J. C. Bose University of Science and Technology
Sessional Exam, Jan 2023
B. Tech ME (Paper code: BSC 102)

Time: 90 min **Max Marks: 15**

All questions are compulsory

Q. 1 Explain any three of following (6)

a. Selection rules for vibrational and rotational spectroscopy **b.** Red shift and blue shift with exp.
c. Critical temperature (T_c) and critical volume (V_c) **d.** Boyle's law and Charles's law

Q. 2 What is molecular spectroscopy? Explain its principle and types in detail. (3)

Q. 3 What are intermolecular forces and explain each type with examples. (3)

Q. 4 Which one will be active in both, rotational and vibrational spectra: H_2, HCl, CO_2, CH_4 (1)

Q. 5 Find B value if separation between lines in rotational spectra is 12 cm^{-1}. (1)

Q. 6 Explain compressibility factor (Z). (1)