

توقيع		الدرجة	السؤال
مراجع السؤال	مقدر السؤال		
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			المجموع

مجموع الدرجات

رقم المراقبة

مجموع الدرجات بالحروف :

امضاءات المراجعين :

رقم المراقبة

جمهورية مصر العربية

وزارة التربية والتعليم والتعليم الفني

امتحان شهادة إتمام الدراسة الثانوية العامة لطلاب الدمج التعليمي

المادة : الرياضيات التطبيقية ( ديناميكا بالإنجليزية ) ( دمج ضعيف بصر )

الدور الأول ٢٠٢٢ م

( الإجابة في نفس كراسة الأسئلة )

اسم الطالب رباعيا /

المدرس / الإدارة /

رقم الجلوس / المحافظة /

التوقيع

الإسم

-١

توقيع الملاحظين بصحة البيانات  
ومطابقة عدد أوراق كراسة الإجابة  
عند استلامها من الطالب

-٢

2022

غير مصرح للطلاب بالكتابة في هذه الصفحة

2022

غير مصرح للطلاب بالكتابة في هذه الصفحة

2022

General Secondary Education Certificate Examination – First Session 2022  
[Third Year Secondary]

dynamics

Time: 2 Hours

(الإجابة في نفس كراسة الأسئلة)

الديناميكا (بالإنجليزية) الدور الأول ٢٠٢٢

(الأسئلة في ثلاثة عشر صفحة)

يسمح باستخدام الآلة الحاسبة

**Calculator is allowed****First: Choose the correct answer from those given**

(1) If the velocity of a particle is determined by the relation  $v = x^2 - 3$ , where  $\|\vec{v}\|$  is in (m/sec),  $\|\vec{x}\|$  is in meter, then when  $x=2$ m. the acceleration of this particle  $a = \text{_____ m/s}^2$

(a) 4

(b) 3

(c) 1

(d) zero

(2) If a body of mass 17 kg. moves under the action of the force  $\vec{F} = 8\vec{i} + 15\vec{j}$ , where  $\|\vec{F}\|$  is in Newton, then the magnitude of the acceleration equals \_\_\_\_\_ m/s<sup>2</sup>

(a)

zero

(b)

1

(c)

2

(d)

3

(3) If a force of magnitude 170 Newton acts on a body of mass 5 kg, in the same direction of its motion for  $\frac{1}{17}$  sec to change its velocity from:

$v_1 = 15$  m/sec to  $v_2$ , then  $v_2 =$  \_\_\_\_\_ m/sec

- (a) 13      (b) 17      (c) 15      (d) 25

(4) If a body moves on a straight line under the effect of the force  $\vec{F} = 6\vec{i} - 3\vec{j}$  from the point A(-1,2) to the point B(3,4), where  $\vec{i}$ ,  $\vec{j}$  are orthogonal unit vectors, then the work done by this force = ..... work unit

- (a) 18      (b) 12      (c) 6      (d) 3

(5) A particle moves in a straight line, from rest from a fixed point its algebraic measure of its velocity after time  $t$  second is given by the relation  $v = (1 - \cos t)$  , then its algebraic measure of its displacement vector  $\vec{s} =$  \_\_\_\_\_

- (a)  $t - \cos t$  (b)  $t + \cos t$   
 (c)  $t - \sin t$  (d)  $t + \sin t$

(6) If a constant force acts on a body at rest, the magnitude of its impulse on it is equal to  $35.28 \text{ N} \cdot \text{s}$  during  $\frac{1}{25}$  second , then the magnitude of this force = \_\_\_\_\_

- (a) 90 Newton (b) 882 gm.wt (c) 882 Kg.wt (d) 882 Newton

\*((بقية الأسئلة في الصفحة الرابعة))\*

(7) A body is suspended to a spring scale fixed in the ceiling of a lift, the scale reading was **18** kg.wt when the lift was ascending with uniform acceleration **a** m/s<sup>2</sup> and the scale reading was **15** kg.wt when the lift was descending with uniform acceleration **2a** m/s<sup>2</sup>, then the mass of the body = \_\_\_\_\_ kg

(a) 17

(b) 15

(c) 18

(d) 33

(8) If the two Forces  $\vec{F}_1 = \vec{i} + 5\vec{j} + 7\vec{k}$ ,  $\vec{F}_2 = 2\vec{i} - \vec{j} - 2\vec{k}$ , act on a body for two seconds, then the magnitude of the impulse of the resultant of the two forces on this body = \_\_\_\_\_ impulse unit.

