

Course No: ENGI 1220  
Course Title: Introduction of  
Materials Science for  
Engineering  
Date: 15/03/2018  
No. of Questions: (4)  
Time: 1 hours  
Using Calculator (yes)

University of Palestine



1<sup>st</sup> Mid Term Exam A  
2<sup>nd</sup> Semester 2017/2018  
Total Grade: 60

Instructor Name: Dr. Hossam ELAQRA  
Student No.: \_\_\_\_\_  
Student Name: \_\_\_\_\_  
College Name: Engineering  
Dep. / Specialist: \_\_\_\_\_  
Using Dictionary (No)

**Question One:**

**22 marks.**

Which of these sentences are true and which is false and correct the false one?

- 1- Polymers were the first materials used by the human. ( )
- 2- Bronze was the first alloy made by the human. ( )
- 3- Stone age was is the oldest age. ( )
- 4- Microscopic scale needs special tools to be seen. ( )
- 5- Macroscopic scale can be seen directly with the eyes. ( )
- 6- Electrons in the ground state (GS) have higher energy than electron in outer shell.  
( )
- 7- Valence electrons are found in the ground state. ( )
- 8- Electronegativity (EN) is the ability of the atom to gain electron. ( )
- 9- Atoms with higher number of electron in the outer shell have lower  
electronegativity. ( )
- 10- Van Der Waals bond is a type of primary bond. ( )
- 11- Ceramics are formed by covalent and secondary bonds. ( )
- 12- Polymers are formed by ionic and covalent bonds. ( )
- 13- Ionic bond is formed between positive core and negative ions. ( )
- 14- Ionic bond is created by sharing electrons between atoms. ( )
- 15- CH<sub>4</sub> is an example for ionic bond. ( )
- 16- Ceramics are poor conductor for heat and electricity due to the presence of a  
lot of free electrons. ( )
- 17- Polymers are good conductor for heat and electricity due to the presence of a  
lot of free electrons. ( )

Course No: ENGI 1220  
Course Title: Introduction of  
Materials Science for  
Engineering  
Date: 15/03/2018  
No. of Questions: (4)  
Time: 1 hours  
Using Calculator (yes)

University of Palestine



1<sup>st</sup> Mid Term Exam A  
2<sup>nd</sup> Semester 2017/2018  
Total Grade: 60

Instructor Name: Dr. Hossam ELAQRA  
Student No.: \_\_\_\_\_  
Student Name: \_\_\_\_\_  
College Name: Engineering  
Dep. / Specialist: \_\_\_\_\_  
Using Dictionary (No)

- 18- Van Der Waals bond can be created between atoms or molecules. ( )
- 19- Van Der Waals bond are created by dipoles. ( )
- 20- Hydrogen bond ha higher bond energy than Van Der Waals. ( )
- 21- Vand Der Waals has higher bond energy than ionic bond. ( )
- 22- Graphite is harder than diamond. ( )

**Question Two:**

**8 marks.**

Choose the correction answer:

- 1- Diamond are composed from carbon atoms by:
- a- Covalent bond
  - b- Ionic bond
  - c- Van Der Waals bond
  - d- Metallic bond
- 2- Ionic and Van Der Waals bond are created by:
- a- Attraction between ions
  - b- Attraction opposite charges
  - c- Attraction between dipoles
  - d- Attraction between core and see of electrons
- 3- Metallic bonds:
- a- Are bad or poor conductor for heat and electricity
  - b- Have high bond energy
  - c- Have high melting point
  - d- All above
  - e- A and B
  - f- B and C

Course No: ENGI 1220  
Course Title: Introduction of  
Materials Science for  
Engineering  
Date: 15/03/2018  
No. of Questions: (4)  
Time: 1 hours  
Using Calculator (yes)

University of Palestine



1<sup>st</sup> Mid Term Exam A  
2<sup>nd</sup> Semester 2017/2018  
Total Grade: 60

Instructor Name: Dr. Hossam ELAQRA  
Student No.: \_\_\_\_\_  
Student Name: \_\_\_\_\_  
College Name: Engineering  
Dep. / Specialist: \_\_\_\_\_  
Using Dictionary (No)

- 
- 4- Covalent bond:
- a- Are bad or poor conductor for heat and electricity
  - b- Have high bond energy
  - c- Have high melting point
  - d- All above
  - e- A and B
  - f- B and C
- 5- Secondary bonds:
- a- Are generally liquid or gaze
  - b- Are solid
  - c- Have low energy bond
  - d- All above
  - e- A and B
  - f- A and C
- 6- Polymers are formed by:
- a- Secondary bond and covalent
  - b- Ionic bond and covalent
  - c- Ionic and covalent
- 7- Ionic and metallic bond are created by:
- e- Attraction between ions
  - f- Attraction opposite charges
  - g- Attraction between dipoles
  - h- Attraction between core and see of electrons
- 8- Hydrogen bonds are created between H and :
- a- N
  - b- F
  - c- Cl
  - d- O
  - e- A, B and C
  - f- A, B and D
  - g- All above

Course No: ENGI 1220  
Course Title: Introduction of  
Materials Science for  
Engineering  
Date: 15/03/2018  
No. of Questions: (4)  
Time: 1 hours  
Using Calculator (yes)

University of Palestine



1<sup>st</sup> Mid Term Exam A  
2<sup>nd</sup> Semester 2017/2018  
Total Grade: 60

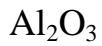
Instructor Name: Dr. Hossam ELAQRA  
Student No.: \_\_\_\_\_  
Student Name: \_\_\_\_\_  
College Name: Engineering  
Dep. / Specialist: \_\_\_\_\_  
Using Dictionary (No)

**Question Three:**

**10 marks.**

Using the following table, calculate the covalent and ionic fraction:

Fe	Al	Mg	O	Si	C	Na	Cl	F	N	H
1.83	1.61	1.31	3.44	1.9	2.55	0.93	3.16	3.98	3.04	2.2



Course No: ENGI 1220  
Course Title: Introduction of  
Materials Science for  
Engineering  
Date: 15/03/2018  
No. of Questions: (4)  
Time: 1 hours  
Using Calculator (yes)

University of Palestine



1<sup>st</sup> Mid Term Exam A  
2<sup>nd</sup> Semester 2017/2018  
Total Grade: 60

Instructor Name: Dr. Hossam ELAQRA  
Student No.: \_\_\_\_\_  
Student Name: \_\_\_\_\_  
College Name: Engineering  
Dep. / Specialist: \_\_\_\_\_  
Using Dictionary (No)

---

**Question Four:****20 marks.**

---

A- Calculate the APF for FCC crystal structure? 10  
marks. If you know the crystal structure, the atomic radius and the atomic  
weight, **calculate the density of the gold**, if it's atomic radius 0.1442 nm and it has  
FCC crystal structure and an atomic weight of 196.97 g/mol.  
10 marks.

End of Questions  
*Good Luck*