

41. Space Science

B.Sc. Space Science-I

Total Mark: 100

Appendix 'A'

(Outlines of Tests)

Paper-A:	Astronomy, Astrophysics and Meteorology (Written):	75 Marks
Paper-B:	Practical :	25 Marks

Appendix 'B'

(Syllabi and Courses of Reading)

Paper-A: Astronomy, Astrophysics and Meteorology

75 Marks

I. Astronomy:

The sphere; Small circles and great circles; principle formulae of the spherical Triangle; The celestial sphere; Diurnal motion; System of coordinates; Sun's apparent annual motion; Sidereal and mean solar times; Equation of time; Standard time.

Atmospheric refraction; Planetary motion; Geocentric and annular parallax; eclipses of the Sun and the Moon.

Astronavigation; The Sextant; Measurement of altitude on Board the ship; Determination of the position of the ship ; position circle ; Equipment used for land surveying; Determination of latitude, longitude and time ; Determination of Azimuth.

II. Astrophysics:

The planet Earth; The Moon; The solar system ; The sun as a star; Solar activity and its effects on the Earth; properties of stars; Luminosity and magnitude; The colour magnitude relations; Evolution of stars; Supernova; White Dwarfs; The structure of Local galaxy; interstellar medium; The Universe.

Space techniques applied in the study of gravitational field and rotation of the earth; Magnetosphere; Space astronomy.

III. Meteorology:

i) Winds:

Nature, of Earth rotation and its effects; Geostrophic winds, gradient winds. Thermal wind. Jet streams.

ii) Meteorological instruments Observations:

Observation of pressure, temperature and humidity; precipitation and evaporation, winds, cloud; upper air observations; Radio sonde. Ozone.

iii) Synoptic Meteorology:

Air mass characteristics, Frontal characteristics, Frontal Non Frontal depression;
Heat lows; Orographic lows; Anticyclones; Surface and Upper air weather charts.

Recommended Books:

1. Foundations of Astronomy: W.M. Smart. Cambridge University Press, Cambridge, U.K.
2. Modern Astronomy: Ludwig aster, molden-Pay Inc., San Francisco., I USA (1974).
3. Cambridge Encyclopedia of Space; FA M. Rycroft, Cambridge University Press. Cambridge, U.K. (1990)
4. Essentials of Meteorology; McIntosh & S.A. Thom, publication (London). U.K. (1983).
5. Atmosphere, weather and climate by R. Barry, R. Choley (1987).

Paper-B: Practical

25 Marks

Identification of stars and constellation use star atlases; use or the Astronomical almanac and computation of data for the position of the observers; use of the telescope and observation of various heavenly bodies, Use of sextant and theodolite.

Note:

Each student will have to perform two experiments each of 20 marks during 5 hours. The question paper will consist of the following two sections each containing three experiments from the above course. Each student will have to mark at least two questions from each section and the examiner will allot one question from each section

Recommended Books:

1. Foundation of Astronomy by W.M. Smart.
2. Introduction to Astronomy by W.M. Smart.
3. Earth and Space Science by Wolfe, Flemming, Battern and others.
4. Your guide to the weather by George L. Cantzlaar.
5. Remote Sensing by Philip N. Slater.
6. The Upper Atmosphere and solar Terrestrial Relations by J. K.