



MACHAKOS UNIVERSITY

University Examination 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

DIPLOMA IN ELECTRICAL AND ELECTRONIC ENGINEERING

MED-PR 214: ELECTRICAL MACHINES II

DATE: 2/5/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS:

ANSWER QUESTION ONE AND ANY OTHER TWO

QUESTION ONE (30 MARKS)

- a) Explain The function of the following parts of a d.c machine (6 marks)
 - i. Yoke
 - ii. Armature core
 - iii. Pole shoes
- b) Classify D.C motors in terms of field connections (6 marks)
- c) List any **four** applications of D.C series motor (4 marks)
- d) Highlight any reasons of skewing rotor bars of (4 marks)
- e) Explain any **three** duty cycles of machines (10 marks)

QUESTION TWO (20 MARKS)

- a) List **three** factors which determine the force of rotation of ad.c motor (3 marks)
- b) Explain any **three** methods of speed control of D.C motors (6 marks)
- c) A 230 v shunt motor takes 10A. A shunt and armature resistances are 300 Ω and 0.3 Ω respectively. Calculate (11 marks)

- (i) Back emf
- (ii) Mechanical power

QUESTION THREE (20 MARKS)

- a) List advantage of power factor improvement (4 marks)
- b) Explain any **three** methods of power factors correction (16 marks)

QUESTION FOUR (20 MARKS)

- a) List **three** drives used in electrical (3 marks)
- b) Highlight the factors to consider for choice of an electricity drive (7 marks)
- c) Explain any **four** motor enclosures (10 marks)

QUESTION FIVE (20 MARKS)

- a) List the **two** types induction motors (2 marks)
- b) Explain the operation of squirrel cage induction motor (8 marks)
- c) A 6 pole ,50Hz induction motor runs at a 750 rpm calculate
 - i. Synchronous speed
 - ii. Slip
 - iii. Rotor speed at stand still (10 marks)