**AKGEC/IAP/FM/02**

**Ajay Kumar Garg Engineering College, Ghaziabad**

**Department of AS and Humanities**

**Sessional Test-2 (Set- A)**

**Course: B.Tech Semester: I**

**Session: 2017-18 Section : EC1,2,3, ME1,2,3, CE 1,2**

**Subject: Engineering Chemistry Sub. Code: RAS 102**

**Max Marks: 25 Time: 1 hour**

***Note* : All questions are compulsory.**

**Section A (3x2=6)**

**1.**  Which homonuclear diatomic molecule(s) of **second period element** ,besides O2 should be **paramagnetic**?.

**2.** Explain why **graphite** is good conductor of electricity .

**3.** How are the **bonding molecular orbitals** differ from antibonding molecular orbitals in **electron densities?**

**Section-B (3x4=12)**

**4.** How the **defects affect the mechanical and electrical properties** give example also discuss stoichiometric defects in ionic crystals.

**5.** State the basic differences in **thermotropic and lyotropic liquid crystals**. Also give **their applications**.

**6**. What **are nano materials,** Give **application** in the field of **medical industry, electronics**.

**Section- C (1x7=7)**

**7**. Draw **MO diagram of F2** and explain the **bonding in metals** with the help of molecular orbital theory.

**AKGEC/IAP/FM/02**

**Ajay Kumar Garg Engineering College, Ghaziabad**

**Department of AS and Humanities**

**Sessional Test-I (Set –B)**

**Course: B.Tech Semester: I**

**Session: 2017-18 Section: EC1,2,3, ME1,2,3 CE 1,2**

**Subject: Engineering Chemistry Sub.Code: RAS 102**

**Max Marks: 25 Time: 1 hour**

***Note* : All questions are compulsory.**

**Section-A (3x2=6)**

**1.** Which homonuclear diatomic **molecule of second period elements**, **do not exist** and why.

**2.** Write the various applications of **fullerene**.

**3. How** the molecular orbitals are formed. Why bond length of **O2** is differ from **O2+**.

**Section-B (3x4=12)**

**4.** Discuss **non stiochiometric** defect with classification and examples.

**5.** Explain **conducting property of metal** with the help of **Band theory**.

**6**. Give Difference between **bonding and antibonding orbital.**  Draw the molecular orbital diagram of **N2**.

**Section- C (1x7=7)**

**7.** Define the following with their applications.

i) Liquid crystals ii) Nano Materials