

## 2382-15 TEST QUESTIONS – PAPER 2

1. To which of the following electrical installations does the IEE Regulations **NOT** apply?
  - a) agricultural and horticultural premises
  - b) construction sites
  - c) systems for transmission of energy to the public
  - d) caravans and their sites
  
2. The BS 7671 relates to permanent and temporary installations for:
  - a) equipment on board ships
  - b) aircraft equipment
  - c) construction sites
  - d) electric traction equipment
  
3. An a.c. voltage of 90 V between conductors is classified as:
  - a) extra-low voltage
  - b) low voltage
  - c) safety extra-low voltage
  - d) reduced low voltage
  
4. Which one of the following types of installation is **NOT** included in the special installations recognised by the IEE Wiring Regulations?
  - a) swimming pools
  - b) petrol filling stations
  - c) agricultural
  - d) saunas
  
5. The **MAXIMUM** accessible distance that it should be assumed a person can reach when standing on a surface is:
  - a) 0.75 m
  - b) 1.25 m
  - c) 2.50 m
  - d) 3.00 m
  
6. BS 7671 requires that the designer of a new installation shall:
  - a) have at least three years experience
  - b) recommend future inspection and testing
  - c) complete a periodic test report
  - d) have a copy of BSD 7671
  
7. Non-sheathed cables for fixed wiring, other than protective conductors, should always be installed in:
  - a) dry conditions
  - b) trenches
  - c) conduit or trunking
  - d) sub-zero temperatures

8. A final circuit is the wiring between the:
- main cut-out and the energy meter
  - main switch and the distribution board
  - distribution board and current-using equipment
  - consumer's main earth terminal and circuit protective device
9. The prospective short circuit current at the origin of the consumer's installation must be taken into account when:
- estimating the external earth loop impedance
  - supplying diversity factor for the installation
  - selecting the system of earthing for the supply
  - selecting the type of overcurrent protective device to be installed
10. A system is defined as:
- the kWh meter and an installation
  - the distribution cables to an installation
  - the consumer's terminals of an installation
  - a single source of energy and an installation
11. The total number of socket-outlets that may be connected to a fused spur is:
- one twin or one single socket – outlet
  - equal to the total number of socket – outlets on the ring
  - equal to half the number of socket – outlets on the ring
  - unlimited depending upon the load
12. Residual current circuit breakers shall **NOT** be used on a TN system where a circuit incorporates:
- protective conductors
  - exposed conductive parts
  - earthing conductors
  - PEN conductors
13. Which one of the following is a method of providing fault protection?
- placing out of reach
  - double insulation
  - protection by obstacles
  - insulation of live parts
14. In addition to regular maintenance of an installation, which one of the following is NOT an essential requirement?
- periodic inspection and testing may be readily and safely carried out
  - the name and address of the contractor is permanently displayed adjacent to the main intake position
  - the reliability of the equipment is sustained
  - protective measures for safety remain effective

15. Where separated extra-low voltage is used to provide basic protection and fault protection, the nominal voltage shall **NOT** exceed:

- a) 12 V a.c.
- b) 25 V a.c
- c) 50 V a.c.
- d) 110 V a.c.

16. Overload current is defined as the overcurrent:

- a) that causes protective devices to operate or correctly
- b) occurring in a circuit which is electrically sound
- c) resulting from a fault of negligible impedance between live conductors of different phases
- d) flowing in a line conductor when in contact with exposed conductive parts

17. The IEE Regulations are designed to provide:

- a) instructions for untrained persons
- b) safety especially from fire, shock and burns
- c) a detailed specification
- d) instructions for every circumstance in an installation

18. Which one of the following is not permitted as a means of isolation in a circuit?

- a) double-pole switch fuse
- b) 13 A plug and socket
- c) semi-conductor device
- d) linked switch

19. When a line conductor comes in contact with the neutral conductor, the type of fault is called:

- a) a short circuit fault
- b) an earth fault
- c) an overload fault
- d) an open circuit fault

20. A means of isolation must be provided in an electrical installation. This is required to be:

- a) clearly identified
- b) always placed next to the equipment it isolates
- c) automatic in operation
- d) available for emergency switching

21 Which one of the arrangements complies with the IEE Wiring Regulations?

- a) the fire fighter's switch is fixed 4 m above the ground and the off at the top
- b) the fire fighter's switch is coloured red and the off position is at the bottom
- c) The fire fighter's switch is coloured red and fixed 2.5 m above the floor

d) The fire fighter's switch is fixed 2 m above the floor and off at the bottom

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

- a) emergency lighting systems operating at low voltage
- b) interior low-voltage discharge lighting installation
- c) exterior discharge lighting installations exceeding low voltage
- d) multi-storey office block fire alarm circuits operating above low voltage

23. The three general categories of external influence are environment, utilisation and:

- a) the number and type of live conductors
- b) construction of building
- c) method of installation
- d) the installation earthing arrangements

24. BS 7671 details the requirements of devices for emergency switching. Which of the following devices would **NOT** satisfy these requirements?

