# INDIVIDUAL TASKS FOR CALCULATION

**TASK 1**

For reaction **A** (table 1), flowing in the gas phase, for temperature ***T*** and pressure ***P***, approximately, assuming ∆***Cp* = const** (does not depend on temperature), calculate

A) **Δ*H***, to draw a conclusion about the thermal effect of the reaction;

B) **Δ*S***, to draw a conclusion about the direction of spontaneous flow of the process in an isolated system;

C) **Δ*G***, to draw a conclusion about the direction of the spontaneous flow of the process at P and T = const;

D) the equilibrium constant ***K*0**;

E) indicate how pressure and temperature affect the equilibrium yield of reaction products.

Таблица 1 Table

|  |  |  |  |
| --- | --- | --- | --- |
| №№ | Реакция **А**Reaction | ***Т*,** К | ***Р*⋅10-5,** Па (Pa) |
| 1 | 2NO2 = N2O4 | 500 | 2,026 |
| 2 | COCl2 = CO + Cl2 | 640 | 1,013 |
| 3 | H2O+C2H4 = C2H5OH | 600 | 5,065 |
| 4 | СО2+Н2 = СО+Н2О | 1060 | 1,013 |
| 5 | N2O4 = 2NO2 | 600 | 1,013 |
| 6 | С2Н6 = С2Н4+Н2 | 820 | 1,013 |
| 7 | СО+Н2О = НСООН | 820 | 3,039 |
| 8 | НСООН=СО+Н2О | 820 | 1,013 |
| 9 | С2Н5OН = Н2O+С2Н4 | 600 | 1,013 |
| 10 | СН3СОСН3 = С2Н6 +CO | 1050 | 1,013 |
| 11 | PCl5 = Cl2+PCl3 | 500 | 5,065 |
| 12 | Cl2+PCl3=PCl5 | 500 | 5,065 |
| 13 | С2Н6 +CO = СН3СОСН3 | 1050 | 3,039 |
| 14 | COCl2 = CO + Cl2 | 720 | 2,026 |
| 15 | СО+Н2О = НСООН | 800 | 1,013 |
| 16 | С2Н4 +H2 = С2Н6 | 820 | 5,065 |
| 17 | COCl2 =CO +Cl2 | 720 | 5,065 |
| 18 | НСООН = СО+Н2О | 850 | 1,013 |
| 19 | СН3СОСН3 = С2Н6 +CO | 1000 | 1,013 |
| 20 | С2Н4 +H2 = С2Нб | 820 | 1,013 |
| 21 | 2NO2 = N2O4 | 700 | 5,065 |
| 22 | СН3СОСН3 = С2Н6 +CO | 1050 | 2,026 |
| 23 | СО2+Н2 = НСООН  | 820 | 1,013 |
| 24 | SO2Cl2 = SO2 + Cl2 | 1050 | 2,026 |
| 25 | SO2 + Cl2= SO2Cl2 | 1050 | 5,065 |