Subject Code: KOE080

Paper ID : 250250

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM VIII) THEORY EXAMINATION 2024-25
FUNDAMENTALS OF DRONE TECHNOLOGY

TIME: 3 HRS **M.MARKS: 100**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

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

Q No.	Question	CO	Level
a.	What are the main categories of Unmanned Aerial Vehicles (UAVs?	1	K2
b.	Define aerodynamic drag and explain its relevance to UAV design.	1	K2
c.	List the key components of a drone's avionics system.	2	K2
d.	What is the function of the autopilot in a drone?	2	K2
e.	Explain the term 'PID control' in the context of UAVs.	3	K2
f.	What are telemetry systems and why are they important?	3	K2
g.	Define waypoints navigation with an example.	4	K2
h.	What are the challenges in in-flight testing of drones?	4	K2
i.	Mention two stealth design strategies used in UAVs.	1	K2
j.	What are the regulatory aspects for drones in India?	1	K2

SECTION B

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

Q No.	Question	CO	Level
a	Describe the classification and applications of UAVs.	1	K2
b	Discuss different airframe configurations and their effects on drone performance.	1	K3
c	Explain the integration and configuration process of drone avionics systems.	2	K3
d	Describe the various communication systems used in drones and their functionality.	3	K3
e	Highlight future prospects and key challenges in drone navigation and testing.	4	K3

SECTION C

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

Q No.	Question	CO	Level
a	Explain the history and evolution of UAV drones with specific technological milestones.	1	K3
b	Discuss Indian drone regulations and their impact on design standards.	1	K3

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

Q No.	Question	CO	Level
a	Describe the key features and roles of the processor and servos in drone avionics.	2	K3

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b	Discuss how gyroscopes and accelerometers help maintain drone stability.	2	K3

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

Q No.	Question	CO	Level
a	Elaborate the PID feedback control system used in UAVs.	3	K4
b	Explain payload and telemetry systems with real-world drone application examples.	3	K4

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

Q No.	Question	CO	Level
a	Explain how ground control software assists in drone navigation and monitoring.	4	K4
b	Discuss the procedures and significance of in-flight drone testing.	4	K4

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

Q No.	Question	CO	Level
a	Design a conceptual UAV drone system for agricultural surveillance, covering components and functions.	1	K6
b	Propose a UAV system with stealth capabilities and justify the design choices.	1	K6