Name: **Enrolment No:**	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2022

Programme Name: B Tech (Aerospace Engineering with Spz. In Avionics **Semester : VII**
Course Name : Aerospace Navigation **Time : 03 hrs**
Course Code : AVEG 4005 **Max. Marks: 100**
Nos. of page(s) : 02
Schematic diagrams are must in each answers

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Discuss the terms "Latitude" and "Longitude" used for navigation	**4**	**CO1**
Q 2	How to correct the position fixing?	**4**	**CO2**
Q 3	Describe the operation of OMEGA navigation system	**4**	**CO3**
Q 4	How Hyperbolic Navigation works?	**4**	**CO 4**
Q 5	What are the various limitations in navigating the vehicles	**4**	**CO 4**

SECTION B
(4Qx10M= 40 Marks)

Q 6	Explain the principle of LORAN in detail with its functioning.	**10**	**CO4**
Q 7	How ILS works? How the pilot takes up decision for safe landing. Which systems are used for landing in India?	**10**	**CO 3**
Q 8	Derive the position estimation algorithm using INS system. Discuss KALMAN filter techniques for error estimations.	**10**	**CO 2**
Q 9	List out the various techniques for navigation. How pilotage navigation differs from modern Radio navigation?	**10**	**CO 1**

SECTION-C
(2Qx20M=40 Marks)

Q 10	How drone surveillance system works? Explain with the help of schematic diagram.	**20**	**CO2**
Q 11	How contour maps are useful in preparing the navigation charts useful in radar and sonar mapping. Discuss the chart as shown in Figure .	**20**	**CO 4**

	River valleys