

 Universiti Malaysia PAHANG <small>Engineering • Technology • Creativity</small>	Name	:	_____
	ID No.	:	_____
	Group	:	_____
	Section	:	_____
	Submission date	:	_____
Module No/Name	:	2/ Structure of Materials	
Quiz duration	:	60 minutes	
Total Marks	:	25	

Answer the following questions

1. Materials with ionic and covalent bondings are commonly electrical insulator and materials with metallic bonding are conductor. Please explain why those bondings provide different electrical properties (relate to valence electron). **(5 Marks)**

2. Iridium (Ir) has an FCC crystal structure, atomic radius of 0.136 nm, and an atomic weight of 192.2 gr/cm.
 - i. Show that the unit cell edge length a and atomic radius R of FCC are related through $a = 2R\sqrt{2}$. **(5 Marks)**
 - ii. Calculate the volume of atoms in a unit cell of Iridium. **(5 Marks)**
 - iii. Calculate the theoretical density ρ of Iridium. **(10 Marks)**