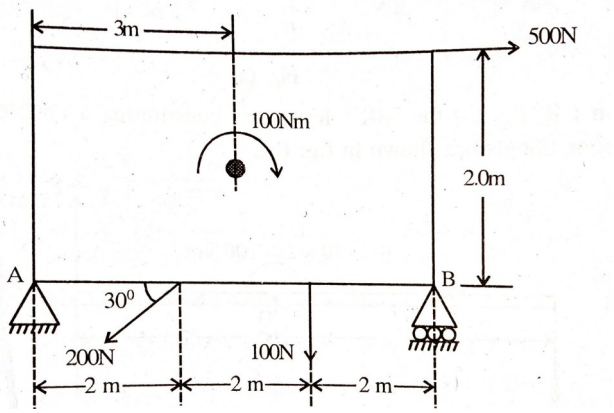
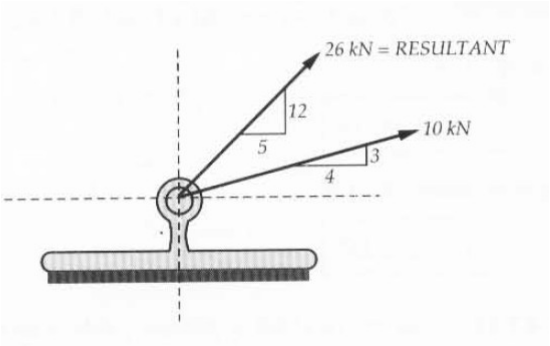
# CONTINUOUS INTERNAL EVALUATION– 1

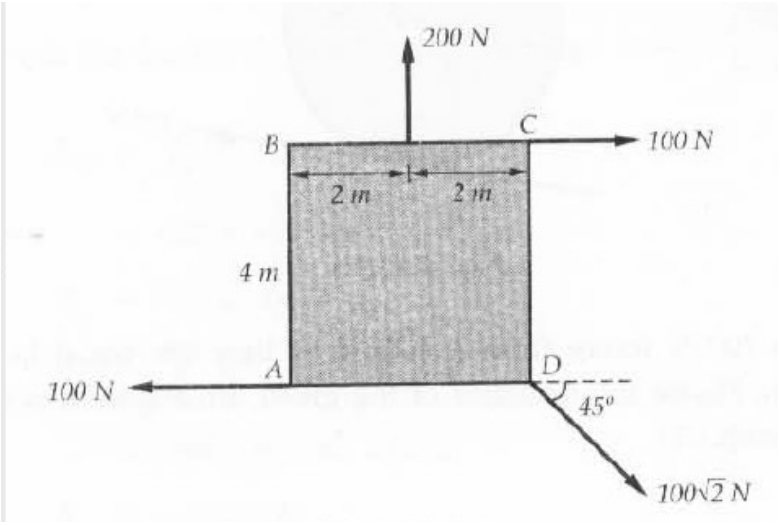
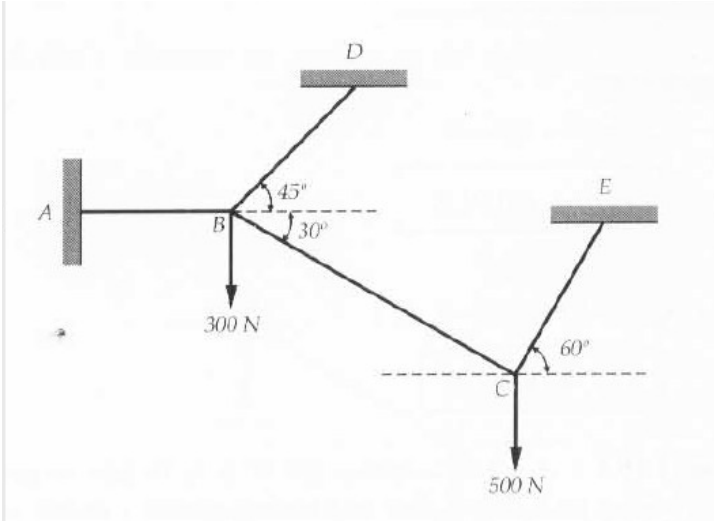
| Dept: CV | Sem / Div: 2 / D,E&F | Sub: Elements of Civil Engineering & Mechanics | S Code: 18CIV24 |
|---|---|---|---|
| Date: 26/6/21 | Time: 9.30-11.00 | Max Marks: 50 | Elective: N |
| Note: Answer any 2 full questions, choosing one full question from each part. | | | |

