

Federal University of Technology Minna,
School of Science and Technology Education
Department of Industrial and Technology Education
First Semester Examination 2018/2019 Session

COURSE:- Electrical Measuring Instruments and Testing.

COURSE CODE: ITE 351

DURATION: 2 hours,

INSTRUCTION: Answer question **one** and any other **three** questions.

- 1a With the aid of diagram, explain four basic blocks of digital meter and State three advantages of digital instruments **(7 marks)**
- b A permanent magnet moving coil measuring instrument has a total resistance of 100Ω and it indicates full scale when a current 100mA flows through it. Calculate the value of resistance of a multiplier such that the instrument will indicate 300V full scale **(3 marks)**
- c What is damping device in indicating instrument? Clearly explain with the aid of diagrams the three main types of damping used **(8 marks)**
- d Explain the attraction and repulsion types of moving iron ammeter and voltmeter **(6 marks)**
- 2a Explain with aid of diagram the construction and principle of operations of megger instrument **(9 marks)**
- b A moving coil instrument of resistance of $150\text{k}\Omega$ gives a full scale deflection in the coil, current of 1800mA . Calculate with aid of circuit the value of the shunt to be connected in parallel to enable it to be used as an ammeter for measuring current up to 10A **(3 marks)**
- 3a Why checking and testing of installation important? State four minimum check and test to be carried out in installation and explain two. **(8 marks)**
- b State four precautions of using permanent-magnet moving coil instrument **(4 marks)**
- 4a Explain three types of electrostatic voltmeters and state four advantages and two disadvantages of electrostatic voltmeters **(9 marks)**
- b State three sources of indicating instrument error **(3 marks)**
- 5a Explain hot-wire instrument and state three merits and demerits each **(6 marks)**
- b What is ammeter and voltmeter? State three differences between ammeter and voltmeter **(6 marks)**
- 6a What is a wattmeter? Explain the principle of operation of dynamometer wattmeter **(9 marks)**.
- b What is a controlling device in indicating instrument? **(3 marks)**