



4. Match the following satellite categories with its design life in years. CO1 [K<sub>2</sub>]

List I	List II
A. Block -IIF	i. 7.5
B. Block -IIA	ii. 15
C. Block -IIR	iii. 4.5
D. Block -I	iv. 10

- a) 2    1    4    3                      b) 1    2    3    4  
 c) 3    2    1    4                      d) 4    3    2    1

5. Tropospheric delay ranges between CO4 [K<sub>2</sub>]

- a) 2-25m                                      b) 25-50m  
 c) 50-100m                                    d) 50-75m

6. **Assertion (A):**Smaller the DOP higher the precision(K2) CO1 [K<sub>2</sub>]

**Reason (R) :** DOP varies with time and location

- a) both A and R are individually true and R is the reason for A                      b) both A and R are individually true and R is not the reason for A  
 c) A is true but R is false                      d) A is false but R is true.

7. **Assertion (A):**Effect of Ionosphere in GPS signal varies with time CO4 [K<sub>2</sub>]

**Reason (R) :** Ionization level of Ionosphere depends on intensity of sunlight

- a) both A and R are individually true and R is the reason for A                      b) both A and R are individually true and R is not the reason for A  
 c) A is true but R is false                      d) A is false but R is true.

8. Which of the following parameter describes the irregularities of earth rotation CO2 [K<sub>2</sub>]

- a) Dilution of precision                      b) Earth orientation parameter  
 c) Length of the day                              d) Equinox

9. Which of the following is the incorrect term used to represent the longest day or night? CO2 [K<sub>2</sub>]

- i)Solstice    ii) Equinox    iii) Equator    iv) ephemeris  
 a) (ii), (iii), and (iv)                              b) (i),(ii) and (iii)  
 c) (i)& (ii)    d) (i),(iii) & (iv)

10. A branch of earth science dealing with the physical processes and phenomena occurring especially in the earth and in its vicinity CO5 [K<sub>2</sub>]

- a) Atmospheric Occulation                      b) Gravity Field Mapping  
 c) Crystal Dynamics                              d) Geophysics

**PART B (10 x 2 = 20 Marks)**

- |   |     |                   |
|---|-----|-------------------|
| 11. Mention the significance of GLONASS                         | CO1 | [K <sub>2</sub> ] |
| 12. List out the reasons behind irregularity in earth rotation. | CO2 | [K <sub>2</sub> ] |
| 13. Write a brief note on differential GPS.                     | CO3 | [K <sub>2</sub> ] |
| 14. What is dilution of precision and what are its types?       | CO1 | [K <sub>2</sub> ] |
| 15. Define equinox and solstice.                                | CO2 | [K <sub>2</sub> ] |
| 16. Mention the significance of OTF Ambiguity.                  | CO3 | [K <sub>2</sub> ] |
| 17. List out the methods to minimize Multipath Effect.          | CO4 | [K <sub>2</sub> ] |
| 18. Write a brief note on Ephemerides.                          | CO4 | [K <sub>2</sub> ] |
| 19. What is Atmospheric Occultation?                            | CO5 | [K <sub>2</sub> ] |
| 20. Define Geophysics.  | CO5 | [K <sub>2</sub> ] |

**PART C (6 x 5 = 30 Marks)**

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|---|-----|-------------------|
| 21. Explain the control and user GPS segment in detail.                   | CO1 | [K <sub>2</sub> ] |
| 22. Discuss in detail the navigation messages and its formats.            | CO3 | [K <sub>2</sub> ] |
| 23. Write a brief note on time systems in GPS.                            | CO2 | [K <sub>2</sub> ] |
| 24. Explain Gravity Field Mapping in detail.                              | CO5 | [K <sub>2</sub> ] |
| 25. Discuss in detail about Data Combination: Narrow Lane; Wide Lane.     | CO3 | [K <sub>3</sub> ] |
| 26. List the different types and write a brief note on GPS error sources. | CO4 | [K <sub>3</sub> ] |

**Answer any FOUR Questions**

**PART D (4 x 10 = 40 Marks)**

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|---|-----|-------------------|
| 27. State and explain the significance of anti-spoofing, selective availability and DOP factors.      | CO1 | [K <sub>3</sub> ] |
| 28. Compare and contrast the features and significance of C/A code and Y-code                         | CO3 | [K <sub>4</sub> ] |
| 29. Explain in detail about the signal processing and its processing techniques                       | CO3 | [K <sub>3</sub> ] |
| 30. Discuss in detail about Elements of Wave Propagation and Ionospheric Effects on GPS Observations. | CO4 | [K <sub>3</sub> ] |
| 31. Elaborate the salient features air borne and space borne GPS.                                     | CO5 | [K <sub>2</sub> ] |

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