-

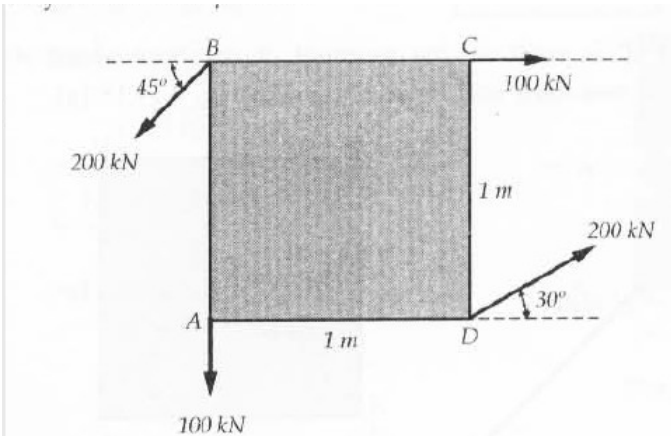
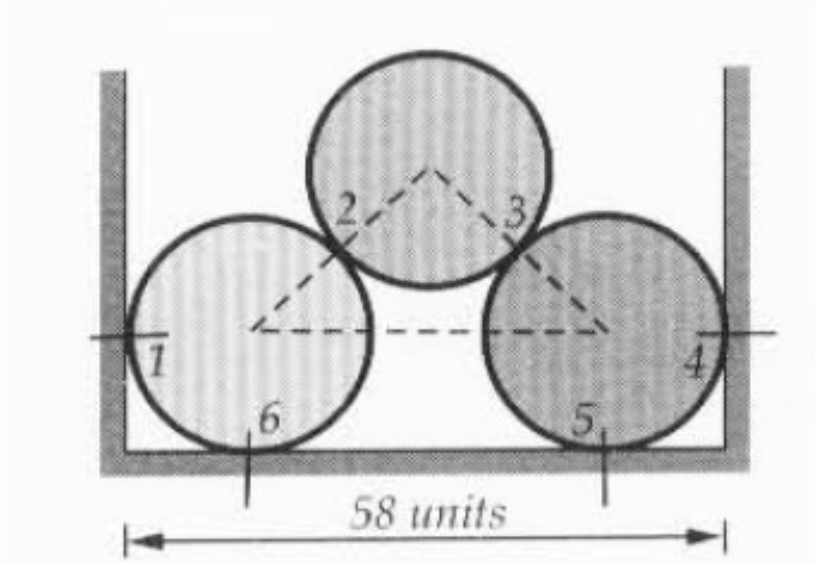
| QN | | Questions | Marks | RBT | COs |
|---|---|---|---|---|---|
| | | **PART A** | | | |
| 1 | a | Explain in detail scope of transportation engineering and geotechnical engineering. | 10 | L2 | CO1 |
| | b | State and Prove Varignon's principle of moments. | 5 | L2 | CO2 |
| | c | Determine the equivalent system of force and couple at A for the system of loading shown in fig. 1c.   Fig. 1c. | 10 | L3 | CO2 |
| | | **OR** | | | |
| 2 | a | What are the roles of Civil Engineers in infrastructure development of a country. | 10 | L2 | CO1 |
| | b | Explain law of physical independence of forces and law of superposition of forces. | 5 | L2 | CO2 |
| | c | The 26kN force is the resultant of two forces. One of which is as shown in the fig. 2c. Determine the other force.   Fig. 2c | 10 | L3 | CO2 |

## CONTINUOUS INTERNAL EVALUATION– 1

**PART B**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | For the non concurrent coplanar system shown in fig. 3a, determine the magnitude, direction and position of resultant force with reference to A.<br>  <br><br>Fig. 3a. | 10 | L3 | CO2 |
| | b | State and prove Lami's theorem. | 5 | L2 | CO2 |
| | c | Fig. 3c shows a system of cables in equilibrium condition under two vertical loads of 300N and 500N. Determine the forces developed in the different segments.<br>  <br><br>Fig. 3c | 10 | L3 | CO2 |

## CONTINUOUS INTERNAL EVALUATION– 1

| | | | | | |
|---|---|---|---|---|---|
| | | **OR** | | | |
| 4 | a | A rigid plate ABCD is subjected to forces as shown in fig. 4a. Compute the magnitude, direction and line of action of the resultant of the system with reference to point A.<br>  <br><br>Fig. 4a. | 10 | L3 | CO2 |
| | b | What is a free body diagram? Explain with examples. | 5 | L2 | CO2 |
| | c | Three cylinders weighing 500N each 24 units in diameter are placed in a channel as shown in fig. 4c. Determine reactions at all contact points. Take cylinders are smooth.<br>  <br><br>Fig. 4c. | 10 | L3 | CO2 |