UE25EE141A – UNIT 1 – ASSIGNMENT – ANSWER KEY

Lecture 1

1. i) $I_1 = 2A$, $I_2 = 1A$, $I_3 = 2A$
   ii) $X = 15\Omega$
   iii) $R_{eq} = 3\Omega$

Lecture 2

1. current through $500\Omega = 1.25mA$

Lecture 4

1. $R_{AB} = 4\Omega$

Lecture 5

1.

$I_{AF} = 39A$; $I_{FE} = -21A$; $I_{ED} = 39A$; $I_{DC} = -81A$; $I_{CB} = -11A$; $I_{BA} = -41A$

Lecture 6

1. i) Load current = 0.967A
   ii) Battery A absorbs 1.34A
   Battery B delivers 2.33A
   iii) P.D across the Load = 9.67V

Lecture 8

1. Current delivered by the source = 0.623A

Lecture 9

1. **R_{AB} = 3.78Ω**

Lecture 10

2. **Considering both mesh currents clockwise, mesh currents are I_1 = 4A & I_2 = 3.5A**
   Hence, current through 4Ω resistor = 0.5A

Lecture 11

2. **Current through 5Ω resistor = 1A**

Lecture 12

1. **Current due to 2V battery acting alone in 8Ω is 0.143A**
   Current due to 2A source acting alone in 8Ω is 0.857A
   Hence, by SPT, Total current I = I' + I'' = 1A

Lecture 13

1. **Current due to 5A source acting alone in 4Ω is 3.43A**
   Current due to 20V battery acting alone in 4Ω is 0.857A
   Hence, by SPT, Total current I = I' + I'' = 4.28A

Lecture 14

1. **V_{TH} = 28.57V; R_{TH} = 8.57kΩ**
   Hence, Range of voltage across R_L varies between 15.3V to 20V

Lecture 15

1. **V_{TH} = 12V; R_{TH} = 18Ω**
   Hence, Load current in branch BD will be 0.207A and flows from B to D

Lecture 16

1. **V_{TH} = 60V; R_{TH} = 9Ω**
   Hence, Range of current through R varies between 3.16A to 6A