Name : ……………………………………………………………

Roll No. : ……………………………………………………………

Invigilator's Signature : …………………………………………

CS/BNS/SEM-5/BNS-501/2009-10

2009

PRINCIPLES OF NAVIGATION – III

Time Allotted : 3 Hours   Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Objective Type Questions)

1. A)   Answer very briefly :   10 × 1 = 10

   i)   What is the relevance of geographical position of a heavenly body ?

   ii)   Enlist the names of Zodiac.

   iii)   Define rational horizon.

   iv)   What is universe ?

   B)   Choose the correct choice :

   v)   UTC is based on sidereal time instead of solar mean time.

   a)   True   b)   False

   vi)   A superior planet cannot have an inferior conjunction.

   a)   True   b)   False

55043   [Turn over

vii) Occurance of aphelion & perihelion coincide with summer and winter solstice.

    a)   True   b)   False

viii) Lunar conjuction is required for lunar eclipse.

    a)   True   b)   False

ix) For a circumpolar body

    a)   Latitude + Declination = 90°

    b)   Latitude + Declination > 90°

    c)   Latitude + Declination < 90°

x) In earth-moon system, barycentre is

    a)   centre of gravity

    b)   centre of mass

    c)   centre of orbit.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.   3 × 5 = 15

2. What is your understanding about origin of universe ?

3. What do you know about absolute and relative stellar magnitude ?

4. Explain the phases of moon in detail.

5. What is the condition necessary for twilight all night ? Between what latitude will there be Civil Twilight all night, when sun is in topic of cancer ?

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.   3 × 15 = 45

6. Explain the oscillation and retrograde motion of planet, with the help of neat sketch.   15

7. a) Derive the formula

    sin amp = sin dec × sec lat.   5

    b) In lat 30°15′ N long 088°45′ E, find the Amplitude of rising sun if the Declination was 18°33′ N.   10

8. Your ship is to make a trans-Atlantic passage. Your departure position is 32°12′ N, 018°15′ E. You have to reach to a position 05°40′ N, 034°20′ W. If you follow a great circular path, calculate the initial and final course and position of vertex.   15

9. Explain the following phenomena :   3 × 5

    a) Why astronomical PL is at right angle to azimuth ?

    b) Why all the stars rise approximately 4 minutes earlier every consecutive day ?

    c) Why does the daylight hour change throughout the year ?   5 × 3 = 15

_____