Printed Pages:01 **Sub Code:KOE 080**

Paper Id: | 2 | 3 | 6 | 0 | 9 | 0 | **Roll No.** | | | | | | | | | | |

B.TECH

(SEM VIII) THEORY EXAMINATION 2022-23

FUNDAMENTALS OF DRONE TECHNOLOGY

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.
2. Any special paper specific instruction.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

(a) What is UAV? Give two applications of UAV.
(b) What is HALE? Give two applications with an example.
(c) Differentiate Drones and UAV.
(d) List the elements of UAS.
(e) What is NAV? Give two applications with an example.
(f) What is autopilot?
(g) What is the role of Telemetry and Tracking in UAV?
(h) Explain the importance of UAV in defense sector.
(i) What is design for stealth?
(j) Explain access control protocol in drone system.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

(a) Write short notes on launch, recovery and retrieval equipment for UAVs as a part of UAVs system functional structure.
(b) Explain about the classification of drones in detail.
(c) Explain the Design Standards and Regulatory Aspects-India Specific for drone systems.
(d) What are different roles where UAVs can perform better than manned aircrafts, discuss them in detail?
(e) Explain in detail the integration, installation, configuration for drones.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss in detail about aerodynamics and airframe configurations.
(b) Discuss 'Navigation Systems' and 'Communication Systems' of UAS.

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) How the payload and the air vehicle affect the UAS?
(b) What is the role of gyros-actuators in drone technology.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain the waypoints navigation, ground control software, and system ground testing.
(b) Describe the PID controller feedback and radio control frequency range for UAV system.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) How the design of most aircraft-based systems begins, discuss the different phases?
(b) Explain about future prospects and challenges in UAV system design.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain ground test-analysis-troubleshooting for UAS.
(b) Discuss few reasons for the loss of communicationduring UAS operations. What is the path loss in radio communications?