PHYSICS MID TERM

about 45 multiple choice questions... 5 or so of which may be short word problems.

4-6 word problems.

2-3 short answer/essay type questions

TOPICS TO REVIEW:

•Basic Physical properties, definition of units, standards.
•Fundamental physical properties of physics, and SI units.
•Accuracy/Precision.
•Fundamental ideas in designing an experiment.
•Definitions and concepts of motion, distance, displacement, speed, velocity, acceleration, instaneous velocity, average velocity.
• Graphing motion: distance-time, velocity-time, acceleration-time graphs. Slope/Area relationships.
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•Uniform Motion: Velocity/Acceleration relationships. Constant acceleration one dimensional problems and calculations.

• Vectors: definitions: vector/scalars. Addition of vectors: Resolution. Finding vector components.
•Independence of perpendicular motions.
• Projectile (two dimensional) motion and word problems.
•Acceleration due to Gravity

•Relative motion.
•Special relativity definitions.

•Forces: definitions
•Newton's Laws of Motion

•Free Body Diagrams, finding Net Force
•Definition of Friction, coefficient of friction.
•Forces at an angle.

•Combination word problems with acceleration, two dimensions, forces, friction.

ESPECIALLY REVIEW:
        OLD TESTS!! (Especially for word problems/short answer)
        Chapter 1-4, end of chapter Review Questions, Conceptual Questions and Section Reviews

EXAMPLE WORD PROBLEMS:

Police find skid marks of 50 meters on a road from a car that has a maximum deacceleration of -40 m/s². Was the car exceeding the 20 m/s speed limit?

How long did it take the car to stop?

If an object is dropped from a tower and it hits the river 20 seconds later, how high is the tower?

If a diver dives off of a platform that is 20 meters above the pool with an upwards velocity of 0.5 meters per second, what is the final velocity of the diver as he hits the water, and how long till he hits the water?

A 4500 kg car is traveling along a surface with the coefficient of friction of 0.4 at a speed of 54 m/s . He sees the light and slams on his brakes, locking the tires and skids to a halt.... What is the distance he travels before he halts?

An arrow is shot in the air with a velocity of 61 meters per second at an angle of 20 degrees. How high will the arrow go?

A truck is stopped at a stoplight. When the light turns green, it accelerates at 2 m/s 2 . At the same instant, a car passes the truck going 30 m/s. Where and when does the truck catch up with the car?   draw the accuarate distance time and velocity time graph

What is the mass of a brick that I need 800 Newtons of force to lift upwards and accelerate at 2 m/s/s ?

A 50 Kg block sits on a 45 degree ramp and starts sliding down. If the ramp has a coefficient of friction of .5, what acceleration does the block have as it slides down the ramp?