1. MEASUREMENT OF LEANGTH

1 Mark

1. Define : a) Least count b) Pitch of the screw ?

2 Mark

1. What is zero error ? How are pastive and negative zero errors detemined ?

4 Mark

1. Give the description of screw gauge ?
2. How do you determine the diamater of a wire using screw gauge ?

5 Mark

1. Draw the neat sketch of screw gauge ?
2. Draw the neat sketchs shokwing :
   a) No zero error b) Positive zero error c) Negative zero error.

2. OUR UNIVERSE - GRAVITATION

1 Mark

1. Distinguish between Heliocentric and Geocentric theory
2. State Hook's law ?
3. What is Gravity meter ?

2 Mark

1. What is Acceleration due to gravity ? What are the factors influencing it ?
2. Differdentiate between mass and weight ?
3. State Newton's universal law of gravitation ?
4. Give relation between G & g

Pb

1. Calculate the mass of 10Kg stone

3. KINEMATICS

1 Mark

1. Define time of flight

2 Mark

1. show that $T_A = T_D$

Pb

1. A ball is thrown up and attains a maximum height of 80 m. find its initial velocity
2. Find the velocity of stone on reaching the ground when it is dropped from a height of 19.6 m.

4. DYNAMICS

1 Mark

1. What is principle of launching satellite into an orbit ?
2. Define : a) Periodic motion b) Oscillatory motion

2 Mark

1. What is centrifuge ? Explain its working
2. Distinguish between inertial and non-inerital frames of reference
3. Distinguish between Rotatory and circular motion
4. What is necessity of banking of roads ?
5. What is SHM ? What are its Characteristics ?
6. Explain the working of laundry driedr ?

4 Mark

1. What is difference between centripetal and centrifugal forces ?
2. What is banking angle ? Derdive tan $\theta = V^2/rg$

5. ELECTROMANETIC SPECTRUM

1 Mark

1. What is a spectrum ?
2. What are electro magnetic radiations ?

2 Mark

1. What is an em spectrum ?
2. What are the common features among all em radiations ?
3. Tabulate the em rays and the wavelengths of spectrum ?

5 Mark

1. Draw the neat sketch showing various regions of em - spectrum and their wave lengths ?
2. Draw the shape of electromagnetic wave ?

6. SOUND

1 Mark

1. Define : a) Forced vibration b) Damped vibration
2. Draw the neat sketch of first and second modes of resonating air columns ?

2 Mark

1. What is resonating air column ?
2. What are nodes and antinodes ?
3. Explain the phenomenon of resonance ?

4 Mark

1. Give examples of resonance phenomenon observed in day - today life ?
2. Distinguish between progressive and stationary waves ?
3. Describe a method to find velocity of sound in air ?

7. LIGHT

1 Mark

1. What is interference ?
2. What is diffraction ?

3. What is the principle of superposition of waves ?
4. Define solid angle ?
5. What is pumping ?

2 Mark

1. What the failures of Newtons corpuscular theory ?
2. When do we get constructive and destructive super position of waves ?
3. State and explain HUYGENES principle ?
4. What are applications of laser in medicine and industries ?
5. What are Special properties of laser ?
6. What are the Basic principles involved in working of laser ?

4 Mark

1. Give the comparison between NEWTONS corpuscular theory and HUYGENS wave theory ?
2. Write the applications of lasers in science and technology ?
3. Describe ripple tank How do you demonstrate reflection and refraction of water waves ?
4. Explain the diffraction of water waves in a ripple tank.
   a) Straight edge b) at an aperture
5. Explain the phenomenon of interference in a ripple tank ?

8. MAGNETISM

1 Mark

1. Distinguish b/n magnetic & non - magnetic substances
2. Define : a) pole strength b) unit pole stength
3. Define (a) Magnetic permeability (b) Magnetic moment
4. What are neutral points ?
5. What is retentivity ?

