GUJARAT TECHNOLOGICAL UNIVERSITY

BE 7 SEMESTER – OLD PAPER – SUMMER 2022 TO SUMMER 2026 – QUESTION BANK

Subject Name & Code: Railway Infrastructure Engineering - 3170619

Chapter 1 – Railway Engineering - General (Module 1)

Repeated Questions:

1. Indian Railways – Importance and Role:

- **Q.** Give importance of Railways. **(WINTER 2022, 3 Marks; SUMMER 2023, 3 Marks)**
- **Q.** Explain role of Indian Railways in the social and economic development of the country. Briefly mention the strengths and weaknesses of the Indian Railways. **(WINTER 2023, 7 Marks; WINTER 2024, 3 Marks; WINTER 2025, 7 Marks OR - Close paraphrase)**

2. Railway Gauges:

- **Q.** Define gauge of railway track. Enumerate different gauges used in India. **(SUMMER 2025, 3 Marks; WINTER 2025, 3 Marks)**
- **Q.** Explain the factors affecting selection of railway gauge. **(WINTER 2022, 7 Marks OR; SUMMER 2023, 3 Marks)**

3. Permanent Way and Coning of Wheels:

- **Q.** Define Permanent way and Draw a neat sketch showing its main components with functions. [Diagram required – refer to the original question paper] **(SUMMER 2023, 7 Marks OR; WINTER 2025, 4 Marks - Close paraphrase)**
- **Q.** Describe in brief the basic requirements of an ideal Permanent way. **(SUMMER 2023, 7 Marks OR; WINTER 2023, 3 Marks; WINTER 2025, 7 Marks)**
- **Q.** Explain the coning of wheels with neat sketch. [Diagram required – refer to the original question paper] **(SUMMER 2022, 4 Marks; WINTER 2022, 4 Marks; SUMMER 2023, 4 Marks; SUMMER 2025, 7 Marks; SUMMER 2026, 4 Marks)**

4. Rails, Rail Joints, Creep and Wear:

- **Q.** What are the functions of rails? Explain the various types of rails. / Explain different types of rail sections used on B.G. and M.G. tracks in India with neat sketches. [Diagram required – refer to the original question paper] **(WINTER 2022, 7 Marks OR; SUMMER 2026, 7 Marks - Close paraphrase)**
- **Q.** Define creep of rail and enumerate various causes (theories) of creep. **(WINTER 2022, 7 Marks; SUMMER 2023, 7 Marks; WINTER 2024, 7 Marks; SUMMER 2025, 7 Marks OR)**

5. Sleepers and Ballast:

- **Q.** Give classification of various types of sleepers. **(SUMMER 2025, 3 Marks OR; WINTER 2025, 3 Marks OR)**
- **Q.** Give functions of Sleepers. / Enlist components of railway track. Give functions of sleepers. **(WINTER 2024, 4 Marks; SUMMER 2025, 3 Marks)**
- **Q.** State functions of ballast. / State requirement of good ballast material. **(SUMMER 2022, 7 Marks; WINTER 2022, 4 Marks OR; SUMMER 2024, 3 Marks; SUMMER 2025, 4 Marks)**

6. Rail Fittings and Fastenings:

- **Q.** Enlist fittings and fastenings commonly used for joining rails. Explain any one briefly. **(WINTER 2024, 3 Marks OR; WINTER 2025, 3 Marks OR)**
- **Q.** Explain the functions of fish plates and fish bolts. / Discuss fish plate type fittings and fastenings used for joining rails. **(WINTER 2023, 3 Marks; SUMMER 2024, 3 Marks OR; WINTER 2025, 3 Marks OR)**

- **Q.** Enlist various types of spikes and explain any one in brief. **(SUMMER 2022, 3 Marks; WINTER 2024, 3 Marks)**

7. Railway Alignment and Accidents:

- **Q.** Discuss factors involved in selection of a good alignment for railway. **(SUMMER 2022, 4 Marks; SUMMER 2024, 7 Marks; SUMMER 2025, 7 Marks)**
- **Q.** Give causes and remedial measures of rail accidents. / Give classification of railway accidents. **(SUMMER 2022, 4 Marks OR; WINTER 2022, 3 Marks; SUMMER 2024, 7 Marks)**

Other Important Questions:

1. Indian Railways – Importance and Role:

- **Q.** Compare railway transportation with roadway transportation. **(SUMMER 2024, 4 Marks)**

2. Railway Gauges:

- **Q.** What do you understand by loading gauge? **(WINTER 2022, 3 Marks OR)**
- **Q.** What is uniformity of gauges? Enumerate problems caused by change of gauge. **(SUMMER 2025, 4 Marks)**

