Syllabus for the
Sri Lankan Astronomy and Astrophysics Olympiad (SLAAO)
and for the International Olympiad on Astronomy and
Astrophysics (IOAA)
(Note: The examination on Sri Lankan Junior Astronomy Olympiad-SLJAO-is mainly based on
the astronomy course material in school text books and school curricula up to grade nine.)

1. Basic Astrophysics
Quantum Physics Electromagnetic spectrum, Radiation Laws, Blackbody radiation, Doppler
effect; Thermodynamics Thermodynamic equilibrium, Ideal gas, Energy transfer; Spectroscopy
and Atomic Physics Absorption, Emission, Scattering, Spectra of Celestial objects, Line
formations; Nuclear Physics Basic concepts

2. Coordinates and Times
Celestial Sphere Spherical trigonometry, Celestial coordinates, Equinox and Solstice,
Circumpolar stars, Constellations and Zodiac; Concept of Time Solar time, Sidereal time, Julian
date, Heliocentric Julian date, Time zone, Universal Time, Local Mean Time

3. Solar System
The Sun Solar structure, Solar surface activities, Solar rotation, Solar radiation and Solar
constant, Solar neutrinos, Sun-Earth relations, Role of magnetic fields, Solar wind; The Solar
System Earth-Moon System, Formation of the Solar System, Structure and components of the
Solar System, Structure and orbits of the Solar System objects, Sidereal and Synodic periods
Phenomena Tides, Seasons, Eclipses, Aurorae, Meteor Showers

4. Stars
Stellar Properties Distance determination, Radiation, Luminosity and magnitude, Color indices
and temperature, Determination of radii and masses, Stellar motion, Stellar variabilities; Stellar
Interior and Atmospheres Stellar nucleosynthesis, Energy transportation, stellar atmospheres and
spectra; Stellar Evolution Stellar formation, Hertzsprung-Russell diagram, Pre-Main Sequence,
Main Sequence, Post-Main Sequence stars, End states of stars

5. Stellar Systems
Binary Star Systems Classification, Mass determination in binary star systems, Light and radial
velocity curves of eclipsing binary systems, Doppler shifts in binary systems; Star Clusters
Classification and Structure ; Milky Way Galaxy Structure and composition, Rotation,
Interstellar medium; Normal and Active Galaxies Classification, Distance determination ;
Accretion Processes Basic concepts

6. Cosmology
Elementary Cosmology Cluster of galaxies, Dark matter, Gravitational lenses, Hubble’s Law,
Big Bang, Cosmic Microwave Background Radiation

7. Instrumentation and Space Technologies
Multi-wavelength Astronomy: Observations in radio, microwave, infrared, visible, ultraviolet,
X-ray, and gamma-ray wavelength bands, Earth’s atmospheric effects; Instrumentation and
Space Technologies Ground- and space-based telescopes and detectors (e.g. charge-coupled
devices, photometers, spectrographs), Magnification, resolving and light-gathering powers of
telescopes