

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII EXAMINATION – WINTER 2025

Subject Code:3174022

Date:01-12-2025

Subject Name:Airport and Seaport 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
Q.1 (a) Define: Harbour, NRT, Draft.	03
(b) Discuss the factors to be considered while selecting the seaport site.	04
(c) Compute the corrected runway length for: Runway length at sea-level, std. atmospheric pressure, temperature and zero gradient = 1600 m, Site elevation = 570 m from MSL, ART = 21° C, effective gradient = 0.15 %.	07
Q.2 (a) Define: Taxiway, Fuselage, Bow.	03
(b) Briefly describe with sketch elements of typical airport.	04
(c) Design the dimensions of a general cargo berth for 3 ships, berthed in series on a wharf as per the IS provisions. Assume LOA = 300 m, and beam = 30 m of the design ship. Draw the scaled sketch and show all components.	07
OR	
(c) Describe with sketches airport grading and drainage system.	07
Q.3 (a) Briefly describe with sketch “Littoral Drift”.	03
(b) Explain with sketch effect of sea waves on marine structure design.	04
(c) Discuss the factors affecting while selecting the location of exit taxiway. Determine the (i) Radius of central curve, (ii) Length of entrance curve, (iii) Stopping distance, for the Exit Taxiway joining a runway and a parallel main taxiway. Take turn off speed of an aircraft is 90 kmph, coefficient of friction between tire and pavement is $f = 0.15$, coefficient $C = 0.39$, and deceleration rate = 1 m/sec ² .	07
OR	
Q.3 (a) Define: Takeoff climb surface, Empty operating weight of aircraft, Wind coverage.	03
(b) Discuss the factors to be considered while the airport site selection.	04
(c) If length of design vessel is 300 m, beam is 30 m, and loaded draft is 15 m, determine following as per the IS provisions: (i) Stopping distance in the entrance channel when vessel in ballast, (ii) Bottom width of one lane channel-draw sketch, (iii) Diameter of Turning basin with tug assistance, (iv) Depth of harbour basin, (v) Minimum length and width of berthing area, (vi) Minimum width of harbour entrance, (vii) Depth of entrance channel.	07
Q.4 (a) Draw the typical C/S of vertical wall type break water.	03
(b) Describe with sketches “Dolphin piles”.	04
(c) Describe with sketches the procedure of determining the orientation of runway using wind rose diagram-type II.	07

OR

- Q.4** (a) Show the components in a detailed C/S sketch of typical Runway. **03**
(b) Describe with sketches any two “Air Traffic Control Aids”. **04**
(c) Explain the components and working of “Dry dock” with the help of sketches of its plan and C/S. **07**
- Q.5** (a) Briefly describe with sketch “Holding apron”. **03**
(b) Briefly describe with sketches any two types of aircraft parking systems on airport. **04**
(c) Explain with sketches: (i) Light house, (ii) Entrance Lock with Gates. **07**
- OR**
- Q.5** (a) Briefly describe with sketch “Dipper dredger”. **03**
(b) Explain with sketches any two types of Buoys used in harbour area. **04**
(c) Explain with sketches: Runway markings and lightings. **07**
