

(3 Hours)

Total marks=80

- Note**
1. Question No 1 is compulsory.
 2. Attempt Any 3 out of remaining
 3. Assume any suitable data wherever required.

Q.1 ANSWER ANY ONE

- a. Draw the neat sketch of layout of artificial Harbor 5
- b. Explain the various parts of bridge along with a neat sketch 5
- c. List out the considerations which have to be checked before recommending a new airport. 5
- d. List out various crossings along with their sketch 5

- Q 2**
- a. Determine all the necessary elements required to set out a 1 in 12 turnout which takes off from a straight B.G track with its curve starting from the toe of switch and passes through theoretical nose of crossing. Give heel divergence =11.42 cm. 10
 - b. Explain the procedure for orientation of runway for airport located at above mean sea level of 315 mt. Plot the orientation for better understanding, if site available of size 3000mt X 45000 mt 10

- Q.3**
- a. The length of runway under standard condition in 2100mts. The airport is to be at elevation of 410 mts above the M.S.L. The ART is 32° C. The construction plan provides the following data .Calculate the corrected length. Also apply check 10

End to End runway (m)	0-300	300-900	900-1500	1500-1800	1800-2100	2100-2700	2700-3000
Grade %	+1.0	-0.50	+0.50	+1.00	-0.50	-0.04	-0.10

- b. Draw a neat diagram of simple right hand or left hand turnout and show its various components parts .Explain the working principle of turnout. **5**
- c. Explain what do understand by interlocking in a railway system **5**

Q.4 a A taxiway is to be designed for a operating Boeing 707-320 which has the flowing characteristics. Determine the turning radius of the taxiway. **10**

Wheel base	17.70 mt
Tread of main loading gear	6.62 mt
Turning Speed	40 kmph
Coefficient of friction between Tire and pavement surface	0.13

b. What is meant by grade compensation for curvature? To What extent should a ruling gradient of 1 in 150 on board gauge line to be downgraded to accommodate a 3⁰ curve. **10**

Q.5 a. A developed city is to have an railway track to be designed, compute all the various design quantities of all the materials required for a proposed railway track of 5km. Assume the suitable data **10**

b. For a pilot what are the various obstructions that are,in operation of taking off or landing the flight. Explain in detail. **5**

c. Discuss the theories to explain probable causes of creep? What can be done to arrest creep? **5**

Q.6 a. Write short notes on (any two) : **10**

- i. Harbour and Docks
- ii. Three controls of aircraft
- iii. Transit Sheds
- iv. Classification of airport as per ICAO

b. Draw a typical layout of airport with all the facilities available along with various different layout airport designs? Name five cities along with their Airport names? **5**

c. Briefly describe the significance of drainage in Airport **5**
