2382-10 Test Questions-Paper 5

1. To which one of the following situations does BS 7671 apply?
a) the manufacture of electrical equipment
b) the inspection and testing of the electrical installation on an oil rig
c) the design of an electrical installation for a caravan site
d) the public electricity supply system

2. Which one of the following is listed under exclusions from the scope of BS 7671?
a) saunas
b) swimming pools
c) marinas
d) lightning protection

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 Regulations
d) BS 7671

4. BS 7671 defines low voltage a.c. between conductors as voltage:
a) below 250 V a.c
b) below 1000 V a.c. but above 50 V a.c.
c) above 50 V a.c. but below 500 V a.c.
d) above 250 V a.c. but below 1000 V a.c.

5. An ordinary person is a person who:
a) is skilled at electrical work
b) works in electrical maintenance
c) is neither skilled nor instructed
d) at least 18 years old

6. A 12 V fire alarm circuit is classified by BS 7671 as:
a) a Band I circuit
b) a Band II circuit
c) a Band III circuit
d) an unclassified circuit

7. Which one of the following is NOT a classification of external influence?
a) current rating
b) environmental conditions
c) construction of buildings
d) utilisation

8. The type of building construction is an external influence which, in an electrical installation, will affect the choice of:

a) equipment and wiring
b) method of earthing
c) overcurrent protection
d) supply voltage

9. 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

10. Domestic ring final circuits are used to supply BS 1363 socket outlets. If the floor area to be served is limited to 50 m2, the cable feeding the circuit must be:
a) 4 mm2
b) 2.5 mm2
c) 1.5 mm2
d) 6 mm2

11. A domestic final ring circuit may:
a) supply any number of socket-outlets over an area of 200 m2
b) feed an immersion heater
c) require additional protection by an RCD
d) supply a cooker rated at 2.5 kW

12. Where thermoplastic insulated and sheathed cables are installed in a plastered wall at a depth of 20 mm and are not protected against mechanical damage, they must be:
a) run in “safe zones”
b) protected by a 30 mA RCD
c) coloured red
d) protected by a 30 mA RCD and run in the “safe zones”

13. A two-storey domestic dwelling should have a minimum of two lighting circuits in order to:
a) make the installation process easier
b) reduce the load on the consumer’s control unit
c) avoid danger in the event of a fault
d) enable a greater variety of luminaries to be used

14. A system is defined as:
a) the kWh meter and an installation
b) the distribution cables to an installation
c) the consumer’s terminals of an installation
d) a single source of energy and an installation

15. The term “basic protection” refers to:
a) protection against electric shock under fault free conditions
b) extra-low voltage terminals

c) protection against electric shock under a single fault condition
d) live parts within an appliance

16. Within a 230 V single-phase, metal clad fuse board, access to the line and neutral busbars are protected by insulation and by secured intermediate barriers. The fuse board may be:
a) opened without use of a key or tool
b) left unearthed
c) used to accommodate SELV circuits
d) used to accommodate ELV circuit conductors

17. A socket-outlet used for a SELV system should:
a) not have a protective conductor contact
b) be of a two-pin type
c) be marked SELV
d) have a protective conductor contact

18. Which one of the following is recognised as a means of providing fault protection?
a) protection by insulation of live parts
b) protection by automatic disconnection
c) protection by placing out of reach
d) protection by obstacles

19. Where SELV is used in normally dry conditions, basic protection is unnecessary where the nominal voltage does not exceed:
a) 12 V a.c.
b) 25 V a.c
c) 50 V a.c
d) 60 V a.c.

20. Obstacles may be used to provide basic protection providing:
a) the circuit voltage does not exceed 250 V
b) the installation is under the control of a skilled person
c) the installation is contained within steel conduit
d) an RCD is fitted

21. Overload current is defined as the overcurrent:
a) that causes protective devices to operate correctly
b) occurring in a circuit which is electrically sound
c) resulting from a fault of negligible impedance
d) flowing in a phase conductor when in contact with exposed conductive parts

22. An overload current could arise when:
a) excessive mechanical load is applied to an electric motor
b) a forward/reverse controller attempts to switch a motor both directions simultaneously
c) contamination of a motor terminal block results in tracking
d) an electrician drills into a busbar chamber and touches a live

busbar with the drill

23. Where the overcurrent device is intended to afford protection against overload, I_2 must not exceed I_z multiplied by:
a) 0.735
b) 1.45
c) 1.8
d) 2.5

24. 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

25. Which one of the following may be used to provide emergency switching for an electric motor?
a) a key switch latched in the on position
b) a plug and socket
c) a switch fuse with a removable handle
d) a device which latches in the off position

