



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

SECOND YEAR SECOND TERM EXAMINATION FOR

DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

2502/202/PE: PLANT ELECTRICAL

DATE: 7/6/2021

TIME: 8.30-11.30 AM

INSTRUCTIONS

ANSWER ALL QUESTIONS

1.
 - a)
 - i Define the term wiring system. (2 marks)
 - ii Explain any **five** factors to consider for the choice of a wiring system. (10 marks)
 - b) List the size of cable and rating of the fuse for protection for the following electrical circuits.
 - i. Lighting
 - ii. Cooker control unit
 - iii. Socket outlets (8 marks)
2.
 - a) Define the terms:-
 - i. Surface wiring
 - ii. Concealed wiring (4 marks)
 - b)
 - i) Explain any types of trunking wiring system. (6 marks)
 - ii) State any **two** advantages and disadvantages of P.V.C Wiring system. (4 marks)
 - c) Explain the areas application of the following wiring systems.
 - i. Ducting

- ii. Catenary
 - iii. Conduit (6 marks)
- 3. a) Explain the function of the following parts of a D.C machine
 - i. Yoke
 - ii. Armature core
 - iii. Field windings (8 marks)
- b) A 240v d.c motor has a shunt resistance of 50Ω .The armature resistance is 0.4Ω .
The supply current is 20A .Calculate the back e.m.f (6 marks)
- c) List any major faults and remedy for
 - i. DC motor
 - ii. DC generator (6 marks)
- 4 a) List any THREE advantages and disadvantages of induction motor (6 marks)
- b) Explain the construction of phase wound induction motor (6 marks)
- c) A 415V, 50Hz, 4 pole induction motor is run at 1000rpm .calculate the
 - i. Synchronous speed
 - ii. Slip
 - iii. Rotor frequency (8 marks)
- 5. a) With the aid of a flow diagram explain the major electrical supply authorities and domestic Installation equipment in a distribution system. (8 marks)
- b) i) Highlight any Four safety precautions to be observed in electrical workshop. (4 marks)
- ii) Explain the following terms of electrical installation.
 - I. Short circuit
 - II. Electric shock (4 marks)
- c) List the applications of Dc shunt Motors (2 marks)