BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: **IMSC**   **SEMESTER: III**
BRANCH: **CHEMISTRY**   **SESSION : MO/2019**

SUBJECT : CH202 PHYSICAL CHEMISTRY-III

TIME: **2 HOURS**   **FULL MARKS: 25**

INSTRUCTIONS:
1. The total marks of the questions are 25.
2. Candidates may attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.

Q1 (a) Discuss the applications of Clapeyron equation.   [2]
Q1 (b) At 373.15 K and 1 bar, the specific volume of water is 1.69 cm3 gm-1 and the value of   [3]
         dP/dT is 0.036 bar K-1. Calculate ΔH_{vap}.

Q2 (a) How many degrees of freedom, number of phases and number of components can be   [2]
         there in the system: solid carbon in equilibrium with gaseous CO, CO_2 and O_2 at 100^0C?
Q2 (b) Derive the expression of phase rule as applicable to a nonreactive system.   [3]

Q3 (a) Show that it is not possible to have more than three phases in equilibrium with each   [2]
         other in a one-component system.
Q3 (b) Describe the phase diagram of water along with its important features.   [3]

Q4 (a) What do you understand by condensed system?   [2]
Q4 (b) Draw the phase diagram of a two-component system exhibiting simple eutectic behavior.   [3]

Q5 (a) Outline the salient features of triangular plot employed for three-component system.   [2]
Q5 (b) What do you understand by the binodal curve and plait point?   [3]

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