3. Rails, Rail Joints, Creep and Wear:

- **Q.** Explain types of rail joints with sketch. [Diagram required – refer to the original question paper] **(WINTER 2025, 7 Marks)**
- **Q.** Classify wear of rails and discuss causes of wear with suitable remedial measures. **(SUMMER 2024, 7 Marks OR)**

4. Sleepers and Ballast:

- **Q.** Define sleeper. Write short note on Cast iron sleeper. **(SUMMER 2023, 4 Marks)**
- **Q.** Advantages and disadvantages of concrete sleepers. **(SUMMER 2024, 3 Marks)**
- **Q.** Define sleeper density. Enlist factors governing sleeper density. **(SUMMER 2026, 3 Marks)**
- **Q.** Find out the expression for sleeper density for B.G track if 19 sleepers are used under a rail length. **(SUMMER 2022, 4 Marks)**

5. Rail Fittings and Fastenings:

- **Q.** List various track fittings. **(SUMMER 2023, 3 Marks)**
- **Q.** Function of fittings/fastening used for rails. (1) Bearing plate (2) Pandrol clip (3) Spikes (4) Keys **(SUMMER 2024, 4 Marks)**

6. Railway Alignment and Accidents:

- **Q.** Write the basic requirements of an ideal alignment. **(WINTER 2022, 4 Marks)**

Chapter 2 – Geometric Design of Railway Track (Module 2)

Repeated Questions:

1. Necessity of Geometric Design and Gradients:

- **Q.** Enlist the necessity of geometric design of a railway track. **(SUMMER 2025, 3 Marks; WINTER 2025, 3 Marks)**
- **Q.** Define (a) Ruling gradient (b) Pusher gradient (c) Momentum gradient. **(WINTER 2024, 4 Marks OR; SUMMER 2025, 4 Marks; SUMMER 2026, 3 Marks)**
- **Q.** Briefly explain different types of gradients used in Railway. What is grade compensation? **(SUMMER 2023, 7 Marks; WINTER 2024, 4 Marks OR; SUMMER 2025, 4 Marks)**

2. Superelevation and Cant (Theory):

- **Q.** Derive an expression for superelevation in railway track design. **(WINTER 2023, 7 Marks OR; WINTER 2025, 4 Marks)**
- **Q.** Explain super elevation and cant deficiency in detail. / Short note on 'super elevation' or 'cant'. / Objective of providing superelevation. / Define superelevation. Also give objectives of providing superelevation and discuss negative superelevation in detail. **(SUMMER 2022, 4 Marks; WINTER 2022, 3 Marks; WINTER 2024, 7 Marks OR; SUMMER 2026, 4 Marks)**

Other Important Questions:

1. Necessity of Geometric Design and Gradients:

- **Q.** Define Gradients. List purposes to provide Gradients. **(WINTER 2025, 3 Marks)**

2. Numerical Problems:

- **Q.** If the ruling gradient is 1 in 250 on a particular section of B.G. and at the same time a curve of 4° is situated on this ruling gradient, what should be the allowable ruling gradient? **(WINTER 2023, 4 Marks)**
- **Q.** A 5° curve diverges from a 3° main curve in reverse direction in the layout of a B.G. yard. If the speed on the branch line is restricted to 35 kmph. Determine the restricted speed on the mainline. **(WINTER 2025, 7 Marks OR)**
- **Q.** Find out the length of the curve for a B.G. curve track having 4° and a cant of 12 cm. The maximum permissible speed on curve is 85 kmph. **(WINTER 2025, 7 Marks OR)**
- **Q.** Examine maximum permissible speed on a railway track from the following data. 1. BG track of 3 degree curve. 2. Speed of 70 kmph for equilibrium cant. **(SUMMER 2026, 7 Marks)**
- **Q.** Calculate extra width required to be provided on gauge from the following data: a. Type of track = BG b. Wheel base of vehicle = 6 m c. Diameter of wheel = 1.5 m d. Depth of flanges below the top of rail = 3.17 cm e. Radius of curve = 150 m **(SUMMER 2026, 7 Marks OR)**
- **Q.** Determine equilibrium cant on a B.G. track with 4° curve for a speed of 65 kmph. If maximum cant deficiency permitted, what would be maximum permissible speed on track? **(SUMMER 2024, 7 Marks OR)**
- **Q.** Calculate the superelevation and the maximum permissible speed for a 2° BG transitioned curve on a high-speed route with a maximum sanctioned speed of 110 km/h. The speed for calculating the equilibrium superelevation as decided by the chief engineer is 80 km/h and the booked speed of goods trains is 50 km/h. **(WINTER 2023, 7 Marks)**
- **Q.** What is equilibrium cant on a 2° curve on a B.G track with several trains running at different speeds as under: 12 trains at a speed of 50 Kmph, 10 trains at a speed of 60 Kmph, 8 trains at a speed of 70 Kmph, 2 trains at a speed of 80 Kmph **(SUMMER 2025, 7 Marks)**