- a) an emergency stop button which breaks the control circuit of a contactor
- b) a switch which breaks the control circuit of a contactor
- c) a 32 A plug and socket outlet
- d) a switch which breaks all live conductors

25. Which one of the following is required to be considered by BS 7671 when assessing the general characteristics of an electrical installation?

- a) the standard of electricians working on site
- b) diversity
- c) switchgear rating
- d) maintainability

27. When calculating the voltage drop in an installation which one of the following should be taken into account?

- a) the cable current carrying capacity
- b) the operating current of the fuse
- c) the current rating of the fuse
- d) the circuit design current

28. Which one of the following is not considered when calculating the minimum current carrying capacity of live conductors of a cable?

- a) ambient temperature
- b) grouping
- c) type of protective device
- d) the maximum permitted volt drop

29. For single circuit cable selection purposes the correction factors must be applied to the:

- a) prospective short circuit current
- b) current carrying capacity of the cable

- c) current rating of the protective device
- d) the earth fault current of the circuit

30. The classification code for high wind is:

- a) AS3
- b) AR3
- c) AP3
- d) AN3

31. Rating factors are applied to the fuse rating of a circuit to determine the minimum current-carrying capacity of cables. A rating factor of 1 is used when a circuit is wired in 70o C thermoplastic insulated cable and operating in an ambient temperature of:

- a) 25o C
- b) 20o C
- c) 30o C
- d) 35o C

32. Which one of the following is not recognised by BS 7671:2008 as the sole means of earthing an installation?

- a) metallic sheath of cables
- b) metal bars embedded in the building foundations
- c) metallic rod driven into the ground
- d) gas and water supply pipes

33. A BS 1361 fuse, rated at 45 A, is carrying a fault current of 240A, the protective device should operate in:

- a) 0.4 s
- b) 8.0 s
- c) 300 s
- d) 5.0 s

34. The maximum permissible earth fault loop impedance on a TN system for a ring final circuit protected by a 30 A BS 1361 fuse is:

- a) 1.15F
- b) 1.2F
- c) 1.92F
- d) 2.76F

35. The wording of a permanent warning notice fixed at the point of connection of an earthing conductor to an earth electrode is:

- a) Earth Connection – Do Not Remove
- b) Do Not Remove This Connection
- c) Electrical Earth Connection – Danger
- d) Safety Electrical Connection – Do Not Remove

36. Which one of the following sources does not comply with BS 7671 as a SELV system?

- a) a safely isolating transformer to BS EN 61558
- b) a motor generator with windings providing equivalent isolation to

- that of a safety isolating transformer  
c) a centre tapped transformer giving 55 V to earth  
d) a battery system operating at extra low voltage

37. The minimum size of a copper earthing conductor buried in the ground, **NOT** mechanically protected and **NOT** protected against corrosion is:

- a) 10 mm<sup>2</sup>
- b) 16 mm<sup>2</sup>
- c) 25 mm<sup>2</sup>
- d) 50 mm<sup>2</sup>

38. When calculating the minimum cross-sectional area of a protective conductor, the following information is available:

Fault current = 650 A

Operating time of protective device = 0.35 sec

Constant, k, for protective conductor material = 115

The selected size of the protective conductor should be:

- a) 2.5 mm<sup>2</sup>
- b) 4.0 mm<sup>2</sup>
- c) 6.0 mm<sup>2</sup>
- d) 10 mm<sup>2</sup>

39. When a residual current device protects a socket outlet in a domestic garage it must operate when:

- a) an earth fault on the garage lighting circuit occurs
- b) the protective conductor in a flexible cord to a lawn mower breaks
- c) someone comes in direct contact with an exposed line conductor and earth
- d) someone comes in contact with exposed earth metalwork

40. Where an auto-transformer is connected to a single-phase supply (phase and neutral) the common terminal of the winding should be connected to the:

- a) neutral conductor
- b) phase conductor
- c) circuit protective conductor
- d) main earthing terminal

41. Circuit cables required to carry the starting, accelerating and load currents of motors shall have a current rating not less than:

- a) full-load
- b) 1.5 x full-load
- c) 6 x full-load
- d) 10 x full load

42. As part of a detailed inspection which of the following must be checked?

- a) the presence of fire barriers and protection against thermal effects

- b) the prospective short circuit current at the origin of the installation
- c) the maximum permissible voltage drop
- d) the manufacturer's name of any RCD fitted

43. Which of the following items should be included for checking during the initial verification of an installation:

- a) site works orders and alterations
- b) presence of diagrams and instructions
- c) minutes of all site meetings
- d) all variations of contract

44. One item that should be included on charts and diagrams made available to the person carrying out an inspection and test is:

- a) all isolation and switching arrangements
- b) the location details of portable equipment
- c) the total number of outlets in the installation
- d) the details of the original contract arrangements

45. Which one of the following insulation resistance test results, meets the minimum acceptable value for an installation with a 400 V supply?

