

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

Q.1

- a. How does the design of track components, particularly of the sleeper affect the creep in the track **5**
- b. What would be the expression for sleeper density if the rail length used in track is 19 mt and there are 22 sleepers under one rail length **5**
- c. Define the terms equilibrium cant and cant deficiency on railway .Calculate cant deficiency for 4^0 curve on BG track . **5**
- d. Draw typical sketch showing general lighting pattern of the major airport **5**

Q 2

- a. Determine all the necessary elements required to set out a 1 in 8.5 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 Wind rose diagram? What is its utility and its types? Explain each type with neat sketches? **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 32^0 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. **10**

TURN OVER

- Q.4 a** A taxiway is to be designed for a operating Boeing 707-320 which has the following 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 3^0 curve. **10**

- Q.5 a.** As an engineer in-charge work out the exact quantities of all the materials required for a proposed railway track of 1km. Assume the suitable data **10**

- b.** Explain in detail airport obstructions with neat sketches? **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. Longitudinal Gradient of Runway
- iii. Transit Sheds
- iv. Classification of airport as per ICAO

- b.** Draw neat diagram and explain about HOLDING APRON **5**

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