

Student Name

Course Name INTRODUCTION TO ELECTRICAL AND COMPUTER ENGINEERING	Course Number EE F102	Course Section F01	Course CRN 34544	Examination QUIZ
Examination Date 31 JAN 2022	Examination Day MONDAY	Examination Time 10:00 – 10:15	Examination Venue DU 252	Number of Printed Pages 6
Number of Questions 1	Maximum Points 50	Examination Type CLOSED BOOK	Materials Allowed? NO	Calculators Allowed? YES
Course Instructor DR. MAHER AL-BADRI				

Formulas you may need:

$$\text{Life (h)} = \frac{\text{Capacity (Ah)}}{\text{Drain (A)}}$$

$$P=VI$$

$$\eta = \frac{P_{\text{out}}}{P_{\text{in}}}$$

$$1 \text{ hp} = 746 \text{ W}$$

$$\eta = \frac{P_{\text{out}}}{P_{\text{out}} + P_{\text{loss}}}$$

Problem QZ-2-1

A dc motor operates at 120 V.

The motor's full load is 10 hp.

The motor is used to operate a mechanical load which accounts for 75% of the motor full load.

The load draws a current of 50 A.

For this operating conditions:

- (a) Determine the power, in watts, drawn by the load. (15)
- (b) Determine the power, in watts, the motor draws from the electric power supply to operate the load. (15)
- (c) Determine the efficiency of the motor at this operating condition. (10)
- (d) Determine the total losses in the motor. (10)

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SOLUTION:
