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University Examinations 2013/2014

FIRST YEAR, FIRST SEMESTER EXAMINATION FOR CERTIFICATE IN ELECTRICAL
INSTALLATION

EEE 0102: ELECTRICAL INSTALLATION TECHNOLOGY I

DATE: APRIL 2014

TIME: 1 ½ HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE – (30 MARKS)

- (a) State the functions of the essential parts of an electrical cable. (3 Marks)
- (b) List any three factors affecting the selection of an electrical cable. (3 Marks)
- (c) State any three employees obligations on safety working practices in a workshop. (3 Marks)
- (d) With reference to personal safety explain eh following modes of dressings:
 - (i) Shoes (2 Marks)
 - (ii) Clothing (2 Marks)
 - (iii) Helmets and safety goggles (2 Marks)
- (e) Draw a wiring diagram of one-gang 5A switching system from a consumer control unit through a 20A junction box to two 60w parallel connected filament lamps. State any two I.E.E regulations to be observed. (5 Marks)
- (f) Define the following terms with reference to excess current protection:
 - (i) Fuse rating (1 Mark)
 - (ii) Fusing current (1 Mark)
 - (iii) Fusing factor (1 Mark)
- (g) Three 60W, 240V filament lamps and two 240V 100W fload lights are connected to a single-phase a.c. power supply. Determine the total current through the lamps if they are connected in parallel across the power supply. (4 Marks)
- (h) Draw a wiring diagram of two 13A power points connected in a ring main circuit and state one major advantage of the circuit. (3 Marks)

QUESTION TWO – (15 MARKS)

- (a) List any five basic electrician's tools for general installation work. (5 Marks)
- (b) Whilst working in a workshop with a colleague he accidentally step on a live conductor and lies on the floor breathlessly.
- (i) State in sequence any three actions which you would take to safe him. (3 Marks)
- (ii) Compose an accident report of the above case including all the essential factors. (7 Marks)

QUESTION THREE – (15 MARKS)

- (a) State any four accessories associated with a surface wiring system. (4 Marks)
- (b) With the aid of a suitable diagram explain the construction and the principles of operation of a rewirable fuse and list one advantage and disadvantage of the fuse. (7 Marks)
- (c) Differentiate between a fuse and a circuit breaker as means of excess current protection devices and state any two advantages of each. (4 Marks)

QUESTION FOUR – (15 MARKS)

- (a) List any two advantages of earthing an electrical installation. (2 Marks)
- (b) With reference to earthing system define the following terms:
- (i) Eartherd (1 Mark)
- (ii) Earth electrode (1 Mark)
- (iii) Earthing lead (1 Mark)
- (c) With the aid of a suitable wiring explain the operation of one-gang 5A, two – ways switching system and state any two advantages and one disadvantage of the system. (8 Marks)
- (d) List any two applications of (c) above. (2 Marks)