26. A section of a factory requires urgent non-electrical repairs to a machine. The type of switching provided to allow this work to proceed would be switching for:
a) mechanical movement
b) mechanical maintenance
c) emergency
d) safe operation

27. Which one of the following shall not be used as an isolator?
a) circuit breakers
b) plugs and socket outlets
c) semiconductor devices
d) fuse links

28. Where PME conditions apply, the main protective bonding conductor shall be:
a) half the csa of the earthing conductor and with reference to Table 54.7
b) selected in accordance with the supply neutral and Table 54.8
c) determined after consultation with the consumer
d) the same csa as the incoming line conductor

29. Which one of the following cannot be used as an earth electrode?
a) copper water supply pipe
b) earth tape or wire
c) lead sheath covering of cable
d) welded reinforcement of concrete embedded in the earth

30. Using Table 54.7 of BS 7671, the minimum cross-sectional area of a circuit protective conductor with a 10 mm2 line conductor will be:
a) 25 mm2
b) 16 mm2
c) 10 mm2
d) 4 mm2

31. In order to calculate the minimum value of the cross-sectional area of a protective conductor, the following information is available:
Fault current = 700 A
Operating time of protective device = 0.4 s
Constant k, for protective conductor material = 115
The selected size of the protective conductor should be:
a) 2.5 mm2
b) 4 mm2
c) 6 mm2
d) 16 mm2

32. Supplementary bonding conductors having mechanical protection connected between two extraneous conductive parts are subject to a minimum cross-sectional area of:
a) 1.5 mm2
b) 2.5 mm2
c) 4 mm 2
d) 6 mm2

33. In a marina, corrosive elements exist, structures can move, mechanical damage can occur, a possible presence of flammable fuel is present and an increase in the risk of electric shock is possible. Which one of the following is NOT taken into consideration when determining any external influence requirements?
a) presence of water
b) reduction in body resistance
c) contact of body with earth potential
d) the reduced resistance of salt water

34. A final circuit supplying 13 A socket-outlets is to be used by ordinary persons. The circuit must be provided with:
a) protection by an RCD
b) a BS EN 60898 circuit breaker
c) additional protection in accordance with Regulation 415.1
d) switched socket-outlets

35. Socket outlets which are under the supervision of skilled persons:
a) do not require additional protection
b) must be mounted 450 mm above the floor
c) must disconnect within 5 s in the event of an earth fault
d) must be to BS EN 60309

36. Ceiling roses are only allowed where the circuit voltage does not exceed:
a) 110 V
b) 250 V
c) 415 V
d) 11 kV

37. The minimum cross-sectional area for a buried copper earthing conductor that is provided with mechanical protection but no protection against corrosion is:
a) 2.5 mm2
b) 10 mm2
c) 16 mm2
d) 25 mm2

38. When an insulation monitoring device (IMD) is installed:
a) it must be set to a higher value corresponding to the normal insulation of the system
b) it must be designed in such a way that it is impossible to modify the setting without the use of a tool, if the location is accessible to ordinary persons
c) an IT system must not be used
d) instruction must be available that indicate how to switch the device off if it detects a fault

39. A circuit with a design current of 45 A is installed using a cable with a current rating of 50 A. If the voltage drop for the cable is 8 mV per amp per metre, the circuit voltage drop for a 10 m run will be:
a) 2.5 V
b) 3.6 V
c) 4 V
d) 6 V

40. Which one of the following should be taken into consideration when calculating the voltage drop in an installation?
a) nominal current setting of the protective device
b) design current of the circuit
c) current carrying capacity of the conductors
d) the current that ensures effective operation of the protective device

41. On a mobile or transportable unit, plugs used to connect the unit to the supply shall comply with BE EN 60309-2 and:
a) shall be enclosed in a metal enclosure
b) the plug part be on the supply distribution board
c) any plug and socket outlets shall afford a degree of protection of not less than IP44 if located inside
d) appliance inlets with their enclosures shall provide a degree of protection of at least IP44

42. The fault current due to an earth fault of negligible impedance in a 400 V, three phase, four wire circuit having an earth fault loop impedance of 0.3 F is:
a) 1383 A
b) 766.6 A
c) 124.5 A
d) 72 A

43. A 30 A protective device to BS 1361 when carrying a fault current of 200 A should operate in:
a) 0.2 s
b) 0.4 s
c) 4 s
d) 5 s

44. A black sleeve or disc is placed on one of the conductors of a three-core MICC cable. This indicates the:
a) line 1 of a three phase a.c. circuit
b) earth conductor
c) line 2 of a three phase a.c. circuit
d) line 3 of a three phase a.c. circuit

