BAGP **2nd SEM 1st Internal Exam (FEEE)** `` **FM: 20**

Q.1 Answer any 5 questions (5*1=5)

1.a The resistance is high in case of____(metal/semiconductor /insulators) **1.b** Which of the digital gates are known as the special purpose gates? **1.c** An ideal voltage source has internal resistance value ___. **1.d** Given dc source, an inductor works as ___ circuit.(short/open) **1.e** The decimal equivalent of binary $(11011)_2$ is _____.**1.f** p type semiconductor is electrically ____ (positive/negative/neutral)**1.g** To convert the type of intrinsic semiconductor into p type extrinsic semiconductor, ___ type of dopant element should be added to it.

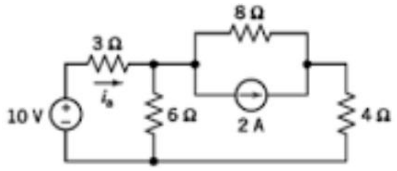
Q.2 Answer any 3 questions (5*3=15)

2.a With a neat diagram, explain the band diagram structure of metal,semiconductor and insulator. Show the formation of a PN junction diode with a proper diagram. 2.5+2.5

2.b What is intrinsic and extrinsic semiconductor? Draw the current-voltage characteristics of the PN diode in forward and reverse bias mode. 2.5+2.5

2.c Draw the truth table of a XOR gate and write down the logical expression of it. How can you construct an AND gate using NOR gates only (using De Morgan law)? 2.5+2.5

2.d How can you convert a practical current source to a voltage source? Find the value of current i in the following figure using source transformation 1+4



BAGP **2nd Sem 1st Internal Exam (FEEE)** **FM: 20**

Q.1 Answer any 5 questions (5*1=5)

1.a The resistance is high in case of____(metal/semiconductor /insulators)**1.b** Which of the digital gates are known as the special purpose gates?**1.c** An ideal voltage source has internal resistance value ___.**1.d** Given dc source, an inductor works as ___ circuit.(short/open)**1.e** The decimal equivalent of binary $(11011)_2$ is ____**1.f** p type semiconductor is electrically ____ (positive/negative/neutral)**1.g** To convert the type of intrinsic semiconductor into p type extrinsic semiconductor, ___ type of dopant element should be added to it.

Q.2 Answer any 3 questions (5*3=15)

2.a With a neat diagram, explain the band diagram structure of metal,semiconductor and insulator. Show the formation of a PN junction diode with a proper diagram. 2.5+2.5

2.b What is intrinsic and extrinsic semiconductor? Draw the current-voltage characteristics of the PN diode in forward and reverse bias mode. 2.5+2.5

2.c Draw the truth table of a XOR gate and write down the logical expression of it. How can you construct an AND gate using NOR gates only (using De Morgan law)? 2.5+2.5

2.d How can you convert a practical current source to a voltage source? Find the value of current i in the following figure using source transformation 1+4