

Code No: 54050

Set No. 1

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

II B.Tech. II Sem., II Mid-Term Examinations, April- 2014

THERMODYNAMICS FOR BIOTECHNOLOGISTS

Objective Exam

Name: _____ **Hall Ticket No.**

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Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. Gibbs – Duhem equation for an isothermal and isobaric process for a binary system []
A) $n_1\mu_1 + n_2\mu_2 = 0$ B) $n_1\mu_2 + n_2\mu_1 = 0$ C) $n_1d\mu_2 + n_2d\mu_1 = 0$ D) $n_1d\mu_1 + n_2d\mu_2 = 0$
2. Fugacity is most helpful in []
A) Representing actual behavior of real gases B) Representing actual behavior of Ideal gases
C) The study of chemical equilibria involving gases at atmospheric pressure D) None of these
3. For transfer of a component A from phase P to phase Q []
A) $\mu_P < \mu_Q$ B) $\mu_P = \mu_Q$ C) $\mu_P > \mu_Q$ D) $\mu = Q$
4. The chemical potential of a pure substance depends upon []
A) Temperature B) Pressure C) Both A and B D) Density
5. The fugacity of ith species in a homogeneous solution is a function of []
A) Temp only B) Pressure only C) Temp & P only D) Temp, Pressure and Composition
6. Equation which relates pressure, volume and temperature of a gas is called []
A) Equation of state B) Gibbs Duhem equation C) Ideal gas equation D) Boyle's law
7. Equilibrium Constant is independent of []
A) Pressure at equilibrium
B) Temperature at equilibrium
C) No of moles involved in the Stoichiometric equation for the reaction
D) Temp and Pressure at the equilibrium
8. For a highly favorable chemical reaction, the standard free energy change is []
A) Zero B) Unity C) Positive D) Negative
9. For an exothermic reaction the increase in temperature results in []
A) Increase of K B) Decrease of K C) No change of K D) None of these
10. The Value of γ (where γ =activity for ideal gases) []
A) Zero B) Unity C) Infinity D) negative

Cont.....2

II Fill in the blanks:

11. Excess property $ME =$ _____
12. The value of activity coefficient for an ideal solution is _____
13. Ratio of the fugacity of the pressure is called _____
14. Fugacity has the same dimensions as that of _____
15. $\Delta G = \Delta A$ for a process occurring at _____
16. The SI Unit of C_p is _____
17. The state of a reversible reaction at which the concentrations of reaction and product do not change with time is called _____
18. Free energy (ΔG) is _____ at equilibrium
19. A Substance of constant chemical composition through its mass is called _____
20. As pressure approaches zero fugacity coefficient value tend to _____

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Set No. 2

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II B.Tech. II Sem., II Mid-Term Examinations, April- 2014

THERMODYNAMICS FOR BIOTECHNOLOGISTS

Objective Exam

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Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. The chemical potential of a pure substance depends upon []
A) Temperature B) Pressure C) Both A and B D) Density
2. The fugacity of ith species in a homogeneous solution is a function of []
A) Temp only B) Pressure only C) Temp & P only D) Temp, Pressure and Composition
3. Equation which relates pressure, volume and temperature of a gas is called []
A) Equation of state B) Gibbs Duhem equation C) Ideal gas equation D) Boyle's law
4. Equilibrium Constant is independent of []
A) Pressure at equilibrium
B) Temperature at equilibrium
C) No of moles involved in the Stoichiometric equation for the reaction
D) Temp and Pressure at the equilibrium
5. For a highly favorable chemical reaction, the standard free energy change is []
A) Zero B) Unity C) Positive D) Negative
6. For an exothermic reaction the increase in temperature results in []
A) Increase of K B) Decrease of K C) No change of K D) None of these
7. The Value of γ (where γ =activity for ideal gases []
A) Zero B) Unity C) Infinity D) negative
8. Gibbs – Duhem equation for an isothermal and isobaric process for a binary system []
A) $n_1 \mu_1 + n_2 \mu_2 = 0$ B) $n_1 \mu_2 + n_2 \mu_1 = 0$ C) $n_1 d\mu_2 + n_2 d\mu_1 = 0$ D) $n_1 d\mu_1 + n_2 d\mu_2 = 0$
9. Fugacity is most helpful in []
A) Representing actual behavior of real gases B) Representing actual behavior of Ideal gases
C) The study of chemical equilibria involving gases at atmospheric pressure D) None of these
10. For transfer of a component A from phase P to phase Q []
A) $\mu_P < \mu_Q$ B) $\mu_P = \mu_Q$ C) $\mu_P > \mu_Q$ D) $\mu = Q$

Cont.....2

II Fill in the blanks:

11. Fugacity has the same dimensions as that of _____
12. $\Delta G = \Delta A$ for a process occurring at _____
13. The SI Unit of C_p is _____
14. The state of a reversible reaction at which the concentrations of reaction and product do not change with time is called _____
15. Free energy (ΔG) is _____ at equilibrium
16. A Substance of constant chemical composition through its mass is called _____
17. As pressure approaches zero fugacity coefficient value tend to _____
18. Excess property $ME =$ _____
19. The value of activity coefficient for an ideal solution is _____
20. Ratio of the fugacity of the pressure is called _____

Code No: 54050

Set No. 3

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

II B.Tech. II Sem., II Mid-Term Examinations, April- 2014

THERMODYNAMICS FOR BIOTECHNOLOGISTS

Objective Exam

Name: _____ Hall Ticket No.

