

Deck Cadet Entrance Exam

SYLLABUS

Total marks: 100
Duration: 120 minutes
Level : XII (Science)

S.NO	SUBJECT
1	ENGLISH <ul style="list-style-type: none">• Sentence Completion• Grammar• Vocabulary• Comprehension
2	MATHEMATICS <p>Number and operations</p> <ul style="list-style-type: none">• Operations, ratio and proportion, averages, percentage, elementary number theory, fractions and decimals, sequences (Arithmetic Mean only,) <p>Algebra and functions</p> <ul style="list-style-type: none">• Expressions (up to cubic level), equations (up to quadratic level), properties of functions (linear, polynomial, rational) <p>Geometry and mensuration</p> <ul style="list-style-type: none">• Plane Geometry (Lines and angles, triangles, square, rectangle, parallelogram, trapezium, rhombus, quadrilaterals and other polygons restricted to 4 sided figures, circles)• Co-ordinate Geometry (Lines and circles)• Three-dimensional Solids (Surface area and volume of cubes, cylinders, cones, spheres and combination of shapes) <p>Trigonometry</p> <ul style="list-style-type: none">• Application questions calculation of height and distances• Right triangles, identities including expressing trig functions in terms of their complements and identities for negative angles• Periodicity of trigonometric functions• Double angle formulas for sine and cosine• Pythagorean formula for sines and cosines
3	PHYSICS <p>Mechanics</p> <p>Kinematics, such as velocity, acceleration, motion in one dimension.</p> <ul style="list-style-type: none">• Dynamics, such as force, Newton's laws, statics, and friction• Energy and Momentum, such as potential and kinetic energy, work, power, impulse, and conservation laws• Circular Motion, such as uniform circular motion and centripetal force• Simple Harmonic Motion, such as pendulum• Gravity, such as the law of gravitation, orbits, and Kepler's laws

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S.NO	SUBJECT
	<p>Electricity and magnetism</p> <ul style="list-style-type: none">• Electric Fields, Forces, and Potentials, such as Coulomb's law, induced charge, field and potential of groups of point charges, and charged particles in electric fields• Capacitance, such as parallel-plate capacitors and time-varying behavior in charging/ discharging• Circuit Elements and DC Circuits, such as resistors, light bulbs, series and parallel networks, Ohm's law, and Joule's law• Magnetism, such as permanent magnets, fields caused by currents, particles in magnetic fields, Faraday's law, and Lenz's law <p>Waves and optics</p> <ul style="list-style-type: none">• General Wave Properties, such as wave speed, frequency, wavelength, superposition, standing wave diffraction, and Doppler effect• Reflection and Refraction, such as Snell's law and changes in wavelength and speed• Ray Optics, such as image formation using pinholes, mirrors, and lenses <p>Heat and thermodynamics</p> <ul style="list-style-type: none">• Thermal Properties, such as temperature, heat transfer, specific and latent heats, and thermal expansion• Laws of Thermodynamics, such as first and second laws, internal energy, entropy, and heat engine efficiency <p>Miscellaneous</p> <ul style="list-style-type: none">• Hydrostatics• Simple hydraulics (Pascal's law)
4	<p>CHEMISTRY</p> <p>States of matter</p> <ul style="list-style-type: none">• Gases, including the kinetic molecular theory, Charles law, Boyle's law, the gas laws / relationships, molar volumes, density.• Liquids and Solids <p>Reaction types</p> <ul style="list-style-type: none">• The chemistry of acids and bases• Conjugate acid- base pairs• Acid –base reactions
5	<p>GENERAL KNOWLEDGE</p> <ul style="list-style-type: none">• Geography (Capitals, Oceans, Ports, Waterways, produce of countries, weather etc.)
6	<p>APTITUDE</p> <ul style="list-style-type: none">• Qualitative reasoning• Quantitative reasoning• Abstract reasoning)• Spatial reasoning• Logical reasoning