Assignment 1

The data for the following assignment is based on the tables and figures provided in the lecture notes.

Due on 2021-03-20, 23:59 IST.

1. What is the key feature of Van der Waals forces? (1 point)
   - A. Long range
   - B. Non-directional
   - C. Attraction
   - D. All of these
   No, the answer is incorrect.
   Accepted Answers:
   - A. Quantum mechanical in nature
   - B. Physical
   - C. Electromechanical
   - D. None of these

2. What is the origin of the Van der Waals forces? (1 point)
   - A. Quantum mechanical in nature
   - B. Physical
   - C. Electromechanical
   - D. None of these
   No, the answer is incorrect.
   Accepted Answers:
   - A. Quantum mechanical in nature

3. Who proposed the interaction pair potential? (1 point)
   - A. Van der Waals
   - B. Van der Waals
   - C. Aracuda
   - D. Non-related
   No, the answer is incorrect.
   Accepted Answers:
   - A. Van der Waals

4. The values of constants $n$ and $m$ in the Lennard–Jones potential equation are: (1 point)
   - A. 3.64
   - B. 6.45
   - C. 4.12
   - D. 3.44
   No, the answer is incorrect.
   Accepted Answers:
   - D. 4.12

5. What type of interaction forces stabilize the protein structure? (1 point)
   - A. Covalent forces
   - B. Hydrogen bonding
   - C. Hydrophobic bonding
   - D. All of these
   No, the answer is incorrect.
   Accepted Answers:
   - D. All of these

6. Which of the following are responsible for generation of electric charge on the surface? (1 point)
   - A. Dissociation of surface groups
   - B. Association of surface groups
   - C. Binding of excess ions
   - D. All of these
   No, the answer is incorrect.
   Accepted Answers:
   - D. All of these

7. What is the unit of dipole moment? (1 point)
   - A. Debye
   - B. Coulomb
   - C. Hertz
   - D. None
   No, the answer is incorrect.
   Accepted Answers:
   - A. Debye

8. The value of gravitational constant $G$ is (1 point)
   - A. $6.67 	imes 10^{-11}$ N m$^2$ kg$^{-2}$
   - B. $6.67 	imes 10^{-11}$ N m$^2$ kg$^{-2}$
   - C. $6.67 	imes 10^{-11}$ N m$^2$ kg$^{-2}$
   - D. $6.67 	imes 10^{-11}$ N m$^2$ kg$^{-2}$
   No, the answer is incorrect.
   Accepted Answers:
   - A. $6.67 	imes 10^{-11}$ N m$^2$ kg$^{-2}$

9. What is the estimated gravitational force between the earth and moon? (1 point)
   - A. $3.72 	imes 10^{21}$ N
   - B. $3.72 	imes 10^{22}$ N
   - C. $3.72 	imes 10^{22}$ N
   - D. $3.72 	imes 10^{21}$ N
   No, the answer is incorrect.
   Accepted Answers:
   - B. $3.72 	imes 10^{22}$ N

10. What will be the density of air ($kg/m^3$) at the outer layer of troposphere (0 km above sea level)? Assume $T = 20^\circ C$, Density at sea level = 1.225 $kg/m^3$ (1 point)
   - A. $3.73$
   - B. $4.6$
   - C. $1.65$
   - D. $3.9$
   No, the answer is incorrect.
   Accepted Answers:
   - B. $4.6$

11. What is the similarity between adhesion and cohesion? (1 point)
   - A. Reversible work done
   - B. Energy to separate two different materials
   - C. Energy to separate two identical materials
   - D. Surface tension
   No, the answer is incorrect.
   Accepted Answers:
   - A. Reversible work done

12. What is the similarity between adhesion and cohesion? (1 point)
   - A. Reversible work done
   - B. Energy to separate two different materials
   - C. Energy to separate two identical materials
   - D. Surface tension
   No, the answer is incorrect.
   Accepted Answers:
   - A. Reversible work done

13. What is the similarity between adhesion and cohesion? (1 point)
   - A. Reversible work done
   - B. Energy to separate two different materials
   - C. Energy to separate two identical materials
   - D. Surface tension
   No, the answer is incorrect.
   Accepted Answers:
   - A. Reversible work done