

PART B - CHEMISTRY

46. c) $[p + (a/V^2)]$
47. a) gas will do positive work
48. c) NH_3
49. c) **Adiabatic process**
50. c) $\Delta E_1 + \Delta E_2 = 0$
51. c) **Isolated system**
52. d) **In all the above equilibrium**
53. c) **pressure of gas can not be measured during process except initial and final states accurately**
54. c) **4.01 kJ**
55. c) $W_{\text{rev.}} > W_{\text{irr.}}$
56. b) **4.2 kJ**
57. c) **800 K**
58. a) **202 J**
59. b) **- 2239.1 J**
60. a) **- 8.365 kJ/mol**
61. b) **- 81.12 kJ**
62. d) **Both (B) and (C)**
63. b) **Rotational and vibrational degrees of freedom also activate**
64. b) **- 4676 J**
65. c) **1**
 $z = \frac{PV}{RT} \therefore \text{for ideal gas } PV = RT \text{ so } Z = 1$
66. c) **-100°C and 5 atmospheric pressure**
 (low temp and high pressure)
67. d) **Attractive force and volume of the molecules**
68. b) **The system gains heat and has work performed on it.**
69. c) **Attract one another**
 Some attractive forces exist between the molecules of real gases. When a molecule approaches the wall of the container it experiences an inward pull as a result of attractive forces exerted by the neighbouring molecules inside the vessel. Therefore the observed pressure is less than the ideal pressure and hence gas deviates from ideal behaviour at high pressure.
70. c) **0.5 atm and 500 K**
 (Low p and high temp)
71. c) L mol^{-1}
72. a) **$\text{dm}^6 \text{ atm mol}^{-2}$**
 $P = \frac{n^2 a}{V^2}$; $a = \frac{PV^2}{n^2} = \text{atm dm}^6 \text{ mol}^{-2}$
73. a) $z = \frac{pV_m}{RT} = 1 - \frac{ap}{RT}$
 $\left[P + \frac{a}{V^2} \right] (V - b) = RT$
 or $PV = RT + Pb - \frac{a}{V} + \frac{ab}{V^2}$
 or $\frac{PV}{RT} = 1 - \frac{PV}{VRT}$
 $Z = -\frac{a}{VRT} \left(\because \frac{PV}{RT} = Z \right)$
74. a) **$\Delta E = W \neq 0, q = 0$**
75. c) **$q = 0$**
76. a) **work is a state function**
77. c) **always greater than 1**
 (due to very very less interaction)
78. c) **0**

79. **b) Zero**
80. **a) Higher than the initial temperature**
81. **a) 200 J**
82. **b) Adiabatic process**
83. **b) Energy changes in a system**
84. **a) $W = - \int P \Delta V$**
85. **b) $\frac{5}{2}RT$**
86. **d) None of these**
87. **c) Path, state**
88. **d) None of these**
89. **d) $q + W$**
90. **a) $(E_1 + 150)$**