PHYSICS DEPARTMENT
FIRST SUMMER SEMESTER 2016/2017

PHYSICS 101 (First Exam)
(June 21st, 2017)

Sec#......

Student's Name (In Arabic):.................................Registration #:.................
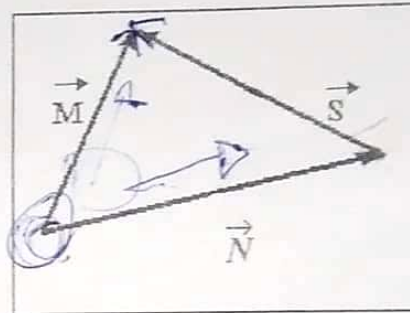
*Useful Information: Some Results Are Rounded.. CONSIDER (ACCELERATION DUE TO GRAVITY) g = 9.8 m/s^2

List your final answers in this table using **Capital Letters**
Only the answer in this table will be graded

Question	Q1:	Q2:	Q3:	Q4:	Q5:	Q6:	Q7:	Q8:	Q9:	Q10:
Final Answer										

Q1: For the vectors shown in the figure, express vector $\vec{S}$ in terms of vectors $\vec{M}$ and $\vec{N}$.

A) $\vec{M} = \vec{S} - \vec{N}$

B) $\vec{M} + \vec{S} + \vec{N} = 0$

C) $\vec{M} = \vec{N} - \vec{S}$

D) $\vec{S} = \vec{M} - \vec{N}$

E) $\vec{N} = \vec{S} + \vec{M}$

Q2: An airplane undergoes the following displacements: First, it flies 66 km in a direction 30° east of north. Next, it flies 49 km due south. Finally, it flies 100 km 30° north of west. How far (in km) the airplane ends up from its starting point.
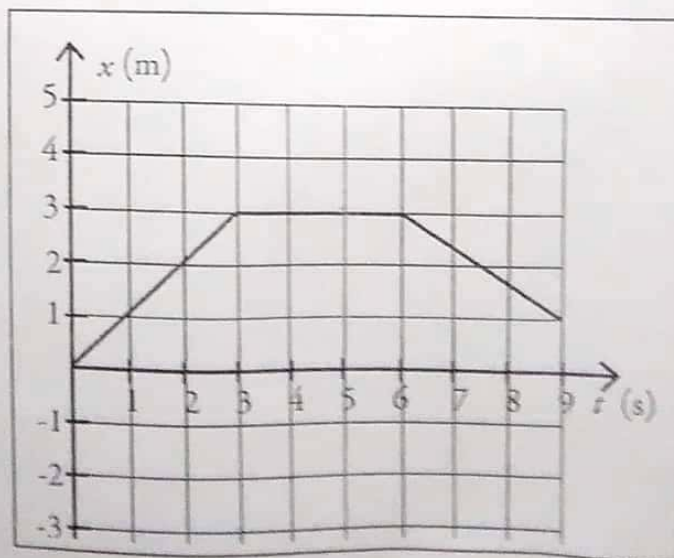
A) 73   B) 81   C) 79   D) 86   E) 93

Q3: What is the angle between the vector $\vec{A} = +3\hat{i} - 2\hat{j} - 3\hat{k}$ and the +y-axis?

A) 115°   B) 65°   C) 90°   D) 25°   E) 155°

Q4: The figure shows the position of an object as a function of time. What is the average velocity (in m/s) of the object during the time interval from time t = 3.0 s and time t = 9.0 s.

A) −0.33   B) 0.33
C) 0.66   D) −0.66
E) 0.99

Q5: The velocity of an object as a function of time is given by $v(t) = 2.00$ m/s $+ (3.00$ m/s$) t$ $- (1.0$ m/s$^2) t^2$. Determine the acceleration (in m/s^2) of the object at time $t = 5.00$ s.

A) 7.00   B) –2.00   C) 0.00   D) 2.00   E) –7.00

Q6: A car starts from rest and accelerates with a constant acceleration of 1.00 m/s^2 for $t = 3.00$ s. The car then continues for 5.00 s at constant velocity. How far (in m) has the car traveled from its starting point?

A) 4.50   B) 19.5   C) 15.0   D) 9.00   E) 25.0

Q7: A ball is thrown upward at time $t = 0.00$ s, from a point on a roof 70 m above the ground and experiences negligible air resistance. The ball rises, then falls and strikes the ground. The initial velocity of the ball is 28.5 m/s. The velocity of the ball (in m/s) when it is 39 m above the ground is:

A) –45   B) –23   C) 38   D) 45   E) –38

Q8: An object has a position given by $\vec{r} = [2.0$ m $+ (5.00$ m/s$)t]\hat{i} + [3.0$ m $- (2.00$ m/s$^2)t^2]\hat{j}$, where quantities are in SI units. What is the speed (in m/s) of the object at time $t = 2.00$ s?

A) 13.0   B) 6.40   C) 7.58   D) 9.43   E) 1.42

Q9: A child throws a ball with an initial speed of 8.00 m/s at an angle of 40.0° above the horizontal. The ball leaves her hand 1.00 m above the ground and experience negligible air resistance. How far (in m) from where the child is standing does the ball hit the ground?

A) 7.46   B) 3.80   C) 5.05   D) 6.39   E) 1.67

Q10: A ball is tied to the end of a cable of negligible mass. The ball is rotated in a circle with a radius 2.00 m making 7.00 revolutions every 10.0 seconds. What is the magnitude of the acceleration of the ball (in m/s^2)?

A) 74.2   B) 38.7   C) 67.9   D) 29.3   E) 14.8