PHYS 110

Second TERM 1439H

الدوري الأول (طالبات)

جامعة الملك عبد العزيز

1 شرح كامل للمقرر

2 ملخص للقوانين

3 نماذج الاختبارات السابقة

4 مراجعة عامة شاملة لمقرر الدوري الأول

5 شرح مفصل لحل جميع الأسئلة

Before Exam

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مركز .. د / معاذ ابراهيم

** للتعليم عن بعد **

لتدريس طالبات السنة التحضيرية بجامعتي الملك عبد العزيز
وجامعة جدة

مادة (فيزياء ١١٠)

**الخطة الدراسية كالاتي :

1 - شرح مقرر كل دوري مع ملخص للقوانين في نهاية كل شابتر

2 - حلول اسئلة منسقة المادة والموقع التفاعلي .

3 - مراجعة شاملة علي المقرر قبل اختبار الدوري .

**4 -**حل تيست بانك يحتوي علي نماذج اختبارات سابقة .

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للتسجيل

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Ch.1

Measurments

القياسات

القياسات Measurments

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            Base quantities                    Not base quantities
            كميات اساسيه                    كميات مشتقه (غير اساسيه)
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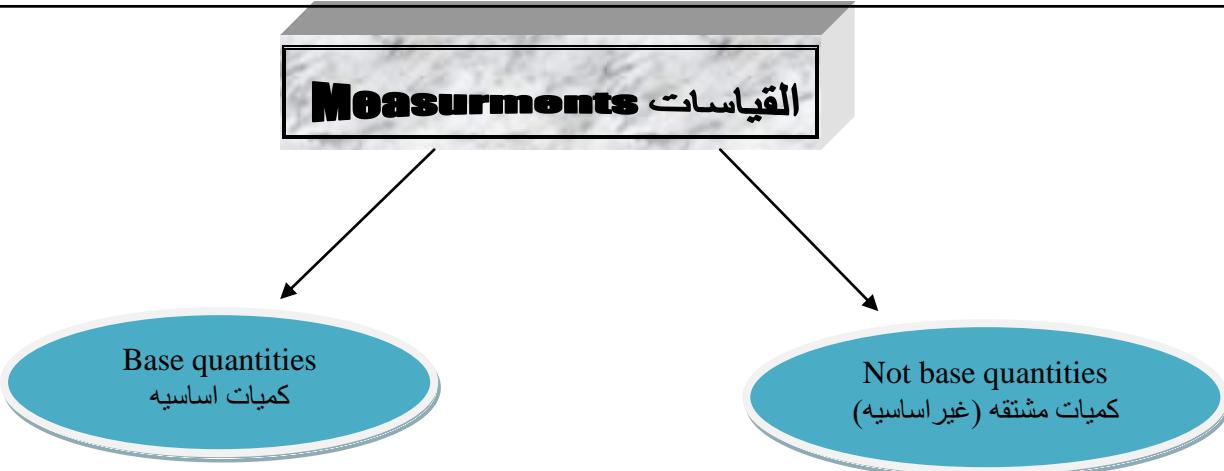
1- the base quantities SI is :-

-quantities	S.I units	Dimension
Length الطول	متر M	L
Mass الكتله	كيلو جرام Kg	M
Time الوقت	ثانيه Sec	S

System international of unites: **SI unites**

(M – Kg – S)

25. **The SI units** of the base quantities (Length, Mass, Time) are:

(a) m, kg, s   (b) cm, g, s   (c) km, g, s   (d) km, kg, s

10. The **base quantities** are:

a) (Speed, Mass, Time)   c) (Length, Speed, Time)
Ⓑ (Length, Mass, Time)   d) (Length, Mass, Speed)

1- "distance" "m"

* من mm $\xrightarrow[\text{إلى}]{\div 1000}$ m من $\xrightarrow[\text{إلى}]{\times 1000}$ mm

* من cm $\xrightarrow[\text{إلى}]{\div 100}$ m من $\xrightarrow[\text{إلى}]{\times 100}$ cm

* من km $\xrightarrow[\text{إلى}]{\times 1000}$ m من $\xrightarrow[\text{إلى}]{\div 1000}$ km

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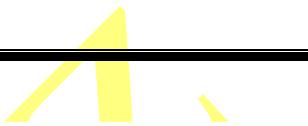
20. How many **centimeters in 1 km**?

