1) Which one of the following includes two fundamental units (a SI base unit)?

a) mole and meter
b) newton and candela
c) joule and tesla
d) ampere and second
e) answer a) and d)

2) In a uniform motion:

a) the distance traveled is directly proportional to the time of movement
b) acceleration and velocity increase uniformly
c) the distance traveled is inversely proportional to the time of movement
d) acceleration equals 0, velocity increases
e) acceleration is directly proportional to the time of movement

3) Which answer best describes Newton's second law of motion?

a) When an unbalanced force acts on a body, the body moves at a constant speed.

b) For every action force, there is an equal and opposite reaction force.

c) An object will remain stationary or will move at a constant acceleration when all acting forces on the object are balanced.

d) An object will remain stationary or will move at a constant velocity when all acting forces on the object are balanced.

e) When an unbalanced force acts on a body, the body moves at a constant acceleration.

4) A student of mass 65kg climbs a vertical ladder 3.0m tall in a time of 5.0s. What is the increase in his potential energy and the power developed by the student against gravity? (acceleration due to gravity equals $10 m/s^2$)

a) 1950 W and 390 J

b) 195 W and 39 J

c) 1950 J and 390 W

d) 195 J and 39 W

e) 3250 J and 13 W

5) The latent heat is defined as

a) the amount of energy required to heat 1kg of an object by 1K.

b) the amount of energy required to melt 1kg of an object.

c) the amount of energy required to heat 1kg of a substance from melting to boiling point.

d) the amount of energy required to evaporate 1 kg of a substance

e) answers b) and d) are true

6) A wooden block with a volume of 0.01 m^3 floats on the surface of water. Only 0.006 m^3 of the block is submerged. The density of water is 1000 kg/m^3, and the gravitational acceleration is $10m/s^2$. What is the weight of the block if it floats on water?

a) 6N

b) 60N

c) 100N

d) 600N

e) 1000N

7) The force between two charges Q_1 and Q_2 separated by a distance *d* is *F*. If we increase one charge to $4Q_1$ and the separation to a distance 4d, the magnitude of the force:

a) increases 16 times
b) decreases 16 times
c) doesn't change
d) increases 4 times
e) decreases 4 times

8) Which of the following sentences are true?

I. Magnetic induction is the process of generating an electric current in a conductor by changing the magnetic flux around it.

II. A piece of aluminium is a source of a magnetic field.

III. A wire with current is a source of a magnetic field.

a) I and III
b) I and II
c) II and III
d) Only I
e) Only III

9) Which of the following sentences about microwaves is true?

a) Microwaves are electromagnetic waves; the frequency of MV is lower than

the frequency of X-rays.

b) The speed of microwaves is always lower than the speed of light.

c) Microwaves are mechanical waves of frequency higher than 20kHz.

d) The speed of microwaves equals the speed of ultrasounds.

e) The speed of microwaves is always higher than the speed of light.

10) An object is placed at a distance 30cm in front of a converging lens of focal length f = 20cm. The image produced by the lens is :

a) real, inverted, and the power of the lens equals 5D

b) real, upright, and the power of the lens equals 0.05D

c) virtual, upright, and the power of the lens equals 0.05D

d) virtual, upright, and the power of the lens equals 5D

e) real, inverted, and the power of the lens equals 10D