

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER–VIII (NEW) EXAMINATION – SUMMER 2022****Subject Code:2180602****Date:02/06/2022****Subject Name:Harbour & Airport Engineering****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

**MARKS**

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|------------|-----|--|-----------|
| <b>Q.1</b> | (a) | What is the terminal area for an airport? Enlist different facilities required at the terminal building.   | <b>03</b> |
|            | (b) | Why is it important to carry maintenance of a harbor on a regular basis? Explain how the periodic maintenance of the harbor is carried out?  | <b>04</b> |
|            | (c) | Find the design length of a runway required if the length of runway at sea level under standard condition at zero gradient is 1200m. The airport site is at an elevation of 900m. The reference temperature is 21°C. Proposed runway permits ascending gradient of 0.5%. | <b>07</b> |
| <b>Q.2</b> | (a) | What is mooring? Explain any one mooring mechanism with neat sketch.   | <b>03</b> |
|            | (b) | Differentiate the following i) Wet dock and Dry dock ii) commercial harbor and refuge harbour.   | <b>04</b> |
|            | (c) | Draw a layout of harbor with cargo handling, passenger handling and repair facility and explain the functions of two important harbor components.  | <b>07</b> |
| <b>OR</b>  |     |  |           |
|            | (c) | What is the function of a hanger? Enlist various facilities available at the hanger.   | <b>07</b> |
| <b>Q.3</b> | (a) | Discuss the role of Airport Authority of India for the functioning of Airports in India.   | <b>03</b> |
|            | (b) | What is break water? Enlist different types of breakwaters.  | <b>04</b> |
|            | (c) | Enlist different types of locks used for harbor operations and explain any two with neat sketch  | <b>07</b> |
| <b>OR</b>  |     |  |           |
| <b>Q.3</b> | (a) | Define the terms: (i) ILS (ii) Littoral drift (iii) Turning basin  | <b>03</b> |
|            | (b) | Explain any two navigational aids used for waterway transportation.  | <b>04</b> |
|            | (c) | Explain in detail factors affecting to site selection of a harbor.   | <b>07</b> |
| <b>Q.4</b> | (a) | Write a short note on airport capacity   | <b>03</b> |
|            | (b) | Explain in detail advantages and disadvantages of air transport.   | <b>04</b> |
|            | (c) | What are the functions of the taxi way in an airport? Draw a cross section of the taxi way, showing all components.  | <b>07</b> |
| <b>OR</b>  |     |  |           |
| <b>Q.4</b> | (a) | Enlist factors affecting planning of a commercial harbor and explain any one with examples.  | <b>03</b> |

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|            | (b) | Why fenders are provided on docking platform? Which type of material is recommended for fenders?  | <b>04</b> |
|            | (c) | Draw a neat sketch showing components of an aircraft and explain how the aircraft dimensions are affecting the design and planning of an airport. | <b>07</b> |
| <b>Q.5</b> | (a) | What are the important wind characteristics to be taken into consideration for the design of a runway?  | <b>03</b> |
|            | (b) | Enlist coastal protection works and explain any one in detail.  | <b>04</b> |
|            | (c) | Explain different aircraft parking systems with neat sketch   | <b>07</b> |
|            |     | <b>OR</b>   |           |
| <b>Q.5</b> | (a) | Discuss the function of airport drainage  | <b>03</b> |
|            | (b) | Explain wave breaking and wave reflection with neat sketch.   | <b>04</b> |
|            | (c) | What is runway orientation? How different elements are affecting the runway orientation explain in detail.  | <b>07</b> |

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