NCE-1603010702020700 Seat No. _____

M. Sc. (Physics) (Sem. II) (CBCS) Examination

April / May - 2017

CT - 7 : Space Physics

Time : Hours] [Total Marks : **70**

Instruction : Attempt all questions. The figures on right indicates marks.

1 Answer ANY **SEVEN** of the following : **14**

(1) Define Geo-potential height.
(2) Explain the escape velocity at the surface of the Earth.
(3) What is the "standard atmosphere"?
(4) Write the chemical composition of the Sun.
(5) Name the different regions of the geomagnetic cavity.
(6) Define the specular and diffuse reflectors.
(7) Explain the electron loss due to attachment.
(8) Explain the Snell's law of refraction.
(9) Draw the energy level diagram of atomic oxygen.
(10) What is the "Coronal Mass Ejection"?

2 Answer ANY **TWO** of the following : **14**

(a) Derive the expression explaining the hydrostatic equilibrium in the Earth's atmosphere.
(b) Describe the thermal or heat balance in the atmosphere.
(c) State the "Entropy" and "Enthalpy" for the atmosphere with examples.

3 Answer the following : **14**

(a) Derive the equation of Chapman's production function and discuss in detail.
(b) Discuss loss mechanism and explain the Alpha and Beta layers.

OR

3 Answer the following : 14

(a) Using the simplified Appelton-Hartree formula, explain how the radio wave is refracted by the ionosphere.

(b) Draw the block diagram of lonosonde and explain the working of it. Show the sample ionogram and discuss the critical frequency.

4 Answer ANY **TWO** of the following : 14

(a) Describe the energy interaction in the atmosphere and explain the scattering and absorption mechanism in the remote sensing.

(b) Discuss the real remote sensing system in detail.

(c) Define the spectral reflectance. Show how this property can be used to classify the different types of vegetation and trees.

5 Write short notes on ANY **TWO** of the following : 14

(a) Formation of Geomagnetic cavity

(b) Refraction of radio waves by ionosphere

(c) Attenuation of solar radiation in the atmosphere

(d) Production and destruction of ozone.
