BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH **SEMESTER : VII**
BRANCH: CIVIL AND ENVIRONMENTAL ENGINEERING **SESSION : MO/2025**

SUBJECT: CE423 HARBOUR AND AIRPORT ENGINEERING

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Differentiate between (with examples) a) natural harbour and artificial harbour b) commercial harbour and marina	[5]	1	2
Q.1(b)	What are the components of a mound breakwater and explain the functions of each	[5]	2	1
Q.2(a)	What are the differences between a transit shed and a warehouse as regards i) their use ii) their construction	[5]	2	2
Q.2(b)	Differentiate between pier, wharf, jetty and quay	[5]	2	2
Q.3(a)	Show that the compressive force on the lock gate varies directly as the width of the lock and inversely as the rise of the sill. Why is a rise of 1/4 -1/5 adopted?	[5]	3	3
Q.3(b)	How do the principal dimensions of an aircraft decide the design of taxiway, runway, apron and hangar?	[5]	3	2
Q.4(a)	Calculate the actual length of the runway from the following data 1. Airport elevation: R.L.150, Airport reference temperature: 30^0C, Basic length of runway: 650m, Highest point along the length: R.L.98.2, Lowest point along the length: R.L.95.2	[5]	4	3
Q.4(b)	Write short notes on optimum location of exit taxiways	[5]	4	1
Q.5(a)	An airport has 10 gates which are restricted in the types of aircraft which can be accommodated. Thae aircraft are of three types A, B,C and other particulars are as follows. Determine the capacity of the gates to process the aircraft at this airport by assuming gate utilization factor as unity	[5]	5	3

Aircraft type	Gate group	No.of gates	Mix %	Average occupancy time in minutes	Aircraft type which can be accommodated
A	I	5	30	60	A, B and C
B	II	3	50	45	B and C
C	III	2	20	30	C only

Q.5(b)	What are the different aircraft parking systems? Explain any two with advantages and disadvantages.	[5]	5	1

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