

جمهورية مصر العربية

وزارة التربية والتعليم والتعليم الفني

امتحان شهادة إتمام الدراسة الثانوية العامة لطلاب الدمج التعليمي

المادة : الرياضيات التطبيقية (استاتيكا بالإنجليزية) (دمج شلل)

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

توقيع		الدرجة	السؤال
مراجع السؤال	مقدر السؤال		
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			المجموع

مجموع الدرجات

رقم المراقبة

مجموع الدرجات بالحروف :

امضاءات المراجعين :

رقم المراقبة

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اسم الطالب رباعي /

الدراسة / الإدارة /

رقم الجلوس / المحافظة /

التوقيع

الإسم

-١-

-٢-

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

2022

تدبير مصرح للطلاب بالكتابة في فئة الأصناف

2022

تدبير مصرح للطلاب بالكتابة في فئة الأصناف

2022

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

Statics

Time: 2 Hours

(الإجابة في نفس كراسة الأسئلة)

الدور الأول ٢٠٢٢

الاستاتيكا (بالإنجليزية)

(الأسئلة في عشر صفحات)

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

(1) A body of weight 16 Newton is placed on a horizontal rough plane and a horizontal force of magnitude 8 Newton acts on it, if the body is about to move, then the coefficient of the static friction between the body and the plane equals

Ⓐ $\frac{1}{2}$

Ⓑ $\frac{1}{7}$

Ⓒ $\frac{1}{14}$

Ⓓ $\frac{1}{21}$

(2) If the force $\vec{F} = 3\hat{i} - 4\hat{j}$ acts at the point $A(3,2)$, then the moment of this force \vec{F} about the point $B(-2,1)$ equals

Ⓐ $23\vec{k}$

Ⓑ $-23\vec{k}$

Ⓒ $5\vec{k}$

Ⓓ $-5\vec{k}$

((بقية الأسئلة في الصفحة الثانية))

(3) Two parallel forces act in the same direction, their magnitudes 20 , 16 Newton and act at two points A, B respectively where $AB=9$ cm, if their resultant acts at a point C, then $AC = \dots\dots\dots$ cm

(a) 4

(b) 5

(c) 6

(d) 7

(4) If the two forces: $\vec{F}_1 = 5\hat{i} + L\hat{j}$, $\vec{F}_2 = m\hat{i} - 3\hat{j}$ form a couple, then

$L + m = \dots\dots\dots$

(a) 2

(b) 8

(c) -2

(d) -8

((بقية الأسئلة في الصفحة الثالثة))

(5) A, B are two physical bodies their weights are 4 , 8 Newton respectively, if the distance between them is 6 meter, then their center gravity lies at a distancemeter from the body A

(a) 4

(b) 6

(c) 8

(d) 12

(6) A body of weight 27 kg. wt is placed on a horizontal rough plane, if the measure of the angle of friction between the body and the plane 30° , then the magnitude of the horizontal force which make the body is about to move=.....kg.wt

(a) $27\sqrt{3}$

(b)

 $9\sqrt{3}$

(c)

27

(d) 9

(7) If the force $\vec{F} = 4\hat{i} + 3\hat{j}$ acts at the point $A(2, -1)$, then the length of the perpendicular drawn from point $B(-1, 3)$ on the line of action of the force \vec{F} equals Length unit

 (a) 3

 (b) 4

 (c) 5

 (d) 6

(8) F_1, F_2 are magnitudes of two parallel forces acting in opposite directions, where $F_1 > F_2$ and their resultant is at a distance 10 cm, 15 cm from the first force and the second force respectively, if the magnitude of their resultant 25 Newton, then:

