Seat No: _____   Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2021 - 22 Examination

Semester: 8   Date: 01/04/2022
Subject Code: 203101487   Time: 10.30 am to 1.00 pm
Subject Name: Drone Technology   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 **Objective Type Questions** - (Fill in the blanks, one word answer, MCQ-not more than Five in   **(15)**
case of MCQ) (All are compulsory) (Each of one mark)

1. If linear dimension is of 10 times, area would be of

   a. 1   b. 10

   c. 100   d. 0.1

2. What a MAV cannot do?
   a. Launch Hellfire missiles   b. Do indoor surveillance

   c. Image transmission   d. All the above

3. Hong Du GJ-11 (SHARP SWORD) has
   a. deep penetration capability   b. ability to deliver laser-guided
                                            munitions

   c. missions include aerial reconnaissance and   d. All the above
   eventually combat missions.

4. For fixed wing UAV, reduction in Span Loading enhances

   a. Cruise speed   b. Endurance

   c. Service Ceiling   d. Both b & c

5. Choose the odd one

   a. Predator A   b. Hummingbird

   c. Predator B   d. Reaper

6. Miss Distance Indicator means..………
7. Linear Dimension Ratio is ………………..
8. Purpose of arrester wires in UAV is to…….
9. DRDO ABHYAS is HEAT. HEAT full form is…………..
10. Aerodynamic Efficency is related to linear dimension & packaging density as…………
11. What is disposable load fraction?
12. What is reconnaissance mission?
13. What is Froude scaling?
14. What are the different types of launch and recovery systems of a fixed wing UAV?
15. What is TCAS and describe its purpose?

Q.2 Answer the following questions. (Attempt any three)   **(15)**
A) What happens when one motor fails in a quad copter? What happens when two motors fail in a
quad copter? What happens when three motors fail in a quad copter?

B) List all the parts including the electronic components which we used to make quadcopter using NAZA M-Lite.

C) What should be the direction of motors in bi copter? How the pitch, yaw and roll controls could be done in bi copter? Draw diagrams.

D) What is the significant task of a designer in designing Long Endurance UAV and why?

Q.3 A) Arduino Board. **(07)**

Look at the above Arduino board and list out the components and pins used for making our quadcopter.

B) Write down various frequency band name and their frequencies. **(08)**

OR

B) Give me the logic table of 4 sensors with quadcopter x type for an obstacle avoidance drone. **(08)**

Q.4 A) Give me the logic table of 4 sensors with hexacopter x type for an obstacle avoidance drone. **(07)**

OR

A) With Suitable diagrams explain the procedures to build Drone Using Pixhawk Flight Controller. **(07)**

B) Raspberry Pi **(08)**

Look at the above Raspberry Pi board and list out the components and pins.