

College of Sciences Department of Physics & Astronomy

للية العلوم أسم الفيزياء والفلك

Final Exam Academic Year 1443 Hijri- Second Semester

معلومات الامتحان Exam Information				
Course name	General Physics		اسم المقرر	
Course Code	PHYS 109		رمز المقرر	
Exam Date	06/06/2022	07/11/1443	تاريخ الامتحان	
Exam Time	8:00 am		وقت الامتحان	
Exam Duration	3.0 hours	3.0 ساعات	مدة الامتحان	
Classroom No.			رقم قاعة الاختبار	
Instructor Name			اسم استاذ المقرر	

معلومات الطالب Student Information			
Student's Name		اسم الطالب	
ID number		الرقم الجامعي	
Section No.		رقم الشعبة	

General Instructions:

Mobiles and smartwatches should be closed under your seat.
Write your answers (only one letter) in the right column.

<u>تعليمات عامة:</u> يجب إبقاء الهواتف والساعات الذكية مغلقة أسفل المقعد. اكتب إجاباتك (حرف واحد فقط) في العمود الأيمن.

هذا الجزء خاص بأستاذ المادة

This section is for the instructor only

#	Course Learning Outcomes (CLOs)	Related Questions	Points	Final Score
1	CLO 1: basic concepts and methods of	1-27	40	
	classical mechanics.			

If needed, use:

$$g = 9.8 \text{ m.s}^{-2}$$

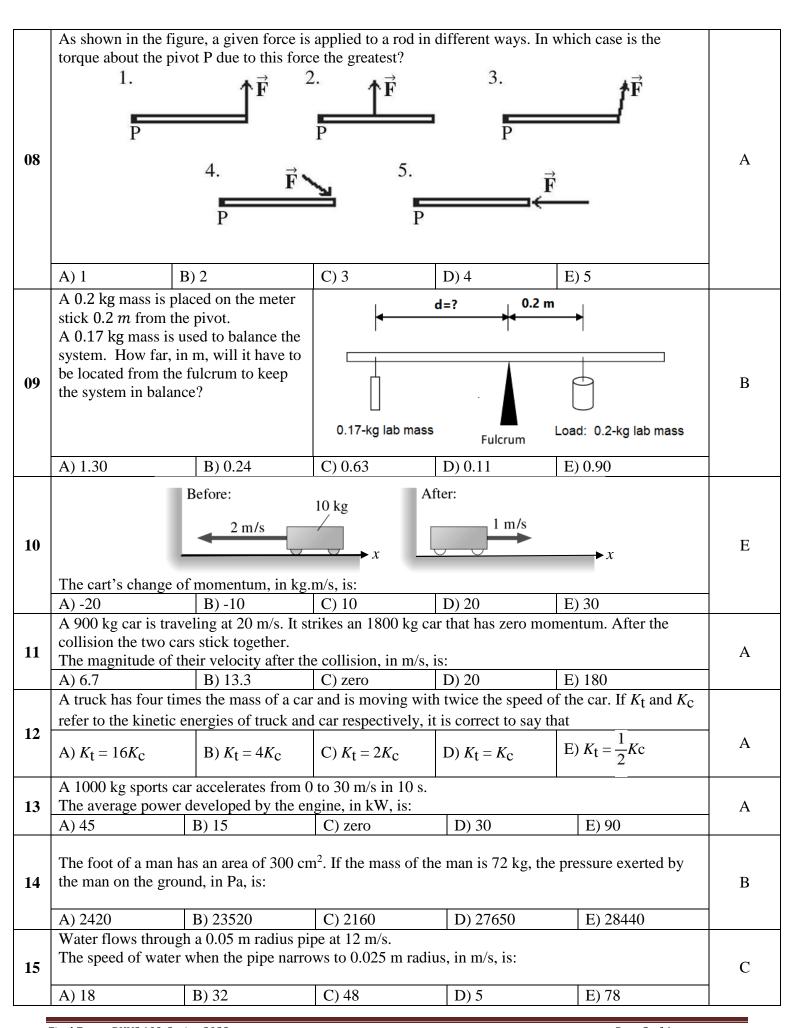
$$\rho_{water} = 10^3 \text{ kg/m}^3$$

$$k = 1/4\pi\varepsilon_{o} = 9 \times 10^{9} \,\mathrm{N} \cdot \mathrm{m}^{2}/\mathrm{C}^{2}$$