$F_1 = \dots\dots$ Newton , $F_2 = \dots\dots$ Newton respectively

 (a) 50, 25

 (b) 75, 50

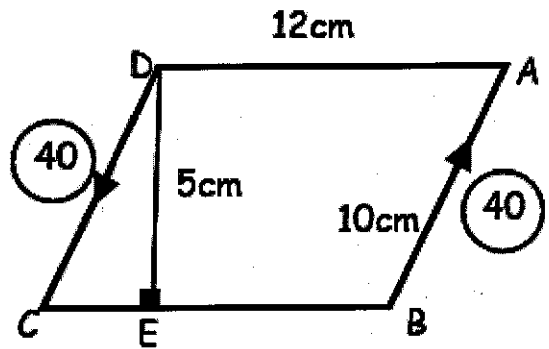
 (c) 10, 15

 (d) 15, 10

(9) A rod is hanged to a vertical wall , let x and y are the algebraic perpendicular components of the reaction of the hinge \bar{R} and if $x = a\sqrt{7}$ gm.wt. , $y = a\sqrt{2}$ gm.wt. , $R = 21$ gm.wt., then the value of $a = \dots\dots\dots$, (where $a > 0$)

- (a) 3 (b) 7 (c) 9 (d) 21

(10) In the opposite figure:
ABCD is a parallelogram,
If the two forces of magnitudes
40, 40 Newton act in directions
as shown in the opposite figure
, then the algebraic measure of
moment of its couple = N .cm



- (a) 240 (b) 200 (c) -240 (d) -400

((بقية الأسئلة في الصفحة السادسة))

(11) If a body of weight 24 kg.wt. is placed on a horizontal rough plane, a force of magnitude 48 kg.wt. acts on it in direction inclined to the plane by angle of measure 30° downwards and makes it is about of move, where the coefficient of static friction between the body and the plane $\frac{\sqrt{3}}{2}$, then the magnitude of the resultant reaction = kg.wt.

- (a) $28\sqrt{7}$ (b) 48 (c) $24\sqrt{7}$ (d) 24

(12) Center of gravity of a fine lamina in the form of an equilateral triangle of side length 6 cm lies at a distance =cm from a base of the triangle.

- (a) $\sqrt{3}$ (b) $2\sqrt{3}$ (c) 3 (d) $3\sqrt{3}$

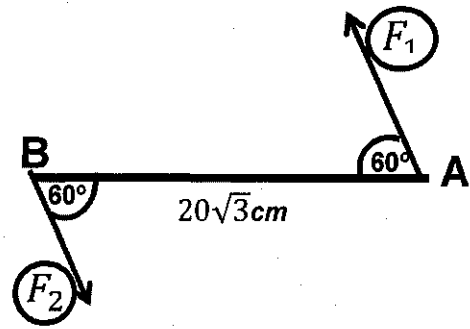
(13) If the two forces: $\vec{F}_1 = 5\hat{i} - L\hat{j}$, $\vec{F}_2 = \hat{i} + 3\hat{j}$ are parallel, then $L = \dots\dots$

- (a) 5 (b) 3 (c) -15 (d) -3

(14) \overline{AB} is a uniform ladder of weight 15 kg.wt. rests with its end A on a rough horizontal ground, with its end B on a smooth vertical wall, if the reaction of the vertical wall on the ladder $5\sqrt{3}$ kg.wt, the ladder is about to slide, then the coefficient of the static friction between the ladder and the ground =

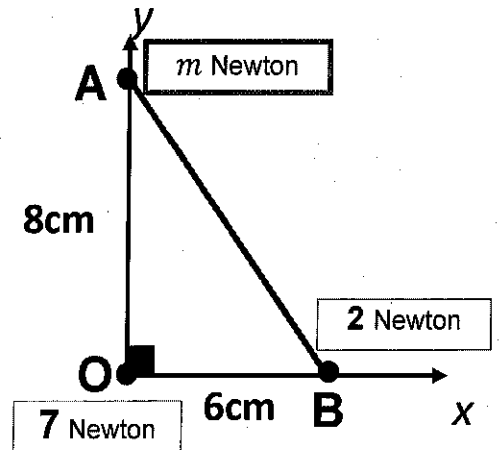
- (a) $\frac{\sqrt{3}}{3}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\sqrt{3}$ (d) $\frac{1}{2}$

