بسم الله الرحمن الرجيم

JORDAN UNIVERSITY FOR SCIENCE & TECH. PHYSICS FIRST SEMESTER
DEPARTMENT OF PHYSICAL SCIENCES 101 (First) 1998/1999

Student Name : ( باللغة العربية ) _____ Univ. ID No. :-

ANSWER THE FOLLOWING QUESTIONS AND CIRCLE THE CORRECT ANSWER ON THE COVER SHEET PROVIDED , CONSIDER $g = 10\ m/s^2$ and approximate your answer to those given for each question

Q1) Given $A = 5\,i + 2\,j - k$ and $B = 4\,i - 3\,j + 2\,k$, the magnitude of $R = A - 2B$ is equal to ;
a) 11.2 b) 10.7 c) 9.9 d) 10.3

Q.2) In question 1 , the angle between the two vectors A and B is equal to ;
a) b) 66.0 c) 71.1 d) 90.0

Q.3) If C is equal to A x B where A and B are the two vectors given in question 1 . The vector C is equal to ;
a) $i - 14\,j - 23\,k$ b) $i - 12\,j - 14\,k$ c) $i - 10\,j + 20\,k$ d) $i - 8\,j - 17\,k$

Q.4) The time dependence of the position of a particle is given by $x(t) = 8\,t^2 + 2$ where x is in meters and t in seconds . The average velocity of this particle in the time interval between t = 2 s and t = 3 s in units of ( m/s ) is equal to ;
a) 25 b) 30 c) 35 d) 40

Q.5) At t = 1 (s) , a particle moving in the X-Y plane with velocity $v = 5\,i + 5\,j$ m/s ,and acceleration given by $a = 2\,i - 3\,j$ $m/s^2$. The velocity of the particle at t = 3 (s) is equal to ;
a) $8\,i - j$ b) $10\,i - j$ c) $9\,i - j$ d) $7\,i - j$

Q.6) A particle moving in the X-Y plane according to the following equation of motion $r = 2\,i + 3\,t^3\,j$ m . The average acceleration of the particle in the time interval between t = 3 s and t = 3.4 s in units of ( $m/s^2$ ) is equal to
a) 55.8 j b) 56.7 j c) 57.6 j d) 54.9 j

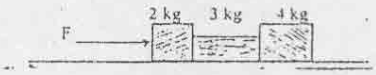
Q.7) A ball is thrown with an initial velocity $v_0 = 3\,i + 2\,j$ ( m/s ) . The velocity of the ball at t= 0.04 s in units of (m/s) is equal to
a) $3\,i + 1.7\,j$ b) $3\,i + 1.6\,j$ c) $3\,i + 1.9\,j$ d) $3\,i + 1.8\,j$

Q.8) In question 7 , the vertical displacement of the particle at x = 0.5 (m) is equal to
a) 0.06 b) 0.19 c) 0.11 d) 0.15

Q.9) In question 7 above, the range of the ball is equal to
a) 1.2 m b) 4.2 m c) 2.4 m d) 0.72 m

Q.10) A particle moving in a circular path of radius 1 m with a speed $v = 3\,t$ m/s , the magnitude of its acceleration at t = 0.4 s in units of ( $m/s^2$ ) is equal to ;
a) 3.33 b) 3.06 c) 3.11 d) 3.75

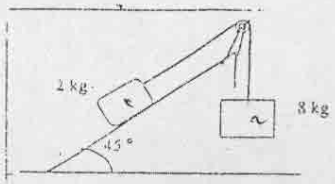
Q11) Three blocks in contact with each other are pushed across a rough horizontal surface by a 80 N force as shown in the figure below . If the coefficient of kinetic friction between the blocks and the surface is ( 0.25 ) , the acceleration of each block is equal to ;




a) 4.2 b) 3.0 c) 6.4 d) 5.3

Q12) In the figure below , the coefficient of kinetic friction between the block and the incline is 0.6 . The acceleration of the suspended block in units of $m/s^2$ is equal to

a) 6.02 b) 5.74 c) 6.52 d) 5.88




Good Luck