

JKBOPEE FMPHW/MMPHW ENTRANCE TEST SYLLABUS

Based on 10th Class Courses of Study | Physics | Chemistry | Biology

Total Questions: 120 (40 Physics + 40 Chemistry + 40 Biology)

Note: The marks distribution given in the syllabus is only illustrative. It will not accrue any right to the candidate if this distribution of marks is not strictly reflected in the question paper.

PHYSICS — 40 Questions

Unit 1: Light – Reflection and Refraction (10 Questions)

- Reflection of Light, spherical mirrors and image formation; uses of spherical mirrors
- Sign conventions for spherical mirrors; relation between focal length and radius of curvature
- Mirror formula (Numerical problems); magnification
- Refraction of Light, refraction through a glass slab; refractive index; conditions for no refraction
- Spherical Lenses – image formation, sign conventions, lens formula (Numerical Problems)
- Magnification (Numerical Problems); power of lenses (Numerical Problems)

Unit 2: The Human Eye and the Colourful World (10 Questions)

- Human eye and power of accommodation; defects of vision and their correction
- Glass prism – refraction and dispersion
- Atmospheric refraction – twinkling of stars and colour of sun at sunrise and sunset

Unit 3: Electricity (10 Questions)

- Concept of electric charge
- Electric current; electric potential and potential difference
- Ohm's law and experimental verification; resistance and its dependence
- Combination of resistances in series and in parallel (Numerical Problems)
- Heating effect of current – electric power and energy (Numerical Problems)

Unit 4: Magnetic Effects of Current (10 Questions)

- Orsted Experiment; magnetic field and field lines
- Magnetic field due to a current-carrying straight wire, coil (loop) and solenoid (qualitative only)
- Force on a current-carrying conductor in a magnetic field
- Domestic electric circuits

CHEMISTRY — 40 Questions

Unit 1: Chemical Reactions and Equations (10 Questions)

- Chemical equations; writing and balancing chemical equations
- Types of chemical reactions – Combination, Decomposition, Displacement, Double Displacement
- Oxidation and reduction
- Effects of oxidation and reduction in everyday life – corrosion and rancidity

Unit 2: Carbon and Its Compounds (10 Questions)

- Bonding in carbon; covalent bond; allotropes of carbon

- Versatile nature of carbon; saturated and unsaturated hydrocarbons
- Chains, branches and rings; homologous series and its characteristics
- Nomenclature of carbon compounds
- Chemical properties – combustion, oxidation, addition and substitution reactions
- Important carbon compounds – Ethane and Ethanoic acid
- Properties of Ethanol and Ethanoic acid; Soaps and Detergents

Unit 3: Metals and Non-Metals (10 Questions)

- Physical properties of metals and non-metals
- Chemical properties of metals – action of water, air, acids and salts; reactivity series
- Cause of reactivity of metals and non-metals; properties of ionic compounds
- Occurrence of metals; extraction; enrichment of ores
- Extraction of metals in accordance with activity series; refining of metals
- Corrosion of metals and its prevention

Unit 4: Acids, Bases and Salts (10 Questions)

- Idea about acids and bases; chemical properties of acids and bases
- Action of metals, metal carbonates, metal hydrogen carbonates; metallic and non-metallic acids and bases
- Similarities in acids and bases; reaction with water
- Strength of acid and base solutions; pH and its importance
- Types of salts and their pH
- Chemicals from common salt – Sodium Hydroxide, Baking Soda, Washing Soda and Plaster of Paris

BIOLOGY — 40 Questions

Unit 1: Life Processes (8 Questions)

- What are life processes?
- Nutrition – Autotrophic and Heterotrophic Nutrition
- How do animals obtain their nutrition? Nutrition in human beings
- Respiration
- Transportation in plants
- Excretion in human beings and in plants

Unit 2: Control and Coordination (8 Questions)

- Nervous system in animals; reflex action
- Human brain; how nervous tissues are protected
- How nervous tissue causes action
- Coordination in plants; immediate response to stimulus; movements due to growth

- Hormones in animals

Unit 3: How Do Organisms Reproduce (8 Questions)

- The importance of variation
- Modes of reproduction in unicellular organisms – Fission, Fragmentation, Regeneration
- Vegetative Propagation, Budding and Spore Formation
- Sexual reproduction and why the sexual mode of reproduction is used
- Reproduction in human beings – Male and Female Reproductive System
- What happens when the egg is not fertilized; Reproductive Health

Unit 4: Heredity (8 Questions)

- Accumulation of variation during reproduction
- Heredity and inherited traits; rules for inheritance of traits
- Mendel's contribution to genetics; how traits get expressed
- Sex determination

Unit 5: Our Environment (8 Questions)

- What happens when we add waste to the environment
- Ecosystem and its components; food chains and food webs
- How human activities affect the environment
- Ozone layer and how it is getting depleted
- Managing the garbage we produce

Question Distribution Summary

Subject	Unit	Topic	Questions
Physics	Unit 1	Light – Reflection and Refraction	10
	Unit 2	The Human Eye and the Colourful World	10
	Unit 3	Electricity	10
	Unit 4	Magnetic Effects of Current	10
Chemistry	Unit 1	Chemical Reactions and Equations	10
	Unit 2	Carbon and Its Compounds	10
	Unit 3	Metals and Non-Metals	10
	Unit 4	Acids, Bases and Salts	10

Biology	Unit 1	Life Processes	8
	Unit 2	Control and Coordination	8
	Unit 3	How Do Organisms Reproduce	8
	Unit 4	Heredity	8
	Unit 5	Our Environment	8
Total			120

Download Syllabus PDF

For the latest syllabus, notifications and study material visit:

<https://applyonline24.in>

Official website: www.jkbopee.gov.in