

عدد الصفحات (١٤ صفحة) + الغلاف
الخارجي + عدد (٣) صفحات مسودة وفقد أية
ورقة من الكراسة يعتبر مسئولية الطالب.

جمهورية مصر العربية

وزارة التربية والتعليم والتعليم الفني

امتحان شهادة إتمام الدراسة الثانوية العامة لطلاب الدمج التعليمي

المادة : الرياضيات التطبيقية (ديناميكا بالإنجليزية) (دمج حركي)

(الإجابة فى نفس كراسة الأسئلة) الدور الأول ٢٠٢٢ م زمن الإجابة : ساعتان

توقيع		الدرجة	السؤال
مراجع السؤال	مقدر السؤال		
			١
			٢
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			٤
			٥
			٦
			٧
			٨
			٩
			١٠
			المجموع

مجموع الدرجات

رقم المراقبة

مجموع الدرجات بالحروف :

امضاءات المراجعين :

جمهورية مصر العربية

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رقم المراقبة

اسم الطالب رباعيا /

المدرس / الإدارة /

رقم الجلوس / المحافظة /

التوقيع

الإسم

-١

-٢

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

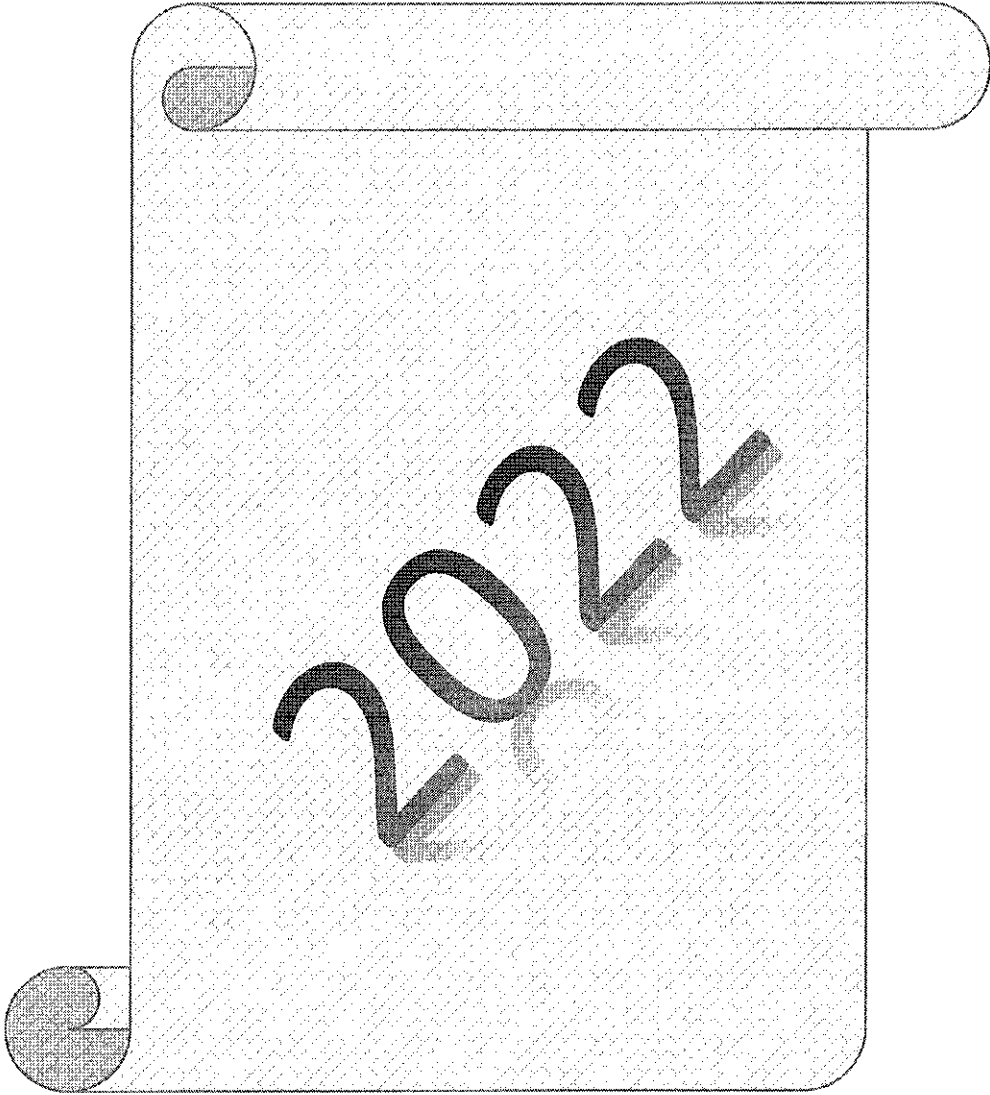
2022

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 أربعة عشر صفحة)

يسمح للطالب 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 $x=2m$. the acceleration of this particle $a = \dots\dots\dots m/s^2$

(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/s²

(a) zero

(b) 1

(c) 2

(d) 3

((بقية الأسئلة في الصفحة الثانية))

(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 $v_2 = \dots\dots\dots$ 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 = $\dots\dots\dots$ work unit

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

((بقية الأسئلة في الصفحة الثالثة))

(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 the algebraic measure of its displacement vector $\vec{s} = \dots\dots\dots$

- (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/s² and the scale reading was **15** kg.wt when the lift was descending with uniform acceleration **2a** m/s², 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.

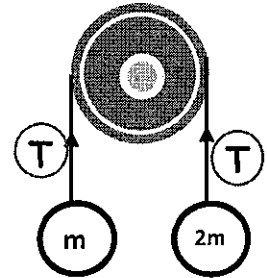
(a) $5\sqrt{2}$ (b) $10\sqrt{2}$ (c) $15\sqrt{2}$ (d) $100\sqrt{2}$

