal voltage
- b) frequency
- c) earth loop impedance Z_e
- d) emergency switching

14. The number and type of live conductors of a new electrical supply to a building may be determined:

- a) by enquiry to the local council offices
- b) after consultation with the local distributor
- c) by reference to BS 7671
- d) by reference to the Electricity, Safety, Quality and Continuity

Regulations

15. Basic protection protects persons and/or livestock from contact with:

- a) Class II enclosures
- b) extra-low voltage terminals
- c) exposed conductive parts made live by a fault
- d) live parts

16. The requirements regarding basic protection have not been applied if livestock comes into contact with:

- a) exposed conductive parts made live by a fault
- b) an exposed terminal within a faulty enclosure
- c) a protective conductor carrying fault current
- d) extraneous conductive parts made live by an earth fault

17. One method of providing basic protection is by:

- a) earth free local equipotential bonding
- b) electrical separation
- c) automatic disconnection of supply
- d) barriers or enclosures

18. A piece of electrical equipment having a protective conductor current of 15 mA is to be connected to the supply by means of a 16A plug and socket outlet complying with BS EN 60309-2. The cross sectional area of the protective conductor of the associated flexible cable shall not be less than:

- a) 1.00mm²
- b) 1.5mm²
- c) 2.5mm²
- d) 4mm²

20. The temperature limit for non-metallic equipment which is intended to be touched but not hand-held is:

- a) 55°C
- b) 65°C
- c) 70°C
- d) 80°C

21. The prospective fault current at the origin of an electrical installation must be taken into account when:

- a) estimating the external earth fault loop impedance
- b) applying diversity to the installation
- c) assessing the earthing arrangement
- d) selecting the type of overcurrent device to be installed

22. Omission of devices for protection against overload is NOT permitted for:

- a) secondary circuits of current transformers
- b) circuits which supply fire extinguishing devices
- c) exciter circuits of rotating machines

d) circuits which supply emergency lighting

23. The nominal rating of an overcurrent protective device should be:

- a) not less than the design current
- b) greater than the current carrying capacity of the conductors
- c) 1.45 times the load current
- d) equal to the prospective short-circuit current

24. The means of isolation for a particular item of equipment may be installed in a position remote from that equipment, providing that it:

- a) can be locked in the off position using a lock and key common to all other such isolators
- b) can be locked in the off position using a lock and key that are unique to that isolator
- c) is located so as to be in full view of persons working on the equipment
- d) is manually operated and a visual display is located next to the equipment

25. A firefighter's switch should be installed at not more than:

- a) 2.75m from the ground and the 'off' position at the top
- b) 2m from the ground and the 'off' position at the bottom and coloured red
- c) 2.75m from the ground and the 'off' position at the bottom
- d) 2.75m from the ground and the 'on' position at the top and coloured red

26. Where the nominal voltage of an installation is 230V, the required minimum impulse withstand voltage for Category II equipment for overvoltage protection is:

- a) 1.5kV
- b) 2.5kV
- c) 4.0kV
- d) 6.0kV

27. In a location where a risk of danger from fire exists due to manufacture or storage of combustible materials, enclosures of heaters shall not attain a surface temperature under normal working conditions exceeding:

- a) 70oC
- b) 90oC
- c) 100oC
- d) 115oC

28. For a.c., the preferred frequencies which are taken into account in BS 7671 are:

- a) 25 Hz, 50 Hz and 60 Hz
- b) 50 Hz, 60 Hz and 400 Hz
- c) 25 Hz, 50 Hz and 250 Hz
- d) 50 Hz, 100 Hz and 400 Hz

29. Which one of the following external influences requires an increase in the current ratings of cables above those normally required?