(a) 10^5 cm   (b) 10^2 cm   (c) 10 cm   (d) 10^4 cm

Ex.: How many meters in 15,5 km ?

Solution

Data

15,5 km

km $\xrightarrow{\times 1000}$ m

Convert to "m"

$15,5 \times 1000$

$= 15500$ m

19. There are **1000 meters** in

(a) 1 kilometer   (b) 10 kilometer   (c) 100 cm   (d) 10,000 cm

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27. 50 km =

(a) 5×10^5 cm   (b) 5×10^6 cm   (c) 5×10^7 cm   (d) 5×10^8 cm

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30. The conversion factor to convert 6 m to mm is:

(a) $\dfrac{10^3\, mm}{1m}$ (b) $\dfrac{10^3\, mm}{6m}$ (c) $\dfrac{1m}{10^3\, mm}$ (d) $\dfrac{6m}{10^3\, mm}$

Ex: **If the volume of a cube is 30.2 c m^3. Find is volume in SI unite :**

a) 30.2×10^6 m^3 b) 30.2×10^{-6} m^3 c) 3.02×10^{-5} m^3

$$\text{Cm} \xrightarrow{\div 100} \text{m}$$

$$\text{c m}^3 \quad \div (100)^3 \quad \text{m}^3$$

$$= \frac{30.2}{(100)^3} \quad = \quad 3.02 \times 10^{-5} \ \text{m}^3 \quad (\ \text{C}\ )$$

٦

13. 1 mm^2 =

(a) 10^{-3} m^2 (b) 10^{-6} m^2 (c) 10^{-9} m^2 (d) 10^{-12} m^2

9. A **square** with an **edge** of **1 cm** has an area of: (area = edge^2)

(a) 10^2 m^2 (b) 10^4 m^2 (c) 10^{-4} m^2 (d) 10^{-6} m^2

14. If the **length, height, and width** of a **rectangular block** are **3 cm, 4 cm, and 5 cm** respectively, then the **volume** is

(a) 60 m^3 (b) 60 cm^3 (c) 60 m   (d) 60 cm

22. If **1m = 3.281 ft**, then **3.375 ft^3** =

(a) 1.2 x 10^2 m^3 (b) 9.6 x 10^{-2} m^3 (c) 10.5 m^3 (d) 0.21 m^3

2- Time " S "

* من min $\xrightarrow[\text{إلى}]{\times\ 60}$ S $\xrightarrow[\text{إلى}]{\div\ 60}$ min   من

* من h $\xrightarrow{\times\ 3600}$ S $\xrightarrow{\div\ 3600}$ h

* km/h $\xrightarrow{\dfrac{\times\ 1000}{3600}}$ m/s $\xrightarrow{\dfrac{\times\ 3600}{1000}}$ km/h   من

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7. The **conversion factor** to convert **hours to seconds** is:

(a) $\dfrac{1\ s}{3600\ h}$ (b) $\dfrac{3600\ h}{1\ s}$ (c) $\dfrac{1\ h}{3600\ s}$ (d) $\dfrac{3600\ s}{1\ h}$

4. The conversion factor to convert **3 min to seconds** is

(a) $\dfrac{3600\,s}{3\,min}$ (b) $\dfrac{60\,s}{3\,min}$ (c) $\dfrac{3600\,s}{1\,min}$ (d) $\dfrac{60\,s}{1\,min}$

32. There are 1209600 seconds in one week.

(a) True   (b) False

---

2. 12 days = 700 hours

   a) True   **b)** False

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2. How many **seconds** are in **36 days**

   a) 31.104×10^5 s   c) 31.104×10^4 s

   b) 31.104×10^6 s   d) 31.104×10^2 s

5. Which of the following **is not** used as a unit of **time**,

a) hour (h)   **b)** day (d)   **ⓒ** meter (m)   **d)** seconds (s)

3- mass "Kg"

* من $g \xrightarrow{\div 1000} \overset{من}{Kg} \xrightarrow{\times 1000} g$

* من $g/cm^3 \xrightarrow{\times 1000} kg/m^3 \xrightarrow{\div 1000} g/cm^3$

18. The **SI base unit** for **mass** is:

(a) gram   (b) pound   (c) kilogram   (d) kilopound

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24. A **10 kilogram** =

(a) 10^6 g   (b) 10^3 g   (c) 10^4 g   (d) 10^2 g

Ex.: A man has mass 150 kg convert This mass to grams:-

Solution

Data

m= 150 kg

kg $\xrightarrow{\times 1000}$ g

Find:
Convert to "g"