(15) In the opposite figure:
 The two forces of magnitudes F_1, F_2 form a couple and the algebraic measure of its moment 210 Newton .cm , then $F_1 = \dots\dots\dots$ Newton



- (a) 21
- (b) 10
- (c) 7
- (d) 3

(16) In the opposite figure:
 If the point $G(1,2)$ is the center of gravity of masses of weights $m, 2$ and 7 Newton are fixed at the vertices of ΔABO as in the figure where O is the origin, then $m = \dots\dots$ N



- (a) 3
- (b) 4
- (c) 5
- (d) 9

(17) If the body is placed on a rough inclined plane, it is noticed that its about to slide downwards under its own weight when the plane is inclined to the horizontal, at angle whose cosine $\frac{1}{2}$ then measure of the angle of friction =

- (a) 30° (b) 15° (c) 45° (d) 60°

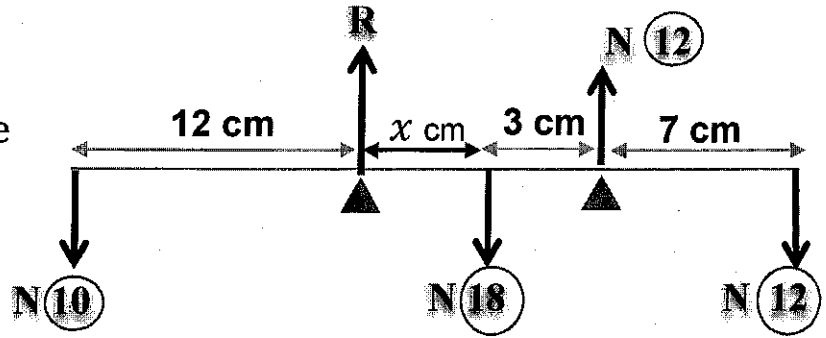
(18) If the force $\vec{F} = \hat{i} + 2\hat{j} - 3\hat{k}$ acts at the point A(-1,2,1) , then the moment of the force \vec{F} about the point B(2,-3,-1) equals

- (a) $19\hat{i} - 7\hat{j} - 11\hat{k}$ (b) $-19\hat{i} - 7\hat{j} + 11\hat{k}$
(c) $-19\hat{i} - 7\hat{j} - 11\hat{k}$ (d) $-\hat{i} - 7\hat{j} - \hat{k}$

((بقية الأسئلة في الصفحة العاشرة))*

(19) In the opposite figure:

If the set of forces are in equilibrium, then the value of $x = \dots\dots$ cm



- (a) 1
- (b) 2
- (c) 3
- (d) 4

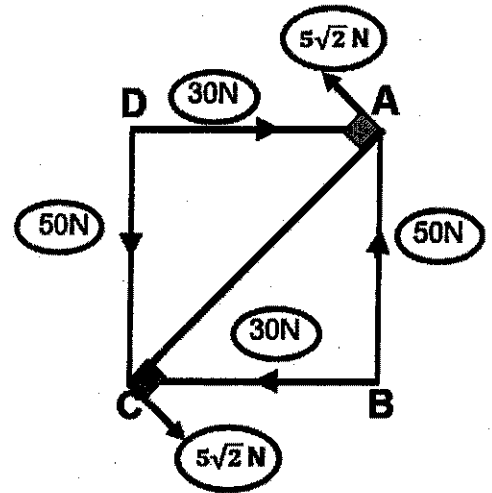
(20) In the opposite figure:

ABCD is a square of diagonal

Length $4\sqrt{2}$ cm,

The algebraic measure of

the resultant couple =N.cm



- (a) -200
- (b) 120
- (c) 80
- (d) -40

*** مسودة ***

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2022