45. An unfused spur connected to a 30 A ring circuit may supply:
a) two fixed appliances
b) two twin socket-outlets or one fixed applianced
c) one twin socket-outlet or one single socket-outlet
d) an unlimited number of socket-outlets

46. Prior to an inspection in accordance with BS 7671, the competent person carrying out the test 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

47. A legible diagram, chart or table relating to an installation must be provided to indicate:
a) the location of all fixed equipment for testing purposes
b) any circuit of equipment vulnerable to a typical test
c) location of all portable equipment for testing purposes
d) that the original installation design has not changed

48. When carrying out an insulation resistance test on a 230 V socket-outlet circuit incorporating surge protective devices (SPD), the test voltage may be reduced to:
a) 500 V
b) 1000 V
c) 50 V
d) 250 V

49. During an initial verification, a test result fails to comply with BS 7671 Part 6. The procedure to be adopted is to:
a) inform the client
b) make good and complete the Periodic Inspection Report
c) make good and complete the Electrical Installation Certificate
d) record the fault on the Periodic Inspection Report

50. For circuits having a nominal voltage above 500 V, the minimum insulation resistance is:
a) 0.25 MF
b) 0.5 MF
c) 1 MF
d) 5 MF

51. Which one of the following is the required test procedure if an existing installation is extended to include extra lighting and socket outlets?
a) insulation resistance
b) no testing is required, only visual inspection
c) ring circuit continuity test only
d) all relevant tests must be carried out

52. It is a requirement of BS 7671 that a Schedule of Test Results should always be attached to an Electrical Installation Certificate for:
a) new installations, alterations or additions to existing installations
b) new installations only
c) major installations only
d) modified installations only

53. BS 7671 requires that the person ordering installation work must be informed of the:
a) need for periodic testing
b) name and address of the regional electricity company
c) anticipated life of the installation
d) diversity factors applied to circuit

54. Which one of the following factors does not affect the frequency of the periodic inspection?
a) type of installation
b) installation use and operation
c) frequency of maintenance
d) supplies for safety services

55. Electric heating units embedded in the floor of a bathroom and intended for heating the location may be installed below any zone provided they are:
a) supplied from an electrically separated source
b) covered with at least 50 mm of screed
c) surrounded with thermal insulating material
d) covered by an earthed metallic grid

56. Electrical equipment installed in Zone 1 of a swimming pool must have a minimum degree of protection in accordance with:
a) IPX8
b) IP4X
c) IP2X
d) IPX4

57. Construction site regulations apply to:
a) all site offices
b) earthworks
c) site canteens
d) site toilets

58. In 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 m
d) 2.5 m

59. The socket outlet and its enclosure, forming part of a pitch supply equipment for a caravan park, must comply with BS EN 60309-2 and have a minimum index of protection of:
a) IP40
b) IP55
c) IP54
d) IP44

60. Inspection and testing of a fairground installation must take place:
a) every three months
b) after each assembly on site
c) only if it is fed from the public supply system
d) only if it is fed from an a.c. supply

Answers:

1 C 110.1 (vii)
2 D 110.2 (ix)
3 D 114.1
4 B Definitions
5 C Definitions 6 A Definitions
7 A Appendix 5
8 A Appendix 5
9 C 521.10.1
10 B Appendix 15
11 C Appendix 15
12 D 522.6.6 and 522.6.7
13 C 314.1
14 D Definitions
15 A Definitions
16 A 416.2.4 (iii)
17 A Definitions or 414.4.3
18 B 411.3.2 or 416.1 – 417.3
19 B 414.4.5 (iii)
20 B 417.1
21 B Definitions
22 A Definitions
or 632.1
23 B 433.1.1 (iii)
recipients
24 D 433.3.3
25 D 537.4.2.6
26 B 537.3.2.1
27 C 537.2.2.1
28 B Table 54.8
29 A 542.2.4
30 C Table 54.7
31 B 543.1.3
32 B 544.2.3
33 D 709.512.2
34 C 415.1
35 A 411.3.3 (a)
36 B 559.6.1.2
37 D Table 54.1
38 B 538.1.3
39 B Calculation – use I_b not I_n
40 B Appendix 4 Section 6
41 D 717.55.1
42 B 411.4.5
43 B Appendix 3
44 C Table 51
45 C Appendix 15
46 B 611.1
47 B 514.9.1
48 D 612.3.2
49 C 612.1 Paragraph 5
50 C Table 61

51 D 633.1
52 A Appendix 6 Page 334 or 633.1
53 A Appendix 6 Guidance for
54 D 622.1
55 D 701.753
56 D 702.512.2 (ii)
57 B 704.1.1 (iv)
58 A 705.422.6
59 D 708.553.1.8
60 B 740.6