2 Mark

1. Define : a) Relative Permeability b)Absolute permeability
2. Define intensity of magnetic field and magnetic susceptibility
3. State and explain inverse square law of magnetism
4. What are the failures of EWINGS molecular theory ?
5. What is magnetic saturation ?
6. Compare the values of magnetic susceptibility and relative permeability of Dia,Para and Ferro magnetic substances

Pb

1. calculate the magnetic induction at a distance of 0.5m from the short bar magnet of length 5cm & pole strength.

4 Mark

1. Distinguish between para, Ferro and diamagnetic substances ?

2 Mark

1. Draw the neat sketch of magnetic lines of force around a bar magnet when north pole of a bar magnet facing North Pole of the earth
2. Drawd the neat sketch of magnetic lines of force around a bar magnet when south pole of a bar magnet facing North Pole of the earth

9. CURRENT ELECTRICTY

1 Mark

1. Define a) Electric current b) electric potential c) emf of a cell d) simple circuit
2. Define electric resistance of a conductor. What are it units ?
3. Define specific resistance of a conductor What are its units ?
4. Define a) watt hour b) kilowatt hour
5. Define a) power b) e.c.e. c) chemical equivalent
6. State Amperes right hand rule
7. What is electromagnetic induction ?
8. What is self inductance and mutual inductance ?
9. Write the principles of ac dynamo & transformer.

2 Mark

1. What are ohmic and non-ohmic conductors ?
2. State laws of resistance ?
3. State FLEMINGS left and right hand rules ?
4. Distinguish between step up and step down transformers ?
5. Write the applications of electrolysis
6. What is the essential difference b/n ac & dc motor ?
7. State & explain Lenzs law.

4 Mark

1. State Ohms law Describe an experiment to verify ohms law ?
2. Derive $R = R_1 + R_2 + R_3$
3. Derive $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$
4. State Joules law. Derive the expression for the heat developed $Q = i^2 Rt/j$
5. State FARADAY'S laws of electrolysis
6. Describe an experiment to verify FARADAY'S first law of electrolysis
7. Describe an experiment to verify FARADAY'S second law of electrolysis
8. Explain the construction and working electric motor with neat sketch ?
9. Explatin the construction and working of A.C dynamo with neat sketch ?
10. Explain the construction and working of transformer with neat sketch ?

Pb

1. What is the total emf when three cells of 1v, 15v, 72v, are connected in series & in parallel ?
2. Calculate the current through the resistance of 30 ohms across which a p. d of 4.5v is applied it

3. An Electric installation consists of 100 lamps each drawing 0.2A at 220V supply find the cost of working of the installation for a month of 30 days at 5 hours a day. if energy is charged at a right of Rs. 2per unit.
4. Calculate the equivalent resistance of two resistors of 100 Ω and 1 connected in paralles.

5 Mark

1. Draw the neat sketch of electric motor.
2. Draw the neat sketch of A.C Dynamo.

10. MODEDRN PHYSICS

1 Mark

1. Define a) atomic number b) mass number c) amu
2. What is an atomic model ?
3. What are isotopes give examples ?
4. What are isobars give examples ?
5. What are isotones give examples ?
6. What is function of moderator in nuclear reactor ?

2 Mark

1. Define a) Mass defect b) Binding energy c) Electron volt
2. Define radio activity and radio active transformation
3. State law of radio active disintegration
4. Define half life periof ?
5. What is chain reaction and how it is controlled Ω
6. Define artificial transmutation
7. Define artificial radio activity
8. What are the uses of radio isotopes ?
9. Define nuclear fusion and nuclear fission
10. What is radio active dating explains ?
11. Explain alpha decay
12. Explain beta decay

4 Mark

1. Write the properties of a, b, y radiations ?
2. What is the principle of nuclear reactor ? How is a chain reaction controlled in it explain its working ?