$$\epsilon_{0} = 8.854 x 10^{-12} \, F/m$$

Version A

No	Question		Answer		
01	The acceleration-versus-time graph that matches the velocity-versus-time graph shown below is: v_x t				
		$ \begin{array}{c c} & E \\ & a_x \\ & 0 \end{array} $			
02	An object starts from rest and uniformly accelerates at a rate final velocity, in m/s, is: A) 5 B) 10 C) 12 I	of 2 m/s 2 for 5.0 seconds. The object D) 15 E) 22	В		
03	A 54 kg block is placed on an inclined plane that is 42° from the horizontal. The magnitude of the normal force F _N , in N, is: A) 354 B) 393 C) 939 D) 36.1 E) 40.1				
04	A constant force causes an object to accelerate at 2 m/s ² . The acceleration of an object with twice the mass that experi		A		
05	A Boeing jet of mass 50,000 kg sits at rest. The pilot turns the pair of jet engines to full throttle. After traveling 720 m, the plane reaches its takeoff speed of 50 m/s and leaves the ground. The thrust of the pair of jet engines , in kN, is: A) 55 B) 67 C) 73 D) 87 E) 95				
06	A rope is used to pull a mass of 10 kg vertically upward. Starting from rest, the mass acquires a velocity of 4 m/s in 8 s. The tension in the rope, in N, is:				
07	A) 98 B) 32 C) 103 D) 0 E) 10 A 15 kg box rests on a frictionless horizontal surface attached to a 5 kg box as shown in the figure. The acceleration of the system, in m/s² will be				
	A) 6.0 B) 0.51 C) 1.55 D) 2.45 E) 0				



The pressure in the constriction is: A) 211.6 Pa B) 96.4 kPa C) 8200 Pa D) 8290 kPa E) 8.29 Pa If the index of the plastic is 1.33, then the angle θ is: A) 48.9° B) 40.3° C) 33.6° D) 38.7° E) 39.8° A diverging lens with a focal length of 50 cm is placed 100 cm from a 3.0 cm height flower. The flower's image has a height of A) I mm B) 2.5 cm C) -3 cm D) 1 cm E) -2.5 cm Two point charges, Q1 and Q2, are separated by a distance R. If the magnitude of each charge is halved and their separation is doubled. The electrical force that each charge exerts on the other is: A) It increases by a factor of 16. B) It increases by a factor of 16. If the electric field at a point 2.8 cm from a small charged object points ourward from the object with a strength of 180 kN/C, then the object's charge q, in nC, is about: A) -16 B) +16 C) -17 D) -18 E) -19 The force of attraction that a -40.0 µC point charge exerts on a +108 µC point charge has magnitude 4.00 N. How far apart are these two charges? A) 2.1 nm B) 3.67 m C) 312 cm D) 1.13 m E) 1.13 cm A parallel plate capacitor is filled with a 1.0-mm-thick rutile dielectric layer (κ _{muthe} -100). B (The radius of a resistance wire is halved then its resistivity will be A) a 8.85 µ0.9° E B) 8.85 µ0.9° E D) 8.85 x10.9° F A) 2.8 NJ/S B) NS B) SS NO SP C C/S D) J/A E) J/C The force of a torque the capacitor plates is 1.0 cm², its capacitance is: A) 1.8 SS NO SP E C) 8.8 SS NO SP E D) 4.2 x10.9° E A) 2.8 Line radius of a resistance wire is halved then its resistivity will be A) doubled B) halved C) tripled D) quadrupled E) still constant The resistivity of a copper vire carrying 5 A current is 1.7x10° Ω.m. If the wire is 22 m long and the radius of its cross-sectional area is 0.5 mm then its resistance, in Ω. is: A) 0.048 B) 4.8x10.3° C) 2.8x10° D) 4.2x10° SP. When an unstable nucleus decays by emitting gamma radiation, the atomic number 2 of the nucleus compare? A) 1.10 of A is five times larger than 11/2 of B. D) 11/2 of A is five times smaller than 11/2 of B. D) 11/		A horizontal pipe of diameter 6 cm has a constriction of diameter 2 cm. The velocity of water in the					
A) 211.6 Pa B) 96.4 kPa C) 8200 Pa D) 8290 kPa E) 8.29 Pa	16	wide pipe is 0.3 m/s and the pressure is 100000 Pa.				D.	
A) 48.9° B) 40.3° C) 33.6° D) 38.7° E) 39.8°	10	The pressure in the constriction is:				Ъ	
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