- a) 5.0 MF
- b) 0.25 MF
- c) 0.5 MF
- d) 1.0 MF

46. The test voltage required to carry out an insulation resistance test on an installation with a nominal supply voltage of 400 V is:

- a) 250 V dc
- b) 400 V dc
- c) 500 V dc
- d) 1000 V dc

47. An earth fault loop impedance test determines the actual value of:

- a)  $Z_s$
- b)  $Z_e$
- c)  $R_1$
- d)  $R_2$

48. Electrical installation certificates should be signed by those responsible for the:

- a) inspection and testing only
- b) installation work only
- c) main contract
- d) design, construction and inspection testing

49. The result and extent of a Periodic Inspection and Test shall be recorded and given to the:

- a) original installer
- b) person ordering the inspection

- c) representative of the supplier
- d) installation designer

50. The following tests are to be carried out on a new installation

- 1 insulation resistance
- 2 continuity of ring final circuit
- 3 continuity of protective conductors
- 4 earth loop impedance
- 5 polarity

The correct order of carrying out the tests is:

- a) 1, 2, 3, 4, 5
- b) 3, 2, 1, 5, 4
- c) 2, 3, 5, 1, 4
- d) 5, 4, 1, 2, 3

51. One reason for carrying out a polarity test is:

- a) lighting switches work
- b) the outer screwed contact is connected to the phase conductor
- c) sockets are switched
- d) fuses are fitted in the phase conductor

52. When carrying out a continuity of circuit protective conductor test, it is recommended that a test instrument operates at:

- a) 500 V and delivers a short circuit current of 100 mA
- b) 50 V and delivers a short circuit current of 200 mA
- c) 20 V and delivers a short circuit current of 100 mA
- d) 20 V and delivers a short circuit current of 200 mA

53. One of the purposes of an inspection prior to initial testing of an installation, is to verify that the installed equipment is:

- a) connected to the supply and energised
- b) not visibly damaged
- c) functioning safely when energised
- d) exceeds the minimum insulation resistance value

54. Electrical equipment installed above a swimming pool diving board should not be fixed at a height less than:

- a) 1.5 m
- b) 2.0 m
- c) 2.5 m
- d) 3.0 m

55. Which of the following may be installed inside a hot air sauna?

- a) a socket outlet fed from an SELV supply source
- b) a ceiling mounted cord operated light switch
- c) a thermostat mounted on the sauna
- d) any equipment and accessories to IP24

56. Construction site special regulations apply to:

- a) all site offices



- b) earthworks
- c) site canteens
- d) site toilets

57. In agricultural premises, an RCD may be used for protection against fire providing the operating current does not exceed:

- a) 30 mA
- b) 150 mA
- c) 300 mA
- d) 500 mA

58. The minimum cross-sectional area of any conductor in a caravan is:

- a) 1.5 mm<sup>2</sup>
- b) 2.5 mm<sup>2</sup>
- c) 4.0 mm<sup>2</sup>
- d) 6.0 mm<sup>2</sup>

59. The maximum permissible height for a caravan inlet is:

- a) 0.5 m
- b) 1 m
- c) 1.5 m
- d) 1.8 m

60. One method acceptable to the IEE Regulations for providing fault protection on circuits feeding street furniture is by:

- a) a non-conducting location
- b) earth free equipotential bonding
- c) automatic disconnection of supply
- d) electrical separation

## Answers:

- 1 C 110.2
- 2 C 110.1 (vii)
- 3 B Definitions
- 4 B Part 7 Page 164
- 5 C 417.3.3
- 6 B 134.2.2
- 7 C 521.10.1
8. C Definitions
- 9 D 434.5.1
10. D Definitions
- 11 D Appendix 15
- 12 D 411.4.4
- 13 B 412.1.1
- 14 B 341.1
- 15 C 414.1.2 then 414.1.1 (i)
- 16 B Definitions
- 17 B 131.1
- 18 C 537.2.2.1
- 19 A Definitions
- 20 A 537.2.2.6
- 21 C 537.6.3 and 537.6.4 22 C 537.6.1
- 23 B Appendix 5 Page 318
- 24 C 537.4.2.8
- 25 D 301.1 (iv)
- 26 C Appendix 4 Page 257
- 27 D Appendix 4 Page 257, last paragraph
- 28 D Appendix 4
- 29 C Appendix 4
- 30 A Appendix 5 Page 328
- 31 C Appendix 4 Table 4B1
- 32 D 542.2.4
- 33 D Appendix 3 Page 244
- 34 A Table 41.2
- 35 D 514.13.1
- 36 C 414.3
- 37 C Table 54.1
- 38 B 543.1.3
- 39 C Technical Knowledge
- 40 A 555.1.1
- 41 A 552.1.1
- 42 A 611.3 (vii)
- 43 B 610.2 then to 514.9.1
- 44 A 514.9.1
- 45 D Table 61
- 46 C Table 61
- 47 A Symbols or Appendix 14
- 48 D Appendix 6, Page 334 note 3
- 49 B 634.1
- 50 B 612.1 to 612.14
- 51 D 612.6
- 52 D 612.2.1
- 53 B 611.2

54 C Fig 702.1  
55 C 703.537.5  
56. B 704.1.1 (iv)  
57 C 705.422.7  
58 A 721.524.1  
59 D 721.55.1.1  
60 C 559.10.3