Pb

1. Calculate the mass defect & the binding energy of $_{27}$CO which has a nuclear mass of 58.933 amu.

5 Mark

1. Draw the neat sketchof nuclefar reactor

11. ELECTRONICS

1 Mark

1. Define a) energy band b) crystal
2. What is doping ?
3. What is hole current ?

4. Define a) p-n junction b) depletion region
5. What are modulation & demodulation ?
6. What are software and hardware of a computer ?
7. Define a) I.C b) BINARY SYSTEM c) BCD CODE
8. Define a) BIT b) BYTE c) WORD
9. What is scanning ?

2 Mark

1. Explain how substances are divided depending on electrical conductivity
2. What is asemi conductor ? What are types of semi conductorss explain ?
3. What is P - N junction ? How it is formed ?
4. What is P - N junction Diode ?
5. What are forward and reverse bias conditions of diode ?
6. What is junction transistor ? What are its types ?
7. Distinguish between machine language and high-level language ?

4 Mark

1. Explain the formation of P - type and N - type semi conductors ?
2. State the properties and uses of P - N diode
3. Explain the formation of transistor ?
4. State the properties and uses of P - N transistor.

5 Mark

1. Draw the neat sketch of P-N-P and N-P-N transistors
2. Draw the neat sketch of P-N Diode
3. Draw the neat sketches of radio & TV broad casting

CHEMISTRY

1. ATOMIC STRUCTURE

1 Mark

1. Define a) atomic orbital b) nodal plane c) degenerate orbitial
2. State paulis exclusion principle & Aufbaus principle
3. Define Electron Effinity What are its units.

2 Mark

1. Explain why electrons enter into 4s orbital but not 3d orbital after filling 3p ?
2. What are stationary orbits ?
3. Define EC. Write EC of Cu & Cr.
4. Define IP. What are the factors influencing it ?
5. Draw Moeller diagram.

4 Mark

1. Write the important postulates and defects of BOHR's theory ?
2. Write the important postulates and defects of Ruther Ford's theory ?

3. State and explain the Hund's rule with one example ?
4. Explain quantum numbers.

5 Mark

1. Draw the shapes of S, P and D orbital.

2. CHEMICAL BONDING

1 Mark

1. Define octet configuration.
2. Draw the neat sketches of PCl_5, PCl_3, NH_3, HO_2 and CO_2

2 Mark

1. Explain how sigma and Pi bonds are formed ?
2. Draw the sketch of PCl_5 write its shape.

4 Mark

1. Explain the formation of Double bond with example.
2. Explain the formation of triple bond with example.
3. Explain the formation of Co-ordinate covalent bond ?

5 Mark

1. Draw the neat sketch of triple bond.

3. PERIODIC CLASSIFICATION OF ELEMENTS

1 Mark

1. State mendeleefs periodic law.
2. State modern periodic law.
3. Write the ec of inert gases.

2 Mark

1. Define electron Affinity write its units.
2. Distinguish b/n Electro negativity & Electropositive Character.
3. What is Newlands's concept of octaves ?
4. What are Doberiener triads ? Give examples.
5. Distinguish b/n oxidation & reduction.

4 Mark

1. How does the following properties vary in a period and in a group ?
   a) Electro positivity b) Electro negativity c) Oxidizing property d) Reducing property
2. How does atomic radius and ionization energy in a period and in a group ?
1. Explain the features of modern periodic table.

4. ALKALINE EARTH METALS

1 Mark

1. Name two ores of Mg ?
2. Why NaCl & KCl are added to anhydrous $MgCl_3$?

2 Mark

1. Write the electrode reactions during extraction of Mg.

4 Mark

1. Write the reactions of group - II A elements with
   a) Oxygen b) Hydrogen c) Chlorine d) Water
2. Describe the method of extracting Mg from its ore ?