Chapter 3 – Railway Station and Yard (Module 3)

Repeated Questions:

1. Station Yards and Station Requirements:

- **Q.** Give types of yards. Discuss marshalling yard in detail. / Summarize the necessity of marshalling yards. Describe the layout of a typical marshalling yard. **(WINTER 2023, 3 Marks OR; SUMMER 2024, 4 Marks OR; WINTER 2025, 4 Marks; SUMMER 2026, 4 Marks)**
- **Q.** Enlist requirements of railway station. Also explain marshalling yard in brief. / Outline different facility requirements of a railway station. Classify the railway stations. Draw a neat sketch of layout of any one type of station. [Diagram required – refer to the original question paper] **(SUMMER 2023, 7 Marks; WINTER 2023, 7 Marks; SUMMER 2026, 4 Marks)**

2. Switches, Turnouts and Crossings:

- **Q.** Classify and briefly explain types of railway switch. / What are switches? Gives various types of switches. **(WINTER 2023, 4 Marks; WINTER 2024, 4 Marks; WINTER 2025, 4 Marks)**
- **Q.** Draw a sketch of turnout and explain its components. **(SUMMER 2022, 3 Marks OR; SUMMER 2023, 7 Marks OR; WINTER 2023, 7 Marks OR)**
- **Q.** Draw neat sketches of the following and show its various component parts. a. Diamond crossing. b. Acute angle crossing. c. Left hand turnout. [Diagram required – refer to the original question paper] **(SUMMER 2022, 3 Marks OR; SUMMER 2023, 7 Marks OR; WINTER 2023, 7 Marks OR; SUMMER 2026, 7 Marks)**
- **Q.** What is crossing? Give types and characteristics of good crossing. / Describe the main constituents of a crossing. Draw neat sketches to show a point rail and a splice rail. [Diagram required – refer to the original question paper] **(WINTER 2023, 4 Marks OR; SUMMER 2024, 7 Marks OR; WINTER 2025, 4 Marks OR)**

3. Signalling and Interlocking:

- **Q.** What are the objectives of signaling and interlocking in railway? **(SUMMER 2023, 4 Marks OR; WINTER 2024, 4 Marks OR; SUMMER 2026, 3 Marks OR)**
- **Q.** Discuss briefly devices used for mechanical interlocking. / Define interlocking. Explain essential regulations of interlocking in Indian railways. **(WINTER 2022, 7 Marks OR; SUMMER 2024, 3 Marks)**

Other Important Questions:

1. Station Yards and Station Requirements:

- **Q.** Explain different types of station yards. **(WINTER 2023, 3 Marks)**
- **Q.** Give the requirements of station yard. **(WINTER 2022, 4 Marks)**
- **Q.** Give requirements of a passenger station yard. **(WINTER 2024, 4 Marks OR)**
- **Q.** Describe functional classification of railway station in details. **(WINTER 2024, 7 Marks)**

2. Switches, Turnouts and Crossings:

- **Q.** Explain the following terms. Trailing direction, Facing points of turnouts, Stock rails, Tongue rails. **(SUMMER 2026, 4 Marks OR)**
- **Q.** Write a brief note on diamond crossing. **(WINTER 2024, 4 Marks)**
- **Q.** What are the functions of points & crossing? **(WINTER 2022, 3 Marks OR)**
- **Q.** Explain scissors crossover. **(WINTER 2022, 4 Marks OR)**

3. Signalling and Interlocking:

- **Q.** Differentiate reception signal and departure signal. **(SUMMER 2026, 3 Marks)**
- **Q.** Briefly explain the semaphore signals and colored light signal. **(WINTER 2022, 7 Marks)**

- **Q.** Explain the working principle of following. a. Centralized traffic control system (C.T.C system) b. Automatic train control system (A.T.C system) **(SUMMER 2026, 7 Marks OR)**

4. Track Drainage and Other Topics:

- **Q.** What are the requirements of a good track drainage system? **(SUMMER 2023, 3 Marks OR)**
- **Q.** Discuss term 'Stresses in sleepers'. Also give advantages and disadvantages of concrete sleepers. **(WINTER 2024, 7 Marks)**

Chapter 4 – Airport Engineering - General (Module 4)

Repeated Questions:

1. Aircraft and Aircraft Characteristics:

- **Q.** Explain components or parts of Aeroplane with neat sketch. [Diagram required – refer to the original question paper] **(SUMMER 2022, 3 Marks; WINTER 2022, 7 Marks; SUMMER 2025, 7 Marks OR; WINTER 2025, 7 Marks)**
- **Q.** Enlist and explain aircraft characteristics. **(WINTER 2022, 4 Marks; SUMMER 2024, 4 Marks; SUMMER 2026, 4 Marks)**

