BBC-95

M.A./M.Sc. IVth Semester (Reg./Pvt./ATKT)

Examination, 2020

Mathematics

Paper - XIII

Spherical Trigonometry & Astronomy - II

[Maximum Marks : Reg.= 85, Pvt.= 100

Note :- All questions from each section carry equal marks. All questions are compulsory and answer limit are approximately 250 words. Start the answer of each section from new page. Maximum limit of pages of answer booklet are approximately 16 pages. Answer should be written by the student in his/her own handwriting mandatory. The first page of answersheet should be download by the student from university website www.bubhopal.ac.in is mandatory.

1. Convert co-ordinate system (α, δ) into (λ, β).

2. If the relation between r and μ is $r\mu^{n+1}$ = constant, then prove that $R = \frac{1}{n}\left\{\zeta - \sin^{-1}\left(\frac{\sin\zeta}{\mu_0^n}\right)\right\}$, where ζ is the apparent zenith distance, 'a' is the radius of earth and μ_0 is the refractive index for Lower Layer.

3. If e = sin ϕ, prove that the relation between true anomaly V and eccentric anomaly E is $\tan\frac{V}{2} = \tan\left(45^0 + \frac{\phi}{2}\right)\tan\frac{E}{2}$.

4. If the line joining two planets to one another subtends an angle of 60^0 at the sun when the planets apper each other to be stationary, show that $a^2 + b^2 = 7ab$, where a and b are the distances of the planets from the sun.

5. Find the formulae for precession in right ascention and declination.

✦✦✦