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| Mid-West University  **Examinations Management Office**  End-Semester Examinations -2080  Bachelor level / B.E. Civil / 2nd Semester Full Marks: 50  Time: 3 hours Pass Marks: 25  **Subject: Basic Electronics Engineering (EX421/EX101)** |

* *Attempt all the questions*
* *Figures in the margin indicate full marks.*
* *Assume suitable values, with a stipulation, if necessary.*
* *Candidates are required to answer the questions in their own words as far as possible.*

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| **1. a.** | Why are resistors, inductors and capacitors called passive elements? What do you mean by  an ideal voltage Source? | **[2]** |
| **b.** | Find current flow in 3Ω resistance. Use superposition theorem to solve the problem. | **[4]** |
| **2. a.** | Explain the modeling of diode forward biasing. Draw the output waveform of full wave rectifier. | **[3]** |
| **b.** | Find the current , assuming . | **[4]** |
| **3. a.** | Explain the structure and operation of enhancement type MOSFET. | **[3]** |
| **b.** | For the given circuit β=100, determine and for the circuit given below. | **[4]** |
| **4. a.** | State any four important properties of ideal Op-Amp. Draw the circuit diagram of differentiator using Op-amp and show the output. | **[2+3]** |
| **b.** | How do you define positive feedback? Draw the circuit for square wave generator and explain the principle of operation. | **[1+3]** |
| **5. a.** | Differentiate between FM and AM communication. Draw and label the diagram of Optical fiber. | **[3]** |
| **b.** | Define communication system. And describe communication system in brief with the complete block diagram. | **[3]** |
| **6. a.** | Simplify the expression using K-Map, F(X,Y,Z) = X'YZ+X’Y'Z+XYZ and realize it using logic gates. | **[3]** |
| **b.** | Mention the types of flip-flops and explain the operation of J-K flip-flop with necessary diagram. | **[4]** |
| **c.** | State De-Morgan's theorems with example in each case. | **[3]** |
| **7. a.**  **b.** | What is instrumentation system? Describe the instrumentation system with block diagram.  Explain briefly about remote control. | **[3]**  **[2]** |

**The End**