



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology

Department of Electrical and Electronic engineering

UNIVERSITY EXAMINATION:

Diploma in Electrical Power Engineering

Electrical Power systems II

EEP 2302

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **five** Questions;. Attempt any **THREE** Questions.

Do not write on the question paper.

Question ONE

(a) Explain the following with reference to underground cables:

- (i) Void formation
- (ii) How voids lead to insulation breakdown
- (iii) How void formation can be prevented

(11marks)

(b) With the aid of a labeled diagram for a single core cable derive the expression for:

- (i) Capacitance
- (ii) Maximum and minimum dielectric stress

(9 marks)

Question TWO

(a) Explain why the neutral of a power system is earthed.

(4 marks)

(b) Explain the relative merits of the following:

- (i) Solid earthing
- (ii) Resistance earthing
- (iii) Reactance earthing

(6 marks)

(c) With the aid of a diagram explain the method of earthing through a voltage transformer and state its advantages and applications.

(10 marks)

Question THREE

(a) (i) State the purpose of reactors in a power system.

(ii) With the aid of diagrams describe THREE ways of placing reactors.

(6 marks)

(b) The single phase ring distributor ABC shown in Figure I is fed at A. The loads at B and C and the impedance of the sections are as shown. Determine the current in all sections and directions of flow.

(14 marks)

Question FOUR

(a) State in reference to power stations;

- (i) three reasons for voltage control

(ii) four methods of voltage control

(7 marks)

(b) Explain the use of a synchronous condenser to control transmission line voltage.

(8 marks)

(c) State ;

(i) The main location of voltage control equipment in a power station

(ii) Two disadvantages of on load tap changing

(5 marks)

Question FIVE

(a). Define and explain the terms :

(i) feeder,

(ii) distributor

(iii) service mains.

6 marks

(b). Discuss the relative merits and demerits of underground and overhead systems.

5 marks

(c). Explain the following systems of distribution connection schemes :

(i) Radial system

(ii) Ring main system

(iii) Interconnected system

6marks

(d). Discuss briefly the design considerations in distribution system.

2marks

(e) Explain why AC is preferred to DC for transmission and distribution.

1mark