- a) possible vertically falling drops of water
- b) low ambient temperature
- c) severe mechanical vibration
- d) high ambient temperature

30. To prevent circulating eddy currents (an electromagnetic effect) in steel conduit, trunking or cable armouring:

- a) only d.c. must be used
- b) line and neutral conductors are to be kept separate
- c) the enclosures should be solidly earthed
- d) all live conductors of a circuit must be contained in the same enclosure

31. It is required that all circuits in a barn on an agricultural installation be protected by an RCD. The maximum rating ($I_{\Delta n}$) for a circuit protected by a 40A BS 88 protective device should not exceed:

- a) 30 mA
- b) 100 mA
- c) 300 mA
- d) 500 mA

32. In agricultural premises in locations where tractors are used, which one of the following methods of installation shall NOT be applied:

- a) cables shall be buried at a depth of at least 0.6m with additional protection
- b) cables in arable ground shall be buried at a depth of at least 1m
- c) self supporting suspension cables at a height of at least 6m
- d) self supporting suspension cables at a height in excess of that accessible by rodents

33. A permanent warning notice must be fixed at or near the point of connection of every earthing conductor to an earth electrode. This notice must bear the words:

- a) Earth Bonding Connection, Do Not Remove
- b) Safety Bonding Connection, Do Not Remove
- c) Earth Electrical Connection, Do Not Remove
- d) Safety Electrical Connection, Do Not Remove

34. Overcurrent protection may be provided by a:

- a) linked switch
- b) residual current device
- c) disconnect
- d) circuit breaker

35. Where ADS is the means of providing fault protection and a 20 A type B circuit breaker to BS EN 60898 is used, the maximum earth fault loop impedance is:

- a) 0.37F

- b) 1.15F
- c) 2.3F
- d) 2.87F

36. Which one of the following is **excluded** as a protective earth electrode?

- a) underground structural metalwork embedded in foundations
- b) welded metal reinforcement of concrete embedded in the earth
- c) earth plates
- d) metalwork of public water services

37. A copper earthing conductor not mechanically protected and not protected against corrosion is buried in soil. The minimum size of the earthing conductor is:

- a) 4mm²
- b) 16mm²
- c) 25mm²
- d) 50mm²

38. By employing an RCD protected socket-outlet to supply a Class II portable tool, the user is:

- a) protected against an earth fault in the windings of the tool
- b) protected against breakage of the protective conductor of the flexible cable
- c) provided with additional fault protection against contact with a live conductor exposed by carelessness of the user
- d) unable to operate the tool until the earthing circuit is complete and monitored

39. A 13A socket-outlet supplies mobile equipment for use outdoors. Additional protection should be provided by means of a:

- a) general purpose fuse
- b) circuit breaker
- c) residual current device
- d) class II equipment enclosure

40. In order to prevent the spread of fire where a wiring system passes through elements of building structures, any holes must be sealed around the cables. Which of the following is NOT a requirement for such sealing materials?

- a) it shall be compatible with the material of the wiring system
- b) it shall prevent thermal movement of the wiring system
- c) it shall be of adequate mechanical stability to withstand the stresses which may arise
- d) it shall resist relevant external influences to the same degree as the wiring system

41. Where an autotransformer is used for step-up purposes:

- a) a single-pole switch can be used
- b) a linked switch breaking all live conductors must be used
- c) no controlling switch is required

d) only a fuse is required

42. When installing socket outlets which will be mounted vertically on a wall or working surface, they should be:

- a) shuttered and suitable for a.c. and complying with BS 1363
- b) mounted 50mm from the floor level or working surface
- c) mounted so the flexible cord and plug top can be withdrawn or inserted without mechanical damage
- d) mounted so that the flexible cord and plug are 50mm from floor or working surface level

43. Any circuit or equipment vulnerable to a particular test should be identified by:

- a) the provision of a legible diagram, chart or table prior to testing
- b) a visual inspection prior to testing
- c) the manufacturer's warning notice on the equipment
- d) the inventory for the building being tested

44. Which one of the following tests is carried out after the supply is connected?

- a) insulation resistance
- b) continuity of protective conductors
- c) continuity of ring final circuit conductors
- d) effectiveness of an RCD

45. The purpose of the inspection conducted prior to testing an installation is to verify that:

- a) all ring final circuit connections are correct
- b) equipment is not damaged or defective
- c) only British Standard equipment is installed
- d) all electrical cables and conduits are pointed orange for identification

46. When testing a 230V installation, the minimum value of insulation resistance is:

- a) 0.5F
- b) 1F
- c) 0.5MF
- d) 1MF

47. No alteration shall be made to an existing installation unless the:

- a) electricity supplier has been informed
- b) local authority has been informed
- c) it is established that the alteration will not impair the safety of the existing installation
- d) existing equipment meets BS and BS EN standards

48. The inspecting and testing required during a periodic inspection should be recorded on a Periodic Inspection Report and carried out by:

- a) the person ordering the inspection

- b) a design engineer
- c) a site engineer
- d) a competent inspector

49. Which one of the following factors does not affect the frequency of periodic inspection?

- a) type of installation
- b) installation use and operation
- c) frequency of maintenance
- d) supplies for safety services

50. Which one of the following numbers is the correct grouping factor for six circuits installed as method B?

- a) 0.45
- b) 0.55
- c) 0.57
- d) 0.69

51. The reference for the installation method that has multi-core cables having a non metallic sheath, in surface mounted conduit is:

- a) E
- b) B
- c) F
- d) G

52. Which one of the following classifications of external influences would be appropriate for an item of electrical equipment installed where it would be subject to 'splashes of water'?

- a) AB
- b) BC1
- c) AD4
- d) AG1

53. In rooms containing a bath or shower, the measures of protection by obstacles and placing out of reach are:

- a) permitted in zones 1 and 2 only
- b) not permitted in any circumstance
- c) permitted for SELV circuits only
- d) not permitted except for luminaries

54. The nominal supply voltage on temporary installations in shows and stands shall not exceed 230/400 V ac, or

- a) 110 V dc
- b) 230 V dc
- c) 240 V dc
- d) 500 V dc

55. In a conduit system on an agricultural installation where livestock are kept, the external influence shall be classified as:

- a) AF4

- b) AG3
- c) AF3
- d) AG1

56. On agricultural premises, heating appliances shall be fixed so as to maintain an appropriate distance from livestock. In the absence of manufacturer's guidance, a radiant heater used in the vicinity of livestock should be placed at a distance of not less than:

- a) 0.5m
- b) 1.5m
- c) 2.0m
- d) 2.5m

57. In a caravan park, the maximum number of socket outlets which can be protected by an RCD is:

- a) 2
- b) 3
- c) 6
- d) 1

58. In exhibitions, protection against thermal effects must be provided for luminaries mounted below a height of:

- a) 1m
- b) 2.5m
- c) 3m
- d) 5m

59. For household installations, as a rule of thumb, the floor area served by a single 20A radial circuit using socket outlets to BS 1363 may be:

- a) up to 20m²
- b) up to 50m²
- c) up to 100m²
- d) unlimited

60. Prior to an inspection in accordance with BS 7671, the competent person carrying out the work shall normally:

- a) ensure that all switches are off
- b) disconnect the installation from the supply
- c) disconnect all fixed appliances
- d) ensure that the supply is connected

Answers:

- 1 D Part 7 2 B Part 7
- 3 D 114.1
- 4 B Definitions 5 C Definitions Fig 2.4
- 6 C Definitions Fig 2.1
- 7 C Appendix 5
- 8 B Appendix 5
- 9 C 537.6.1 (i)
- 10 B 543.7.1.3
- 11 C 314.1
- 12 D Appendix 15
- 13 D 313.1
- 14 B 312.2.1
- 15 D Definitions
- 16 B Definitions
- 17 D 416.2
- 18 C 543.7.12
- 19 A Calculation
- 20 D Table 42.1
- 21 D 434.5.1
- 22 D 433.3.3
- 23 A 433.1.1
- 24 B 537.2.1.5
- 25 A 537.6
- 26 B Table 44.3
- 27 B 422.3.2
- 28 B 110.1 (xv)
- 29 D Appendix 4
- 30 D 521.5.2
- 31 C 705.411.1
- 32 D 705.522.16
- 33 D 514.13.1
- 34 D 432.1 to 432.3 + 433.1.2
- 35 C Table 41.3
- 36 D 542.2.4
- 37 C Table 54.1
- 38 C 415.1.1
- 39 C 411.3.3 (ii)
- 40 B 527.2.7
- 41 B 555.1.3
- 42 C 553.1.6
- 43 A 514.9.1
- 44 D 612.1 Paragraph 4
- 45 B 611.2
- 46 D Table 61
- 47 C 131.8
- 48 D 621.5
- 49 D 622.1
- 50 C Appendix 4 Table 4C1
- 51 B Appendix 4 Table 4A2
- 52 C Appendix 5
- 53 B 701.410.5.5

54 D 711.313
55 A 705.522.16
56 A 705.422.6
57 D 708.553.1.13
58 B 711.559.5
59 B Appendix 15
60 B 611.1