

	Mid term exam – 2 nd semester Sound and Heat - Phys 104 The exam duration is 40 minutes Model (5)	Arab Republic of Egypt Ministry of Higher Education - Zagazig University Faculty of Science - Physics Department
	رقم الطالب الجلسي:	الاسم:

Answer the following questions:

1 - Mark the right answer with a (✓) and the wrong answer with an (x): (1 point for each question)

- The ratio between the radiant power of a natural object and its absorptive capacity is a constant amount ()
- For two objects to have the same temperature, they must be in thermal equilibrium ()
- The specific heat of a substance changes as its mass changes ()
- The degree of absolute zero on the Celsius scale is -273 °C ()

2- Choose the one alternative that best completes the statement or answers the question: (1 point for each question)

1- A bridge is made with segments of concrete 50 m long. If the linear expansion coefficient is $12 \times 10^{-6} (^{\circ}\text{C})^{-1}$, how much spacing (in cm) is needed to allow for expansion during an extreme temperature change of 150°F?

- A) 10 B) 2.5 C) 7.5 D) 5.0 E) 9.5

2- a paper slide is 0.2 cm thick and has a surface area of 100 cm². If the temperature difference between the two opposite surfaces is 200°C, find the amount of heat that will transferred through the slide in a time of one minute, given that $k = 2 \times 10^{-3} \text{ cal/sec. cm. } ^{\circ}\text{C}$

- A) 200 cal B) 1200 cal C) 600 cal D) 12000 cal

3- Which of the following is not a possible thermometric property of a body?

- A) The change in length of a solid.
 B) the change in volume of a gas at constant pressure.
 C) The change in pressure of a gas at constant volume.
 D) The change in weight at constant pressure and volume.
 E) The change in electrical resistance of a conductor.

4 - Before ice can form on a lake, all the water in the lake must be cooled to

- A) 4 °C B) 0 °C. C) A value slightly below 0 °C. D) Neither of these

5- The lowest temperature possible in nature is

- A) -273°C B) 0°C C) 4 K D) -273 K

6- How much heat (in kcal) must be removed to make ice at -10°C from 2 kg of water at 20°C? ($S_{\text{ice}} = 0.5 \text{ cal/g } ^{\circ}\text{C}$, $L_f = 80 \text{ cal/gm}$)

- A) 190 B) 200 C) 240 D) 210

7- A black spherical object has area of 1.6 m² is stationary at a constant temperature of 37°C and the temperature of the medium is 27°C. What is the power radiated? Consider $\epsilon=1$ knowing that $\sigma = 5.67 \times 10^{-8} \frac{\text{W}}{\text{m}^2 \text{K}^4}$.

- A) 115.8 watt B) 837.8 watt C) 98.6 watt D) 103 watt

8- If a Celsius thermometer reads 37 degrees Celsius, what will a Fahrenheit thermometer read in the same room

- A) 310 K B) 37 °C C) 98.6 f D) 48.66 f

I- Mark with a (✓) or with an (x)				I- mcq- write the letter you choose							
1	2	3	4	1	2	3	4	5	6	7	8

تعليمات للطلاب: يتم حل الأسئلة في المكان المخصص لها وكذلك كتابة رمز الحل في الجداول المرفقة مع التأكد من تطبيق الاختيار والحل. وسيتم اعتماد الجدول للنصح.