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Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. Equation which relates pressure, volume and temperature of a gas is called []
A) Equation of state B) Gibbs Duhem equation C) Ideal gas equation D) Boyle's law
2. Equilibrium Constant is independent of []
A) Pressure at equilibrium
B) Temperature at equilibrium
C) No of moles involved in the Stoichiometric equation for the reaction
D) Temp and Pressure at the equilibrium
3. For a highly favorable chemical reaction, the standard free energy change is []
A) Zero B) Unity C) Positive D) Negative
4. For an exothermic reaction the increase in temperature results in []
A) Increase of K B) Decrease of K C) No change of K D) None of these
5. The Value of γ (where γ =activity for ideal gases) []
A) Zero B) Unity C) Infinity D) negative
6. Gibbs – Duhem equation for an isothermal and isobaric process for a binary system []
A) $n_1\mu_1 + n_2\mu_2 = 0$ B) $n_1\mu_2 + n_2\mu_1 = 0$ C) $n_1d\mu_2 + n_2d\mu_1 = 0$ D) $n_1d\mu_1 + n_2d\mu_2 = 0$
7. Fugacity is most helpful in []
A) Representing actual behavior of real gases B) Representing actual behavior of Ideal gases
C) The study of chemical equilibria involving gases at atmospheric pressure D) None of these
8. For transfer of a component A from phase P to phase Q []
A) $\mu_P < \mu_Q$ B) $\mu_P = \mu_Q$ C) $\mu_P > \mu_Q$ D) $\mu = Q$
9. The chemical potential of a pure substance depends upon []
A) Temperature B) Pressure C) Both A and B D) Density
10. The fugacity of i th species in a homogeneous solution is a function of []
A) Temp only B) Pressure only C) Temp & P only D) Temp, Pressure and Composition

Cont.....2

II Fill in the blanks:

11. The SI Unit of C_p is _____
12. The state of a reversible reaction at which the concentrations of reaction and product do not change with time is called _____
13. Free energy (ΔG) is _____ at equilibrium
14. A Substance of constant chemical composition through its mass is called _____
15. As pressure approaches zero fugacity coefficient value tend to _____
16. Excess property M^E = _____
17. The value of activity coefficient for an ideal solution is _____
18. Ratio of the fugacity of the pressure is called _____
19. Fugacity has the same dimensions as that of _____
20. $\Delta G = \Delta A$ for a process occurring at _____

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Set No. 4

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

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THERMODYNAMICS FOR BIOTECHNOLOGISTS

Objective Exam

Name: _____ Hall Ticket No.

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Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. For a highly favorable chemical reaction, the standard free energy change is []
A) Zero B) Unity C) Positive D) Negative
2. For an exothermic reaction the increase in temperature results in []
A) Increase of K B) Decrease of K C) No change of K D) None of these
3. The Value of γ (where γ =activity for ideal gases []
A) Zero B) Unity C) Infinity D) negative
4. Gibbs – Duhem equation for an isothermal and isobaric process for a binary system []
A) $n_1\mu_1 + n_2\mu_2 = 0$ B) $n_1\mu_2 + n_2\mu_1 = 0$ C) $n_1d\mu_2 + n_2d\mu_1 = 0$ D) $n_1d\mu_1 + n_2d\mu_2 = 0$
5. Fugacity is most helpful in []
A) Representing actual behavior of real gases B) Representing actual behavior of Ideal gases
C) The study of chemical equilibria involving gases at atmospheric pressure D) None of these
6. For transfer of a component A from phase P to phase Q []
A) $\mu_P < \mu_Q$ B) $\mu_P = \mu_Q$ C) $\mu_P > \mu_Q$ D) $\mu = Q$
7. The chemical potential of a pure substance depends upon []
A) Temperature B) Pressure C) Both A and B D) Density
8. The fugacity of ith species in a homogeneous solution is a function of []
A) Temp only B) Pressure only C) Temp & P only D) Temp, Pressure and Composition
9. Equation which relates pressure, volume and temperature of a gas is called []
A) Equation of state B) Gibbs Duhem equation C) Ideal gas equation D) Boyle's law
10. Equilibrium Constant is independent of []
A) Pressure at equilibrium
B) Temperature at equilibrium
C) No of moles involved in the Stoichiometric equation for the reaction
D) Temp and Pressure at the equilibrium

Cont.....2

II Fill in the blanks:

11. Free energy (ΔG) is _____ at equilibrium
12. A Substance of constant chemical composition through its mass is called _____
13. As pressure approaches zero fugacity coefficient value tend to _____
14. Excess property $ME =$ _____
15. The value of activity coefficient for an ideal solution is _____
16. Ratio of the fugacity of the pressure is called _____
17. Fugacity has the same dimensions as that of _____
18. $\Delta G = \Delta A$ for a process occurring at _____
19. The SI Unit of C_p is _____
20. The state of a reversible reaction at which the concentrations of reaction and product do not change with time is called _____