

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VIII (NEW) EXAMINATION – WINTER 2018****Subject Code: 2180602****Date: 19/11/2018****Subject Name: Harbour & Airport 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.

- Q.1** (a) List major ports in India. **03**  
(b) Write classification of harbour **04**  
(c) What is breakwater? Write functions of it. Discuss about types of it. **07**
- Q.2** (a) Enlist aircraft characteristics. **03**  
(b) Explain different wheel configuration of aircraft with neat sketch. **04**  
(c) The length of runway at sea level under standard condition at zero gradient is 1500m. The airport site is at an elevation of 900m. The reference temperature is 20°C. proposed runway permits ascending gradient of 0.5%. Determine final runway length. **07**
- OR**
- (c) Determine the turning radius of taxiway for an aircraft with a wheel base of 30m. Tread of main landing gear is 6m. Design turning speed is 50kmph. Width of taxiway pavement is 22.5m. Assume coefficient of friction between tyre and pavement surface as 0.13m. **07**
- Q.3** (a) How runway orientation is decided? **03**  
(b) Sketch various orientation of runway with label. **04**  
(c) Which facilities are provided in terminal area? **07**
- OR**
- Q.3** (a) What is the role of ICAO? **03**  
(b) Write airport classification as per ICAO. **04**  
(c) Discuss parking system of aircraft on airfield. Draw neat sketches of various parking configuration of aircraft. **07**
- Q.4** (a) What are the types of locks? **03**  
(b) What are the types of docks? **04**  
(c) Discuss about study of natural phenomena for harbour planning. **07**
- OR**
- Q.4** (a) What are the site selection criteria for harbour planning? **03**  
(b) Sketch neat layout of harbour showing various components. **04**  
(c) What are the types of marine structures? Write functions of each. **07**
- Q.5** (a) Write in brief about types of airport lightings with their purpose of provision. **03**  
(b) Write in brief about types of airport markings with their function. **04**  
(c) What is the need of harbour maintenance? What are the methods of maintenance of harbour? **07**
- OR**
- Q.5** (a) What is importance of airport grading? **03**  
(b) Write in brief about airport drainage system. **04**  
(c) Explain about various navigational aids for waterway transportation. **07**

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