5 Mark

1. Draw the neat sketch of extracting Mg from its ore.

5. SOLUTIONS

1 Mark

1. Define solute, solvent and solution.
2. Define solubility and concentration ?
3. Define w% and v%
4. Define ionization.

2 Mark

1. What are strong electrolytes, Weak Electrolytes and non - electrolytes.
2. Define molarity and mole fraction and give their equations.

4 Mark

1. Calculate number of moles of oxalic acid present in 400 m/ of its 0.025 M solution.
2. 20 m/ of alcohol is mixed with 160 m/ of water. Find out the V% and w% of the solution.
3. 6 grams of urea is present in 200 m/ of its aqueous solution calculate the molarity of the solution (GMW = 20) A Gaseous mixture contains 4 gm of H_2 (GMW = 2) and 168 gm of N_2 (GMW = 28) calculate the mole fractions of H_2 & N_2

5 Mark

1. How do you prepare 0. 1 M $Na_2 CO_3$ solution ?

6. ACIDS, BASES & SLATS

1 Mark

1. Define p^H ?
2. Define : a) acid b) base
3. Define : a) Arrhenius acid & base
4. Calculate the p^H of 0.0001 m. HC/

2 Mark

1. What is ionic product of water ? Give its value at 25^o C.
2. Define heat of neutralization.
3. Write the chemical properties of acids with equations ?
4. Write the chemical properties of bases with equations ?

4 Mark

1. Write ARRHENIUS theory of acids and bases what are its limitations ?
2. Define strong acid, strong base, weak acid and weak base with examples.

7. CHEMISTRY OF CARBON COMPOUNDS

1 Mark

1. What is allotropy ?
2. What is dry ice ?

2 Mark

1. What is catenation and polymerization ?
2. What is alkyl group and functional group ?
3. Draw the structure of Benzene.

4 Mark

1. Compare the structures of diamond and graphite.
2. Write the substitution reactions of alkanes.
3. Tabulate the functional groups with examples.

8. CARBOHYDRATES & PROTIENS

1 Mark

1. Define : a) Carbohydrates b) Calorific Value
2. Define : a) Sugars & non - sugars b) Bagasse
3. Define : a) Defecation b) Carbonation c) Sulphitation.
4. Define : a) Molasses b) Wash
5. Define : a) Absolute alcohol b) Denatured spirit c) Rectified spirit
6. Define : fermentation.

2 Mark

1. What are the uses and evil effects of alcohol ?
2. How do you prepare Tollen's reagent and Bendict's reagent ?
3. How carbohydrates are classified depending upon their behaviour to hydrolysis ?
4. what are amino acids ? Give examples.
5. What are proteins ? How they are useful ?

4 Mark

1. How is alcohol prepared industrially ?

5 Mark

1. Draw the neat sketch of preparation of sugar.
2. Draw the neat sketch of preparation of alcohol.

9. OILS & FATS

1 Mark

1. Define : a) Oil b) Fat.
2. What is saponification ?
3. Define : a) Soap b) Detergent
4. Write the uses of hydrogenation of oils ?

4 Mark

1. How do you test the quality of soap ?

10. CHEMISTRY & INDUSTRY

1 Mark

1. What is cement ?
2. Write the chemical composition of glass.
3. Why do we add cullet during the manufacture of glass ?
4. Define : a) Plastic b) Adhesive
5. Name two auxochromes and chomophores.
6. What are primary nutrients ?
7. What is cracking ?

2 Mark

1. Write short notes on pottery and earthenware.
2. What are the characteristics of good quality face power ?
3. What is dye ? Write its structural features ?
4. What are pharmaceuticals ?
5. What are fertilizers ? Give their types with examples.
6. Draw the neat sketches of aspirin, paracetmol and aniline yellow dye.
7. What is annealing ?

4 Mark

1. What is a drug ? What is the characteristics of ideal drug ?
2. How drugs are classified depending on therapeutic action ?

5 Mark

1. Draw the neat sketch of fractionation of petroleum.