**Assignment 9**

**Unit 11 - Week 3**

1. Write the equation for the FBD (Free Body Diagram) of the frame structure on the left side of the page. Use Newton's Laws to solve for the vertical reaction force. Answer: R_x = 0

2. Write the equation for the FBD (Free Body Diagram) of the frame structure on the right side of the page. Use Newton's Laws to solve for the horizontal reaction force. Answer: R_y = 0

3. Write the following for the FBD (Free Body Diagram) of the frame structure: Vertical reaction force, horizontal reaction force, and the sum of all forces. Use Newton's Laws to solve for the unknown forces. Answer: R_x = 0, R_y = 0, ΣF = 0

4. Write the following for the FBD (Free Body Diagram) of the frame structure: Vertical reaction force, horizontal reaction force, and the sum of all forces. Use Newton's Laws to solve for the unknown forces. Answer: R_x = 0, R_y = 0, ΣF = 0

5. Write the following for the FBD (Free Body Diagram) of the frame structure: Vertical reaction force, horizontal reaction force, and the sum of all forces. Use Newton's Laws to solve for the unknown forces. Answer: R_x = 0, R_y = 0, ΣF = 0

6. Write the following for the FBD (Free Body Diagram) of the frame structure: Vertical reaction force, horizontal reaction force, and the sum of all forces. Use Newton's Laws to solve for the unknown forces. Answer: R_x = 0, R_y = 0, ΣF = 0

7. Write the following for the FBD (Free Body Diagram) of the frame structure: Vertical reaction force, horizontal reaction force, and the sum of all forces. Use Newton's Laws to solve for the unknown forces. Answer: R_x = 0, R_y = 0, ΣF = 0

8. Write the following for the FBD (Free Body Diagram) of the frame structure: Vertical reaction force, horizontal reaction force, and the sum of all forces. Use Newton's Laws to solve for the unknown forces. Answer: R_x = 0, R_y = 0, ΣF = 0

9. Write the following for the FBD (Free Body Diagram) of the frame structure: Vertical reaction force, horizontal reaction force, and the sum of all forces. Use Newton's Laws to solve for the unknown forces. Answer: R_x = 0, R_y = 0, ΣF = 0

10. Write the following for the FBD (Free Body Diagram) of the frame structure: Vertical reaction force, horizontal reaction force, and the sum of all forces. Use Newton's Laws to solve for the unknown forces. Answer: R_x = 0, R_y = 0, ΣF = 0

**Exercises for Questions 6 to 10**

- **Exercise 6:**
  - Given vector A: 2i + 3j
  - Given vector B: -i + 4j
  - Find the resultant vector C = A + B
  - C = (2i + 3j) + (-i + 4j) = (2-1)i + (3+4)j = 1i + 7j
  - Magnitude of C = \sqrt{1^2 + 7^2} = \sqrt{50} = 5\sqrt{2}

- **Exercise 7:**
  - Given vector A: 3i - 2j
  - Given vector B: 4i + 5j
  - Find the resultant vector C = A + B
  - C = (3i - 2j) + (4i + 5j) = (3+4)i + (-2+5)j = 7i + 3j
  - Magnitude of C = \sqrt{7^2 + 3^2} = \sqrt{58}

- **Exercise 8:**
  - Given vector A: 2i + 3j
  - Given vector B: -i + 4j
  - Find the resultant vector C = A + B
  - C = (2i + 3j) + (-i + 4j) = (2-1)i + (3+4)j = 1i + 7j
  - Magnitude of C = \sqrt{1^2 + 7^2} = \sqrt{50} = 5\sqrt{2}

- **Exercise 9:**
  - Given vector A: 3i - 2j
  - Given vector B: 4i + 5j
  - Find the resultant vector C = A + B
  - C = (3i - 2j) + (4i + 5j) = (3+4)i + (-2+5)j = 7i + 3j
  - Magnitude of C = \sqrt{7^2 + 3^2} = \sqrt{58}

- **Exercise 10:**
  - Given vector A: 2i + 3j
  - Given vector B: -i + 4j
  - Find the resultant vector C = A + B
  - C = (2i + 3j) + (-i + 4j) = (2-1)i + (3+4)j = 1i + 7j
  - Magnitude of C = \sqrt{1^2 + 7^2} = \sqrt{50} = 5\sqrt{2}