$\therefore$ 150 × 1000
 = 150000 g

OR

مع تحريك الفاصلة 5 أعداد لليسار   1,5 × 10^5

Ex : **A gram is equal to** :

   a) 10^{-2} kg   b) 10^{-3} kg   c) 10^{-4} kg   c) 10 kg

28.   100 g/cm^3 =

(a) 10^3 kg/m^3 (b) 10^4 kg/m^3 (c) 10^5 kg/m^3 (d) 10^6 kg/m^3

Are the following statements (True ✓) or (False ✗) ?

31.   The SI base unit for mass is gram.

(a) True   (b) False

2- the not base quantities

1- Speed $\longrightarrow$ **m/S**

2- Acceleration $\longrightarrow$ m/s^2

Speed

Ex.: If the velocity of a car is 50 km/ hr. find the velocity in SI units.

Solution

V $\rightarrow$ m / s

↓

وحدتها

السرعة $\rightarrow$ m/ s

ملحوظة:

m/s $\leftrightarrow$ $\dfrac{m}{s}$

تحول

100 Km/ hr $\rightarrow$ m/s

$\therefore$ $50 \times \dfrac{1000}{3600} = 13.89$ m/s

A car is traveling at 20 m/s. The speed of this car is equivalent to:

Solution:

(A) 23 km/h   (B) 56 km/h   (C) 72 km/h   (D) 97 km/h

A train moves with a speed of 65 mile per hour. The speed in SI units is: (Hint: 1 mile = 1610 m)

Solution:

(A) 24   (B) 29   (C) 32   (D) 37

15. If **1 mi = 1609 m** then **55 mi/h** is

(a) 15.4 m/s   (b) 24.6 m/s   (c) 66.3 m/s   (d) 88.1 m/s

8. **(1 m = 3.281 ft)** then **1.5 ft/h** equals:

(a) 1.37×10^{-3} m/s   (b) 1.27×10^{-4} m/s   (c) 1645.8 m/s   (d) 17717.4 m/s

Ex: Find The acceleration of car in SI units if it is given by 25 km/min^2 .

Solution

$a \quad \rightarrow \quad m/s^2$

$\downarrow$

التسارع $\rightarrow m/s^2$

$25 \, Km/min^2 \rightarrow m/s^2$

$\therefore 25 \times \dfrac{1000}{(60)^2} = 6.94 m/s^2$

عرض خاص

(1) Kilo watt $\xrightarrow{\quad \times 10^3 \quad}$ watt

(2) Mega watt $\xrightarrow{\quad \times 10^6 \quad}$ watt

(3) gega watt $\xrightarrow{\quad \times 10^9 \quad}$ watt

(4) Tera watt $\xrightarrow{\quad \times 10^{12} \quad}$ watt

Ex : **2 Megawatt = …………**

a) 2×10^6 **w**   **b)** 2×10^{-6} **w**   **c)** 2×10^9 **w**   **d)** 5×10^6 **w**

Ex : **4800 watt = ………..**

a) 0.048 kw   **b) 4.8×10^6 kw**   **c) 48 kw**   **d) 4.8 kw**

10. 10^3 gigawatts is:

(a) 10^{12} watts   (b) 10^9 watts   (c) 10^{-6} watts   (d) 10^{-3} watts

4. Electric power of magnitude 2.17×10^9 watts equals:

a) 2.17 kilowatts   c) 2.17 nanowatts
b) 2.17 megawatts   d) 2.17 gigawatts

12. Which prefix is **true**?

(a) milli = 10^3 (b) micro = 10^{-9} (c) mega = 10^6 (d) pico = 10^9

بعض التحويلات الهامة

Mille sec $\longrightarrow$ M s = 10^{-3} S

Micro sec $\longrightarrow$ μ s = 10^{-6} S

Nano sec $\longrightarrow$ η s = 10^{-9} S

Pico sec $\longrightarrow$ ρ s = 10^{-12} S

الرسمه القادمه توضح اكثر طريقة التحويل

انتبـهي
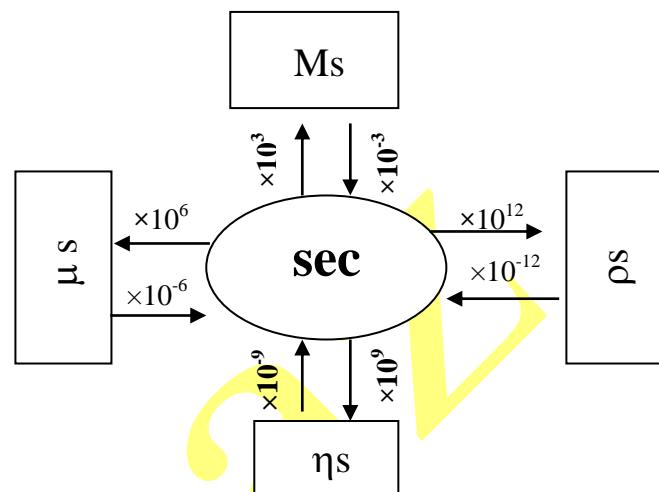
Ex : 10^2 **mille second is equal to** :

    a) 10^3 **s**   **b)** 10^2 **s**   **c)** 10 **s**   <u>**d)**</u> 10^{-1} **s**

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16. **A nanosecond** is:

(a) 10^9 s   (b) 10^{-9} s   (c) 10^{10} s   (d) 10^{-10} s

23. 10^{-9} second is

(a) millisecond   (b) microsecond   (c) nanosecond   (d) gigasecond

---

29. a microsecond is:

(a) 10^6 s   (b) 10^{-6} s   (c) 10^9 s   (d) 10^{-9} s

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7. 9.35×10^{-12} s =

a) $9.35\ \mu s$ **b)** 9.35 ns   **c)** 9.35 ms   **d)** 9.35 ps

3. We can express the very small number (**0.000 000 004 56**) using the scientific notation as:

(a) 4.56×10^{-8} (b) 4.56×10^{-9} (c) 4.56×10^{-10} (d) 4.56×10^{-11}

26. **(0.000 000 00636)** is equal to:

(a) 6.36×10^{-7} (b) 6.36×10^{-8} (c) 6.36×10^{-9} (d) 6.36×10^{-10}

1. We can write the speed of light **(c = 299,000,000 m/s)** using the **scientific notation as:**

(a) 2.99×10^{8} (b) 29.9×10^{8} (c) 0.299×10^{8} (d) 299×10^{8}

27. **(0.000 000 000 535)** is equal to:

a) $5.35 \times 10^{+10}$ **b)** $5.35 \times 10^{+7}$ **ⓒ** 5.35×10^{-10} **d)** 5.35×10^{-8}

19. The **conversion factor** is:

    a) Greater than one

    b) A small number of physical quantities

    ⓒ A ratio (النسبة) of units that is equal to unity

    d) A base quantity

5. **The conversion factor** used to convert a volume of 64 cm³ to SI units is

a) $\dfrac{10^2 cm}{1m}$ b) $\dfrac{10^6 cm^3}{1m^3}$ c) $\dfrac{1m}{10^2 cm}$ d) $\dfrac{1m^3}{10^6 cm^3}$

4. The conversion factor $\left(\dfrac{10^6 mm}{1km}\right)$ is used to convert ....to mm

A) 1 m   **B)** 1 mm   **C)** 1 km   **D)** 1 mi

&& _Summary laws chapter one_ &&

* ملخص قوانين الشابتر الاول *

1- Cm ÷ 100   M   ×100   Cm

2- Mm ÷1000   M   × 1000   Mm

3 - Km ×1000   M   ÷1000   Km

4 - Min ×60   Sec   ÷60   Min

5 - h   ×3600   Sec   ÷ 3600   h

6 - Km/h ×(100/3600) M/S ×(3600/1000) Km/h

7-   gram   ÷ 1000   Kg   × 1000   gram

8-   g/c m^3 × 1000   Kg/ m^3 ÷ 1000   g/c m^3

9-   C m^2 ÷ (100)^2 m^2

10 -   M m^2 ÷ (1000)^2 m^2

11-   C m^3 ÷ (100)^3 m^3

12-   M m^3 ÷ (1000)^3 m^3

13-   m   × 10^{-6} M   ÷10^{-6} m

14-   m × 10^{-9} M   ÷10^{-9} m & 15- m   × 10^{-12} M