



MACHAKOS UNIVERSITY

University Examinations for 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

SECOND YEAR SECOND SEMESTER EXAMINATION FOR CERTIFICATE IN

ELECTRICAL AND ELECTRONICS ENGINEERING

EPC 214: INDUSTRIAL MACHINE AND CONTROL

DATE: 5/6/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Define a PLC control. (4 marks)
- b) State the major operation cycles of PLC. (8 marks)
- c) Highlight the major input and output devices of a PLC (6 marks)
- d) Explain any FOUR types of switches used in machine control (6 marks)
- e) Explain any THREE types of protective devices in machine control (6 marks)

QUESTION TWO (20 MARKS)

- a) List any FIVE characteristics of Alternators motor (5 marks)
- b) Explain the working principle of an alternator(5mks)
- c) List the major PLC hardware components (5 marks)
- d) List any 3 advantages and disadvantages of PLC control. (6 marks)

QUESTION THREE (20 MARKS)

- a) Explain the 3 mounting methods of motors. (6 marks)
- b) List any six steps during mounting of a given motor. (6 marks)
- c) Explain any FOUR types of enclosures for motors (8 marks)

QUESTION FOUR

- a) List any three components of a control panel. (3 marks)
- b) Explain the factors to consider in design of a control panel (7 marks)
- c) Explain the power and control circuit of Direct on line motor control of motor (10 marks)

QUESTION FIVE (20 MARKS)

- a) Explain the constructional features of a synchronous motor (6 marks)
- b) List any major faults and remedies in the following motors
 - i) DC Motors
 - ii) Induction Motors
 - iii) Single Phase Motors
 - iv) Alternators (14 marks)