Module 4: Earthing System

Name:	Date:

Part A: Multiple choice question (MCQ)

1) What is the acceptable value for residential house earthing?

(a) <1 Ω
(b) 5 Ω
(c) 10 Ω
(d) 15 Ω

2) What is the correct cable size of earth lead wire (main protective conductor) for residential (60A)??

(a) 4.0 mm^2
(b) 10.0 mm^2
(c) 16.0 mm^2
(d) 25.0 mm^2

3) What is the minimal depth of the earth electrode copper rod to be install on a residential earthing?

(a) 3 meter
(b) 2 meter
(c) 5 meter
(d) 1 meter

4) "A connection serves a purpose other than providing protection against electrical shock." This refers to.

(a) electrocuted
(b) functional earth
(c) earth leakage
(d) shocking effect

5) The purpose of earthing is listed below, except.

(a) Safety reasons
(b) Protection system requirements
(c) Need to limit over voltages
(d) protection against overcurrent

6) Which of the following is not component of earthing system?

(a) electrode copper rod
(b) earth chamber
(c) earth clamp or terminal
(d) fuse

7) CPC is protective conductor which is connected to following part of electrical installations, except.

(a) neutral link terminal
(b) body of metal frame
(c) trunking metal joint part
(d) body of metal box switch/socket

8) The following is earth bonding method, except.

(a) circuit protective conductor
(b) supplementary bonding
(c) terminal clamp
(d) equipotential bonding

9) What is earth chamber?

(a) A small box made of concrete or PVC box
(b) A small box consist of neutral terminal
(c) A switch terminal
(d) The point to connect earth and phase supply

10) Earth resistance is been measured with the use of this test equipment known as.

(a) clamp meter
(b) earth resistance
(c) meggar
(d) multi-meter

11) What is the acceptable value for earth fault loop impedance (Zs)?

(a) < 1 Ω
(b) < 10 Ω
(c) < 100 Ω
(d) > 100 Ω

12) What is the standard colour to identify protective conductor?

(a) red
(b) green
(c) yellow
(d) black

13) What is the minimum size of earth lead wire?

(a) 1.5 mm^2
(b) 2.5 mm^2
(c) 6.0 mm^2
(d) 16.0 mm^2

14) Malaysia earthing system is using___ system. The best answer in the blank is.

(a) TN-C-S
(b) TT
(c) TNS
(d) IT

15) What is the first 'T' meaning in TT system?

(a) primary terminal
(b) terminal end
(c) transformer terminal
(d) transformer at secondary shall be earth

16) When earth bonding is connected between water pipe and body of an electrical equipment is known as?

(a) main bonding
(b) earth bonding
(c) equipotential bonding
(d) CPC bonding

17) Supplementary bonding is earth grounding between ____ and ____. The best answer to fill the blank is.

(a) trunking, GI conduit
(b) sanitary, metal pipe
(c) earth, sanitary pipe
(d) earth, armor cable

18) Example of supplementary bonding are.

(a) water pipe
(b) MET
(c) G.I conduit
(d) sewage pipe

19) Example of circuit protective conduct is applied, except.

(a) cable tray
(b) G.I conduit
(c) trunking metal
(d) exposed metal parts

20) What happen to RCD if the value of earth fault loop impedance is greater than 100Ω?

(a) RCD will trip faster
(b) RCD will takes longer to trip
(c) RCD will not work
(d) RCD will get hots

Part B: Subjective Question

1) a) List three (3) to earth resistance is determine by.

i) ……

ii) ……

iii) ……

b) List three (3) type of earth bonding.

i) ……

ii) ……

iii) ……

2) a) Given t=1.5 sec to disconnect, K=115(copper), the fault current is 495A, calculate the sizing of protective conductor, S?

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b) What is the value of S, if the conductor material is using aluminium and the disconnection time is 3 second, the earth fault loop impedance reading is 9.5Ω connected to the 240 volts supply.

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3) a) Three earth point z,z1 and z2 is been taken with the following value of 1.1 Ω, 1.2 Ω and 0.5 Ω, calculate the earth resistance value.

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b) Explain how to rectify the earth resistance value if found higher than acceptable value?

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4) Draw the complete residential earthing system.