5. Derive the formula for time of rising and setting of a star and hence prove that a cirampolar star does not rise or set.

ekeâmee leej keâ GoÙe SJe Demle neve keâ eueS me$e keâe JÙelheVe keâeepeS SJe oMeeFS ekeâ Skeâ heejOeJeeÙe leeje GoÙe SJe Demle vene nelee n~

Unit-III / FkeâeF-III 7½

6. Explain the evening trilight and find its duration.

meeÙekeâeueeve ÚeÙee keâe heejYeee<ele keâjle n Fmekeâe DeJeeOe evekeâeeueS~

7. Explain "dip of horizon" and find its value approximately.

''e[he Deeheâ nejeFpeve'' keâe mecePeele nS Fme JÙeòeâ keâjve keâe me$e %eele keâeepeS~

Unit-IV / FkeâeF-IV 7½

8. Derive a formula for calculating the phase of the moon.

Ûevõcee keâe keâuee %eele keâjve keâ eueS me$e keâe JÙelheVe keâeepeS~

9. Derive Kepler's equation:

M=E–e Sin E

keâheuej meceekeâjCe

M=E–e Sin E

keâe JÙelheVe keâeepeS~

A (Printed Pages 4)

Roll No. _____

S-687

B.Sc. (Part I) Examination, 2015

(Regular & Exempted)

ASTRONOMY

Frist Paper

(Spherical Astronomy & Trigonometry)

Time Allowed : Three Hours] [Maximum Marks : 50

Note : Answer Five questions in all. Question No.1 is compulsory. Attempt one question from each Unit. Symbols have their ususal meanings.

keâue heeÙe ØeMvee keâ Gòej oeepeS~ ØeMve me. 1 DeeveJeeÙe n~ ØelÙekeâ FkeâeF me Skeâ ØeMve keâeepeS~ mekeâlee keâ meeceevÙe DeLe n~

1. Attempt all parts: 2×10=20

meYee Yeeie nue keâeepeS:

(a) Explain circumpolar stars.

OeJeeÙe leeje keâe mecePeeFS~

(b) Define Mean Sun.

ceeOÙe meÙe keâe meceÞeeFS~

(c) Define brightness of a planet.

«en keâe Ûecekeâ keâe heejYeee<elee keâeepeS~

(d) In the celestial sphere, define:

Cardinal Points, obliquity of the ecliptic, zenith, and Parallel of altitude.

Skeâ KeieueeÙe Jeòe yeveekeâj Gmece oMeeFS:

keâeee[veue eyevo, »eâeeleJeòe keâe eleÙekeâlee, eMejeeyevo SJe meceevlej GVeleeMe

(e) Explain G.S.T. and G.M.T.

G.S.T. SJe G.M.T. keâe heejYeee<elee keâeepeS~

(f) In an equilateral triangle, show that:

$$2\text{Cos}\frac{a}{2}\text{Sin}\frac{A}{2}=1$$

Skeâ meceyeen e$eYepe ce, oMeeFS :

$$2\text{Cos}\frac{a}{2}\text{Sin}\frac{A}{2}=1$$

(g) Explain small circle and great circle with digram.

uele Jeòe SJe oele Jeòe keâe meeÛe$e JeeCele keâeepeS~

(h) Explain eccentric anomaly and mean

anomaly.

FmeevšKeâ Sveeceuee SJe ceeve Sveeceuee keâe meceÞeeFS~

(i) Explain lans of refraction.

Jeleve keâ eveÙecee keâe meceÞeeFS~

(j) Define summer solstice and winter solstice.

GòejÙeCeevle SJe oe#eCeeÙeveevle keâe heejYeee<elee keâeepeS~

Unit-I / FkeâeF-I 7½

2. In a spherical mangle. Prove that:

Cos a=Cos b Cos c + Sin b Sin c Cos A

ekeâmee ieeueeÙe e$eYepe ce emeæ keâeepeS:

Cos a=Cos b Cos c + Sin b Sin c Cos A

3. In an equilateral triangle, show that:

$$2\text{Cos}\frac{a}{2}\text{Sin}\frac{A}{2}=1$$

ekeâmee meceyeen e$eYepe ce oMeeFS ekeâ

$$2\text{Cos}\frac{a}{2}\text{Sin}\frac{A}{2}=1$$

Unit-II / FkeâeF-II 7½

4. Explain the different coordinate systems of astronomical coordinates with digram.

KeieueeÙe eveoMeekeâe keâe eJeeYeVe je_____ eâeepeS~