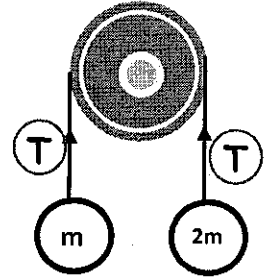
(a)  $5\sqrt{2}$ (b)  $10\sqrt{2}$ (c)  $15\sqrt{2}$ (d)  $100\sqrt{2}$

(9) If a body of mass 1 kg. fall down from a height 20 m. above the ground surface, then the **sum** of its kinetic and potential energy after 1 second from the instant of falling = \_\_\_\_\_joule.

- (a) 196      (b) 98      (c) 49      (d) 20

(10) **In the opposite figure:**

The small pulley is smooth, the system moves from rest, if the magnitude of the tension in the string = 30 N, then the pressure on the pulley = \_\_\_\_\_ N



- (a) 30      (b)  $30\sqrt{2}$       (c) 15      (d) 60

(11) A ball started motion on a rough horizontal ground with initial velocity 28 m/sec and stopped after 10 second, then the kinetic coefficient of friction between the ball and the ground equals \_\_\_\_\_

- (a)  $\frac{1}{10}$       (b)  $\frac{2}{7}$       (c)  $\frac{5}{18}$       (d) 1

(12) An airplane moves horizontally under the effect of resistance directly proportional as the square of its velocity, if the resistance equal 324 kg.wt, when its velocity 75 m/sec and its maximum velocity equal 125m/sec, then the engine power of the airplane = \_\_\_\_\_horse.

- (a) 1250      (b) 1500      (c) 1750      (d) 2000



(13) A body of mass 200 gm moved from rest from the top of an inclined smooth plane of length 25 m , inclined to the horizontal by angle of sine 0.1 , then the kinetic energy of the body when it reached the bottom of the plane \_\_\_\_\_joule

- (a) 4.9      (b) 9.8      (c) 490      (d) 980

(14) A rigid body is projected vertically upwards and its height  $x$  meter after  $t$  second from its projection is given by the relation  $x = 39.2t - 4.9t^2$  , then the maximum height of the body = \_\_\_\_\_ meter.

- (a) 4.9      (b) 9.8      (c) 58.4      (d) 78.4

(15) A body of mass 100 kg moved with acceleration  $3 \text{ m/s}^2$  up a smooth inclined plane, inclined to the horizontal by angle of measure  $30^\circ$ , under the effect of a force  $\vec{F}$  acts in the direction of the line of the greatest slope upwards, then the magnitude of the force  $\vec{F} =$  \_\_\_\_\_ Newton

- (a) 790      (b) 300      (c) 190      (d) 490

(16) If a car of mass 2 tons, moves with velocity 90 km/h, then its momentum = \_\_\_\_\_ Kg.m/s

- (a) 1800      (b) 2000      (c) 25000      (d) 50000

(17) If a body moves under the effect of the force  $\vec{F} = 2\vec{i} + \vec{j}$ , its displacement vector  $\vec{s}$  as a function of time is given by the relation  $\vec{s} = t^2\vec{i} + 5t\vec{j}$ , where  $\vec{i}$ ,  $\vec{j}$  are two orthogonal unit vectors, where  $\|\vec{F}\|$  is in Newton,  $\|\vec{s}\|$  is in meter,  $t$  is in second

, then when  $t = 4$  sec the power equals \_\_\_\_\_

- (a) 2 watt      (b) 21 watt      (c) 5 watt      (d) 28 watt

(18) The Kinetic energy of a projectile of mass 1 kg moves with velocity 30 m/sec equals \_\_\_\_\_ Joule

- (a) 3000      (b) 2000      (c) 1450      (d) 450

**Second: Answer the following questions: -**

- (19) A car moves in a straight line from rest from fixed point, its algebraic measure of its velocity after time  $t$  second is given by the relation  $v = (8t - t^2)$ , where  $\|\vec{v}\|$  is in m/s,  $t$  is in second then at  $t = 3$  sec find each of the acceleration and the displacement.

- (20) A sphere of mass 300 gm falls from a height 3.6 meters on a viscous liquid surface and penetrates it with a uniform velocity, to travel a distance of 9.6m in 2 seconds.  
Calculate magnitude of the impulse of the liquid on the sphere.

\* (( بقية الأسئلة في الصفحة الثانية عشر )) \*

- (21) A body of mass 63 kg. is placed inside a box of mass 35 kg which is tied with a rope that move the box vertically, if the magnitude of the tension in the string 105 kg.wt., then find magnitude and direction of the acceleration of the box.

\*((بقية الأسئلة في الصفحة الثالثة عشر))\*

(22) A car of mass 3 tons and the power of its engine is 90 horses moves on a horizontal road with maximum velocity 50 m/sec . Find the magnitude of the road resistance to its motion per each ton of its mass .

★★(انتهت الأسئلة)★★









