

Ranking Results from Engineering Mechanics Delphi Study Rounds 1, 2 and 3

Concept	Understood? Median (Interquartile range)			Importance? Median (Interquartile range)		
	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3
	1. 3-D Visualization	3 (2.25, 5)	4 (3, 5)	4 (3.5, 5)	8 (7, 9)	8 (7.25, 9)
2. Beam Deflection	6 (4, 7)	5.5 (5, 7)	6 (5, 6)	8 (7, 10)	9 (8, 9)	8 (7, 9)
3. Beam Shear Stress	5 (3, 6.5)	4 (3, 5)	4 (3, 5)	8 (5.75, 10)	6 (5, 9)	7 (6, 8)
4. Beams-Normal Stress	7 (6, 8)	7 (6, 8)	7 (6, 8)	10 (8, 10)	9 (8, 10)	9 (8.25, 10)
5. Combined Loading/Column Buckling	5 (4, 7)	5 (4.5, 6)	5 (4, 5)	9 (7.25, 9.75)	8.5 (7.75, 9)	8 (8, 9)
6. Conservation of Energy thru Impact	3 (3, 5.75)	3 (3, 4.5)	3 (3, 4)	7.5 (3, 9.75)	8 (5.5, 8.5)	7 (7, 7.75)
7. Couple	5 (4, 7)	5 (3.25, 7)	5 (4.5, 7)	8 (4, 10)	8 (6.25, 9)	7 (6.5, 9)
8. Distributed Forces	7 (4, 8)	5 (5, 6.75)	5 (5, 6)	9 (8, 10)	9 (8.25, 9.75)	9 (8.5, 9)
9. Equilibrium – Sum of forces = 0, Sum of moments = 0 (Newton’s 3 rd Law)	7 (6, 8)	7.5 (6.25, 8)	7 (6.5, 8)	10 (10, 10)	10 (10, 10)	10 (10, 10)
10. External vs. Internal Forces	5 (4, 6.5)	5 (4, 6.75)	5 (4.5, 6)	9 (8, 10)	10 (9, 10)	10 (9, 10)
11. Importance of signs on forces	5 (4.25, 7.75)	6.5 (5, 7)	5 (5, 7)	7.5 (6, 10)	8.5 (7, 9.75)	8 (7, 9)
12. Isolating a body from surroundings	5 (4, 6.75)	5 (4, 6)	5 (4.5, 6.5)	9 (9, 10)	10 (9, 10)	10 (9, 10)
13. Linear vs. Circular Velocity and Acceleration	4.5 (3, 6)	5 (3, 5.5)	5 (3.5, 5)	7.5 (3.75, 10)	8 (7, 9)	8 (8, 8)
14. Mohr’s Circle	6 (3, 7.5)	6 (5, 6.5)	5.5 (5, 6)	7 (6, 10)	6 (4, 8)	5.5 (2.75, 8)
15. Moment of Inertia	4 (3, 7)	4 (3, 7)	4 (4, 5)	9 (7, 10)	8 (8, 9)	9 (8, 9)
16. Moments	7 (5, 8)	7 (6, 7.75)	6 (6, 6.75)	10 (9, 10)	10 (9.25, 10)	10 (10, 10)
17. Momentum	7 (2, 8)	5 (3.5, 6.5)	5 (3.5, 5.5)	8.5 (6.75, 9.25)	9 (8, 9)	9 (8.5, 9.5)
18. Rolling/Kinetic Friction	3 (2, 6)	4 (2.75, 6)	4 (3, 4)	9 (5.25, 9.75)	8 (7, 9)	7.5 (7, 8)
19. Shear Force	5 (3.5, 7.5)	5 (4.5, 6)	5.5 (5, 6)	9 (7, 10)	9 (8, 9)	8 (7.25, 9)
20. Static Friction	5 (3, 6)	5.5 (4, 6)	5 (4.5, 6)	8 (7, 9)	8 (7.25, 9)	8 (8, 9)
21. Statically Indeterminant Members	3 (2, 5)	3.5 (2, 4.25)	3.5 (3, 4)	9 (8, 10)	10 (8, 10)	9 (8.5, 10)
22. Stress vs. Strain	6 (4.5, 7.5)	7 (5, 7)	6 (6, 7)	10 (9, 10)	10 (9, 10)	10 (9, 10)
23. Sum of Forces not equal to 0 in dynamics	6 (3, 8)	6 (4, 7)	5.5 (4, 6)	10 (9, 10)	10 (9, 10)	10 (9, 10)
24. Torsion	5 (4, 8)	6 (5, 7)	6 (5.5, 7)	9 (8, 10)	9 (8.75, 10)	9 (9, 9)
25. Translational & Rotational Motion	5.5 (3, 6)	4.5 (3.25, 5)	4 (3, 5)	9 (7.75, 10)	8.5 (8, 9)	8 (8, 9)
26. Truss Analysis	5.5 (5, 8)	6 (5, 7)	6 (5.5, 7)	8 (5.75, 10)	9 (5, 9)	9 (6, 9)
27. Two Force Members	5 (5, 8)	6 (5, 7)	6 (5, 6.5)	8 (6, 10)	8 (6, 9)	7 (6.5, 8.5)
28. Weight vs. Mass	7 (5, 8)	7 (6, 7)	7 (6, 7)	10 (6.5, 10)	9.5 (9, 10)	10 (9, 10)

Understanding scale	Importance scale
1 = no one understands the concept	1 = Not at all important to understand the concept
10 = everyone understands the concept	10 = Extremely important to understand the concept