


જાહેરાત ક્રમાંક :- ૧૯૯/૨૦૦૯-૨૦૧૦, જગ્યાનું નામ :- સરકારી પોલીટેનીક ખાતેના રસાયણશાસ્ત્ર વ્યાખ્યાતા, વર્ગ-૨  
પરીક્ષાની તારીખ :- ૧૧-૦૭-૨૦૧૦, સમય :- સવારે ૧૦-૦૦ થી ૧૧-૪૦

ક્રમ	પ્રશ્નપત્રનો વિષય	સમય	માધ્યમ	ગુણ
૧.	ભાગ-૧: સામાન્યજ્ઞાનના ૧૦૦ પ્રશ્નો. દરેક પ્રશ્નના ૦૧ ગુણ	૧૦૦ મિનિટ	ગુજરાતી	૧૦૦
૨.	ભાગ-૨: સંબંધિત વિષયના ૧૦૦ પ્રશ્નો દરેક પ્રશ્નના ૦૨ ગુણ. અભ્યાસક્રમ : નીચે દર્શાવ્યા મુજબ : 		અંગ્રેજી	૨૦૦

### Syllabus of Preliminary Test (Objective Type) for the Post of Lecturer in Chemistry at Govt. Polytechnic

**1. Atomic and Molecular Structure :-** Arrangement of e, p<sup>+</sup> and n. in atom, distribution of atomic orbitals, distribution of electron in shell and sub shell, define orbit, orbital, auf-beau's principle, ionization energy, electro affinity, Hund's rule, electronic configuration of elements, different types of chemical bond, difference between ionic bond, covalent bond and metallic bond, arrangement of atoms in metallic elements in metallic formation- three types (face centered cubic type, body centred cubic type, hexagonal close packed type), types of hydrogen bond.

**2. IONISATION AND ELECRO CHEMISTRY:-** Ionisation and degree of ionisation, factors affecting degree of ionisation, definition of PH, PH of acid, base and neutral solution, PH calculation of acid, base and salt solution at different concentration, importance of PH in various fields, definition of buffer solution, types of buffer solution, application of buffer solution, types of electrolytes, industrial application of electrolytes (electroplating and electrotyping), electrolytic conductance, "N" and "P" type of semi conductors.

**3. CORROSION OF METALS AND ITS PREVENTION :-** Oxidation - reduction process, construction and working of electrochemical cell, definition of corrosion, standard condition, types of corrosion (atmospheric, pitting, waterline and crevice corrosion), standard hydrogen electrode, hals cell potential, electro chemical series and its significance, factors influencing corrosion, use of protective coatings (galvansing, tinning, metal spraying, metal clodding, sheradizing and electro plating), control of corrosion by modification of design and choice of material.

**4. WATER TREATMENT :-** Hard and Soft water, types of hardness of water and its units, method to express the hardness of water, process for softening of water (permutit and ion-exchange resin process), purification of water by screening, sedimentation, sedimentation with coagulants and filtration, sterilization/disinfection of water by boiling and chlorination by chlorine and bleaching powder, harmful effect of hard water in boiler, caustic embrittlement and its prevention.

**5. LUBRICATION AND LUBRICANTS :-** Definition lubricants and lubrication, functions of lubricants, classification of lubricants (solid, semi-solid, liquid and synthetic lubricants (oils), test of lubricants and their significance like viscosity and viscosity index, flash point and fire point, pour point and cloud point, neutralisation number and acid value, saponification number, emulsification number, corrosion test, copper strip test, additives to improve the quality of lubricants, purpose for using additives like antioxidants, antiwear agent, detergents and foam inhibitors, selection of lubricants for gears, cutting tools, steam turbine.

**6. CHEMISTRY OF ENGINEERING MATERIALS :-** Define polymer and polymerisation, types of polymerisation, classification of polymers with suitable examples, thermoplastic and thermosetting plastics, properties and uses of thermosetting plastics such as bakelite, melamine, epoxy and silicons, preparation and uses of thermoplastic polymer such as polythene, polyvinylchloride, polystyrene and teflon, synthetic fibrepreparation and use (application) nylon terylene or polyesters and orlon, preparation and uses of elastomers (synthetic rubber) Buna-S or SBR and Buna-N and butyl rubber, vulcanisation of rubber. **ADHESIVES:** Define adhesives, characteristics of adhesives, classification of adhesives with names and uses, natural and synthetic adhesives, **PAINTS AND VARNISH:** Define paint and varnish, purpose of using paints, characteristic of good paint, constituents of paints, function of pigments, drying oil, thinner, driers, fillers and extenders and plasticizers, types of varnish and uses of varnish, characteristic of good varnish. **REFRACTORIES:** Definition and application of refractories, classification of refractories such as acid, base and neutral refractories, uses of alumina and magnesia refractores. **INSULATING MATERIALS:** Types of insulating materials - Natural insulating materials, insulating foils insulating wool, and manufactured insulating materials, properties (characteristics) of ideal insulating material, properties and uses of insulating materials such as glass wool and thermocole.

**નોંધ :-** આયોગ દ્વારા તા. ૧૧-૦૭-૨૦૧૦ના રોજ જાહેરાત ક્રમાંક: ૧૯૯ થી ૨૦૯/૨૦૦૯-૨૦૧૦ની પ્રાથમિક કસોટી લેવાનાર છે, તે પૈકી તા. ૨૩-૮-૨૦૧૦ થી રસાયણશાસ્ત્ર વિષયની (જાહેરાત ક્રમાંક: ૨૦૩ અને તે પછી ૧૯૯) રૂબરૂ મુલાકાત શરૂ થશે અને ત્યારબાદ ઈજનેરી કોલેજ ખાતેના બાકીના વિષયોના વ્યાખ્યાતાઓની રૂબરૂ મુલાકાત શરૂ થશે, જેનો વિગતવાર કાર્યક્રમ આયોગની વેબસાઈટ પર યથા સમયે મૂકવામાં આવશે.