

Federal University of Technology
Department: Industrial and Technology Education
Course: ITE 351 (Measuring Instrument and Testing)
Session/Semester: 2022-2023/ First semester Exam

Instruction: Answer four questions, question 1 and 2 are compulsory

Question 1A. Draw a neat well label diagram of megger meter and explain its principle of operation (10mks).

Question 1B. List five (5) applications of megger meter (5mks).

Question 1C. Explain the following checking and testing of installation:

- (i) Visual Inspection, (ii) Earth Resistance and Continuity Test, (iii) Insulation Resistance Test, (iv) Polarity Test and (v) Correct Circuit Connections.

Question 2A. Construct a power bank of six (6) batteries, each of these batteries having 12V and 24Ah that is capable of operating:

- i. 72Ah and 24V circuit (5mks)
- ii. 12V and 144Ah circuit (5mks) and
- iii. 72V and 24Ah (5mks)

Question 2B. Draw a neat well label diagram of hot-wire instrument and explain its principle of operation (5mks).

Question 3. Choose between Moving coil instrument and moving iron instrument to measure electric current or voltage either AC or DC. Explain the principle of operation. List 3 each of their advantage and disadvantage. Neat and well label diagram is needed. (10mks)

Question 4A. A moving coil instrument having a resistance of $30\ \Omega$ gives a f.s.d when the current is 10mA. Calculate the value of the multiplier to be connected in series with the instrument so that it can be used a voltmeter for measuring p.d up to 300V (2mks).

Question 4B. Explain the following devices: Damping device, controlling device and deflecting device (3mks).

Question 4C. Define the following terms: Precision, accuracy, discrepancy, systematic error and Residual errors (5mks).

5a. List and explain five (5) sources of instrument errors (5mks)

5b. Briefly explain with the aid of diagram principle of operation of digital measuring instrument (5mks)