******FINAL UNIT OF THE YEAR!**

**UNIT 10: ROTATIONAL MOTION**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Monday | Tuesday | Wednesday | Thursday | Friday |
| 14-Mar | 15-Mar | 16-Mar | 17-Mar | 18-Mar |
|  |  | Due: ----- | Due: PS1 | Due: ----- |
|  |  | Lect: Intro Rotation | R. Inert, P. Axis Thm | Finish Lecture |
|  |  |  | Return SHM Test | Start Torque Lab |
|  |  | HW: PS1 | HW: --- | HW: PS2 |
| **Spring Break March 19 – April 3****HW: MC & FR Practice** |
| 4-Apr | 5-Apr | 6-Apr | 7-Apr | 8-Apr |
| Due: PS2 | Due: Lab | Due: PS3 | Due: Rotation Recap | Due: Pulley Ex #2 |
| *Torque Lab* | Lect: Torque | Static Equilibrium | **10 pt Quiz** | Return 10 pt Quiz |
| Review SB HW |  | Examples | Pulley Example | Cons. of Energy |
| HW: Lab Qs | HW: PS3 | HW: Rotation Recap | HW: Pulley Ex #2 | HW: PS4 |
| 11-Apr | 12-Apr | 13-Apr | 14-Apr | 15-Apr |
| Due: ----- | Due: PS4, EWP | Due: AP #1&2 | Due: ----- | Due: Conc Qs |
| Discuss PS4 | Physical Pendulums | **15 pt Quiz** | Lect: Cons of Mom*.* | Return Quiz |
| Energy, Work, Power |  |   | Examples | AP#3 & #4 |
| HW: AP #1&2 | HW: Quiz Mon | HW: *Conc Qs* | HW: PS5 | HW: Review |
| *Per. 1/3/5* 18-Apr | *Periods 2/4/6* 19-Apr | 20-Apr | 21-Apr | 22-Apr |
| Due: PS5, AP#3&4 |  | *All Classes* | *1/3/5* | *2/4/6* |
| Unit Review |  |  |  |  |
|  |  | **Unit 10 Exam** |  |  |
| HW: Test Wed |  |  |  |  |

**PS4: Work and Energy** pg. 321 (42, 43, 45, 48) pg. 350\* (4)

42. 56.3 J, 8.38 rad/s, 2.35 m/s, very close (2.34 m/s)

43. 2.36 m/s

45. 11.4 N, 7.57 m/s2, 9.53 m/s, 9.53 m/s

48. 10.3 min

4. (4gh/3)^.5, (gh)^.5, the disk reaches bottom first

**PS1: Kinematics** pg. 317 (3, 6, 7, 8, 18, 19)

3. 1200 rad/s, 25.0 s

6. -226 rad/s2

7. 5.00 rad, 10.0 rad/s, 4.00 rad/s2, 53.0 rad, 22.0 rad/s, 4.00 rad/s2

8. 50.0 rev

18. 29.4 m/s2, -9.8 m/s2

19. 126 rad/s, 3.77 m/s, 1260 m/s2, 20.1 m

**PS2: Rotational Inertia** (Worksheet)

**Energy, Work, and Power**

1. 7.67 rad/s

2. H = 13.9 m/s, CYL = 16.0 m/s, S = 16.6 m/s, CU = 19.6 m/s

3. 190 rad/s

4. 6.53 m/s2, 1.75 s, 11.4 m/s, 32.7 N

5. 91.8 kgm2, 0.817 rad/s2, 2.45 rad/s, 276 J, 9.00 m/s2, 1.22 m/s2, 92 W, 184 W

1. 92.0 kg\*m2, 184 J, 6.00 m/s, 4.00 m/s, 8.00 m/s, 184 J

2. 0.00625

3. 3MR2/2, 7MR2/5

4. 115 J, 13.3 m/s, 253 m/s2

5. 548 kgm2, 350 kgm2

**PS3: Torque** pg. 320 (32, 33, 37, 38, 40)

32. 177 kg

33. 3.55 Nm

37. 24.0 Nm, 0.0356 rad/s2, 1.07 m/s2

38. 21.6 kgm2, 3.60 Nm, 52.4 rev

**PS5: Ang. Momentum** pg. 351\* (19, 31, 34, 37, 54)

19. 17.5 kg\*m2/s

31. 0.433 kg\*m2/s, 1.73 kg\*m2/s

34. 7.14 rev/min

37. 0.360 rad/s CCW

54. 6mvi/(Md + 3md), M/(M+3m)

40. 0.312

**Rotation Recap**

1. 99 kgm2, 7.6 m, 53.6 Nm CW

2. 5 rad/s2, 250 rad, 39.8 rev, 15 m/s, 0.15

3. 1.53 kgm2, 7.66 rad/s2, 11.7 Nm, -4.59 x 104 J, a & d