(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 smooth ball of mass 400 gm moves with velocity 24 cm/sec , collides with another smooth ball of mass 200 gm at rest , if the velocity of the first ball after the collision changed to 16 cm/sec in its previous direction, then the velocity of the second ball after collision = cm/sec

- (a) zero (b) 8 (c) 16 (d) 24

(12) If a smooth ball of mass 200gm moves in a straight line on a horizontal ground with velocity 10 m/s it collides with a vertical smooth wall perpendicular the direction of its motion , it rebounds with velocity 2 m/s , then the lost in kinetic energy according to the collision equals.....joule

- (a) 4.9 (b) 9.6 (c) 9.8 (d) 19.6

(13) 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

(14) The Kinetic energy of a projectile of mass 1 kg moves with velocity 30 m/sec =..... Joule

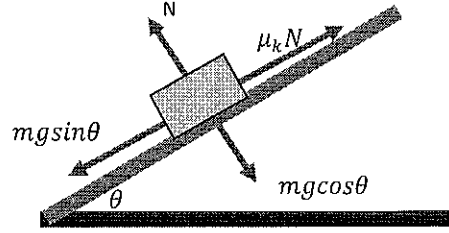
- (a) 3000 (b) 2000 (c) 1450 (d) 450

Second: Answer the following questions: -

- (16) 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 $t = 3 \text{ sec}$ find each of acceleration and displacement.

((بقية الأسئلة في الصفحة العاشرة))

- (17) A body descends from rest from the top an inclined rough plane of length 4.5 m and height 2.7m, if the coefficient of the kinetic friction equals $\frac{1}{2}$, find the velocity of the body when it reaches the plane base.



(18) 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))

- (19) 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))

(20) 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 .

(21) A ring of mass 250 gm start slides on a rough vertical cylindrical pool, if its velocity 7.2 m/s after it traveled 4 meters from the beginning of its motion. Calculate the work done by the resistance during the motion.

(((انتهت الأسئلة)))

*** مسودة ***

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*** مسودة ***

A series of horizontal dashed lines for writing, filling the majority of the page.

*** المائدة ***

A series of horizontal dashed lines for writing, spanning the width of the page.