B.Tech. IN AEROSPACE ENGINEERING (BTAE)

00723

Term-End Examination

December, 2012

BAS-025 : SPACE DYNAMICS

Time : 3 hours   *Maximum Marks : 70*

Note : *Attempt **any seven** questions. All questions carry equal marks.*

1. What do you understand by the term 're-entry' ? Explain fully all the features of entry trajectory of a ballistic missile. **10**

2. Explain the General aspects of Satellite injection. **10**

3. Explain the stability of motion near the liberation points. Make use of sketches and examples. **10**

4. For a spacecraft with constant tangential low thrust using electric propulsion system , find the expression for angular position at escape Qesc, for an escape trajectory. **10**

5. Explain the Reference frame where sun is taken as origin and compare it with the reference frames usually considered for satellite orbits. **10**

6. Describe Cowell's method, and Encke's method in detail. **10**

7. Explain the following in brief :

   (a) Time of Flight. **5**

   (b) Flight Path angle **5**

8. Sketch the velocity hodographs for elliptic, parabolic and hyperbolic motion and explain them in detail. **10**

9. What do you understand by 'fast' interplanetary trajectory ? Derive the expression for $\dfrac{V\alpha e}{Ve}$ for a 'fast' interplanetary trajectory of a spacecraft which is moving from earth to planet Mars. **10**

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