

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII (NEW) EXAMINATION – SUMMER 2021

Subject Code:2180108

Date:06/08/2021

Subject Name:Helicopter Engineering

Time:02:30 PM TO 05:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

	MARKS
Q.1 (a) Shortly explain ground effect.	03
(b) Define disk loading and power loading.	04
(c) Discuss maneuvering technique of a tandem rotor helicopter	07
Q.2 (a) Shortly define figure of merit.	03
(b) Explain function of collective pitch.	04
(c) Discuss axial climb and descend.	07
OR	
(c) Discuss design of vertical fin and horizontal stabilizer with neat sketch.	07
Q.3 (a) Only draw a conventional helicopter and mention important components.	03
(b) Explain function of cyclic pitch.	04
(c) Explain tail rotor swash plate mechanism with neat sketch.	07
OR	
Q.3 (a) Define Thrust and Power Coefficient.	03
(b) Discuss various blade tip design with neat sketch.	04
(c) Discuss Hovering and axial climb performance.	07
Q.4 (a) How will you decide number of blades of main rotor design?	03
(b) With neat sketch explain structural design of main rotor blade.	04
(c) Explain function of main rotor swash plate with neat sketch.	07
OR	
Q.4 (a) With neat sketch explain feathering of main rotor blade.	03
(b) Explain airfoil selection with neat sketch	04
(c) With neat sketch describe types of helicopters with respect to main rotor configurations.	07
Q.5 (a) Define hover. How hover is performed by helicopter?	03
(b) Shortly define blade loading and rotor solidity.	04
(c) Describe qualities of highly maneuverable combat helicopter.	07

OR

- Q.5** (a) Shortly describe chronological development of helicopters. **03**
(b) Draw and explain components of a conventional monorotor helicopter **04**
(c) With neat sketch explain flapping of main rotor blade. **07**
