Waljat College of Applied Sciences, Muscat

Guidelines for applicants appearing in Entrance Examination for admission to Bachelor Degree Programs

1) Medium of Examination: The medium of examination is English Only.
2) Mode of Examination: The entrance examination comprises of a written examination (for English), Computer based multiple choice examination (for Physics, Chemistry & Mathematics / Information practices) followed by a personal interview.
   The type of questions, number of questions and duration is as per the details given below:

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Type of questions</th>
<th>No. of questions</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Language</td>
<td>English Communication (reading, writing, grammar and vocabulary)</td>
<td>10</td>
<td>30 Minutes</td>
</tr>
<tr>
<td>Physics, Chemistry and Mathematics / Information practices</td>
<td>Multiple choice questions</td>
<td>20 in each subject</td>
<td>30 Minutes for each subject</td>
</tr>
</tbody>
</table>

The subjects of entrance examination for various programs are as per the details given below:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Course</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BE Biotech, CS and EC</td>
<td>English, Physics, Chemistry, Mathematics</td>
</tr>
<tr>
<td>2</td>
<td>BCA</td>
<td>English, Mathematics/ Information practice</td>
</tr>
<tr>
<td>3</td>
<td>BBA</td>
<td>English</td>
</tr>
</tbody>
</table>

3) Schedule: Entrance examination for admission to bachelor degree programs in Monsoon-2013 Session are scheduled as per the details given below:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
</tr>
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<tbody>
<tr>
<td>During July 01, 2013 - August 28, 2013 (Every Sunday and Wednesday)</td>
<td>11.00 AM</td>
</tr>
</tbody>
</table>

4) Further Information:
   a. The entrance examination is conducted at Waljat College of Applied Sciences only.
   b. Applicant has to report at the Admission & Registration Department 45 minutes before the commencement of entrance examination.
   c. Question paper for entrance examinations (Physics, Chemistry and Mathematics) will consists of objective type multiple choice questions only (four options with single correct answer).
   d. Applicant should refer to syllabi for entrance examination provided on website.
   e. There is No negative marking.
   f. Applicant has to appear for an interview after the Written / Computer based examination.
   g. Result of the entrance examination will be intimated within three working days.
Syllabi

PHYSICS


ROTATIONAL MOTION: Basic concepts of rotational motion; torque; angular momentum, moment of inertia. Dynamics of uniform circular motion: Centripetal force and its applications.


ELECTRICITY: Conductors and insulators, Ohm’s law, resistors in series and parallel, Dielectrics and electric polarization, capacitor, combination of capacitors in series and parallel.

ELECTROMAGNETIC INDUCTION: Electromagnetic induction; Faraday’s law, induced e.m.f. and current; Lenz’s Law, Eddy currents. Self and mutual inductance. combination of inductors in series and parallel.

OPTICS: Reflection and refraction of light at plane and spherical surfaces, mirror formula, Total internal reflection and its applications, Deviation and Dispersion of light by a prism, Lens Formula, Magnification, Power of a lens, Combination of thin lenses in contact, Microscope and Astronomical Telescope (reflecting and refracting) and their magnifying powers.

ELECTRONIC DEVICES: Semiconductors; semiconductor diode: I-V characteristics in forward and reverse bias; diode as a rectifier; I –V characteristics of LED, photodiode, solar cell and Zener diode; Zener diode as a voltage regulator. Logic gates (OR, AND, NOT, NAND and NOR).
CHEMISTRY

SOME BASIC CONCEPTS IN CHEMISTRY: Matter and its nature, Dalton’s atomic theory, Concept of atom, Molecule, element and compound; Physical quantities and their measurements in Chemistry, precision and accuracy, significant figures, S.I. Units, dimensional analysis’ Laws of chemical combination; Atomic and Molecular masses, mole concept, molar mass, percentage composition, empirical and molecular formulae; Chemical equations and stoichiometry.

STATES OF MATTER:

Gaseous State – Measurable properties of gases; Gas laws- Boyle’s law, Charle’s law, Graham’s law of diffusion, Avogadro’s law, Dalton’s law of partial pressure; concept of Absolute scale of temperature; Ideal gas equation; Kinetic theory of gases (only postulates); Concept of average, root mean square and most probable velocities; Real gases, deviation from Ideal behavior, compressibility factor and van der Waals equation.

Liquid State – Properties of liquid – vapour pressure, viscosity and surface tension and effect of temperature on them (qualitative treatment only).

Solid State – Classification of solids: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea); Bragg’s Law and its applications; Unit cell and lattices, Packing in solids (fcc, bcc and hcp lattices), voids, calculations involving unit cell parameters, imperfection in solids; Electrical and magnetic properties.

CHEMICAL BONDING AND MOLECULAR STRUCTURE:

Ionic Bonding- Formation of ionic bonds factors affecting the formation of ionic bonds; calculation of lattice enthalpy.

Covalent Bonding – Concept of electronegativity, Fajan’s rule, dipole moment; valence shell Electron Pair Repulsion (VSEPR) theory and shapes of simple molecules.
MATHEMATICS


Trigonometric Functions: Positive and negative angles. Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions. Addition and subtraction formulae, Multiple and sub multiple angles, Sum as product.

Limits and Continuity: Limits, Indeterminate forms, Right hand and left hand limit, Continuity of a function at a point, Continuity of a function in an interval.

Calculus and Its Applications:

Applications of Derivative: rate of change, increasing / decreasing functions, tangents and normals, approximation, maxima and minima.

Integration: Integration of a variety of functions by substitution, by partial fractions and by parts. Basic properties of definite integrals and evaluation of definite integrals.

Applications of the Integrals: Area under simple curves, especially lines, areas of circles /parabolas / ellipse (in standard form only), area between the two curves.

Geometry: Coordinate Lines, parabolas, circles, equation of a circle, ellipses, hyperbolas.

Probability and Statistics: Mean, median, mode, range, standard deviation, graphs and plots, least squares regression (linear), Multiplication theorem on probability, Conditional probability, independent events, total probability, Baye’s theorem, Random Variable and its probability distribution. Repeated independent (Bernoulli) trials and Binomial distribution.
ENGLISH

English Language (IELTS Pattern):

1. Reading
2. Comprehension
3. Vocabulary
4. Grammar Writing (Paragraph/Essay)