P. S. SCIENCE & H. D. PATEL ARTS COLLEGE, KADI

Internal Examination

B. Sc. SEM - I **[Mark : 40**

27-9-2016] **Chemistry - 101** **[2 Hours**

SECTION - A

Attend all Questions compulsory. **5**

(1) _____ is the state function.

(a) Heat (b) Distance

(c) Work (d) Pressure

(2) "It is impossible to construct a device that will work in complete cycle and convert completely heat in to work without making any change in surrounding" is statement of .....

(a) Clausius (b) Plank

(c) Thomson (d) Kelvin-Plank

(3) What is bond angle of Pcl_5 ?

(a) 90° (b) 180°

(c) 90° & 120° (d) 120°

(4) NO molecule is _____

(a) dia magnetic (b) paramagnetic

(c) magnetic (d) none of these

(5) H_2O having _____ lone pair electrons.

(a) 2 (b) 3

(c) 1 (d) 0

SECTION - B

Attend all Questions compulsory. **5**

(1) Define system.

(2) Give the equation of mathematical form of first law of Thermodynamics.

(3) Give the equation of Cannot cycle.

(4) Define Bond Order.

(5) Define Covalent bond.

SECTION - C

Attend any 3 Questions out of 4 questions. 6

(1) Derive the equation of entropy as function of volume and temperature.

(2) Write any two statements of second law of thermodynamics.

(3) Define Hybridization. Explain SP^2 hybridization.

(4) What are bond pair electrons and lone pair electrons. Explain H_2O having SP^3 hybridization.

SECTION - D

Attend any 4 Questions out of 6 questions. 12

(1) Prove that entropy as a state function.

(2) Explain all the types of system according to exchange of energy and matter.

(3) Derive Gibbs Helm-Halts equation.

(4) Give the name, atomic number and electronic configration of lanthanide series.

(5) Explain SP^3d hybridization.

(6) Draw molecular orbital energy level diagram of any one home molecule.

SECTION - E

Attend all Questions compulsory. 12

(1) Explain carnot cycle in detail and define the efficience of carnot cycle.

OR

Define heat capacity. Give the equation of a heat capacity at constant volume and pressure and derive the relationship between C_P & C_V.

(2) Explain Molecular Orbital diagram of NO molecule.

OR

Give name of method for separation of lanthanide series. Explain any one method in details.