2. Airport Classification, Regulatory Bodies and Air Transport:

- **Q.** Classify the airport as per ICAO. **(SUMMER 2023, 4 Marks; WINTER 2023, 3 Marks; WINTER 2025, 3 Marks OR)**
- **Q.** Write short note on ICAO & AAI. / What are functions of AAI? / State functions of AAI. **(WINTER 2022, 7 Marks OR; SUMMER 2024, 3 Marks; SUMMER 2025, 4 Marks OR)**
- **Q.** Role of the DGCA as regulatory body in field of civil aviation. / Write the function of director general of civil aviation. / Functions of director general of civil aviation. **(SUMMER 2022, 4 Marks OR; WINTER 2022, 3 Marks; WINTER 2024, 4 Marks)**

Other Important Questions:

1. Aircraft and Aircraft Characteristics:

- **Q.** Explain the aircraft dimensions height, wingspan and length using the necessary sketch. [Diagram required – refer to the original question paper] **(WINTER 2023, 3 Marks OR)**

2. Airport Classification, Regulatory Bodies and Air Transport:

- **Q.** Classify airport based on different criteria. **(SUMMER 2026, 4 Marks OR)**
- **Q.** Advantages and disadvantages of air transport. **(SUMMER 2022, 7 Marks)**

Chapter 5 – Airport Planning (Module 5)

Repeated Questions:

1. Airport Site Selection and Size:

- **Q.** Elaborate various factors to be considered while selecting suitable site for an airport. / Give data required before site selection for Airports. **(SUMMER 2023, 7 Marks OR; WINTER 2024, 7 Marks; SUMMER 2025, 4 Marks; WINTER 2025, 7 Marks)**
- **Q.** Explain factors that affect the necessary size of an airport. **(WINTER 2023, 4 Marks OR; WINTER 2025, 4 Marks OR)**

2. Airport Planning and Capacity:

- **Q.** Define any three: approach zone, turning zone, airport capacity, runway capacity / Define airport capacity and explain factors affecting on it. **(SUMMER 2023, 3 Marks; SUMMER 2024, 7 Marks; WINTER 2025, 3 Marks; SUMMER 2026, 3 Marks)**
- **Q.** Describe airport master planning process as per ICAO recommendations. **(SUMMER 2022, 7 Marks OR; SUMMER 2025, 7 Marks)**
- **Q.** Enumerate objectives of regional planning. What data collected for regional planning? **(WINTER 2022, 3 Marks; SUMMER 2024, 7 Marks)**

3. Approach Zone and Imaginary Surfaces:

- **Q.** Discuss take-off climb surface and approach surface in detail. / Enlist different types of imaginary surfaces. Discuss take-off climb surface and approach surface in detail. **(SUMMER 2024, 4 Marks; WINTER 2024, 7 Marks)**

Other Important Questions:

1. Airport Planning and Capacity:

- **Q.** Define Airport Capacity, Runway, Supersonic Aircraft. **(SUMMER 2025, 3 Marks)**

2. Approach Zone and Imaginary Surfaces:

- **Q.** What is approach zone? Draw a typical sketch showing height limitation in approach zone for safety of the aircraft. [Diagram required – refer to the original question paper] **(WINTER 2022, 4 Marks)**

Chapter 6 – Runway and Taxiway Design (Module 6)

Repeated Questions:

1. Runway Orientation, Wind Rose and Configuration:

- **Q.** Explain Runway Orientation. / What is runway orientation? What are the factors affecting orientation? **(SUMMER 2023, 4 Marks; SUMMER 2025, 3 Marks OR; WINTER 2025, 3 Marks)**
- **Q.** Write a short note on wind rose diagram. / Explain in detail wind rose diagram showing direction, duration and intensity of wind by drawing sketch. / Explain Type-II wind Rose diagram. **(SUMMER 2022, 7 Marks; SUMMER 2025, 4 Marks OR; SUMMER 2026, 7 Marks OR)**

2. Runway and Taxiway Geometric Design:

- **Q.** Summarize briefly the various runway and taxiway geometrics as per recommendation of ICAO. / Explain ICAO recommended geometric design of width of safety area, turning radius and fillets of taxiway. / Points to be considered in the geometric design of a runway. / Explain ICAO recommended geometric design of various runway elements. **(WINTER 2023, 7 Marks; SUMMER 2024, 7 Marks; WINTER 2024, 7 Marks OR; SUMMER 2026, 7 Marks)**

3. Runway Length Corrections (Theory):

- **Q.** Describe different corrections to be applied to calculate actual length of runway. **(WINTER 2022, 7 Marks; SUMMER 2024, 4 Marks OR; SUMMER 2025, 7 Marks OR; SUMMER 2026, 7 Marks)**

4. Taxiways and Exit Taxiways:

- **Q.** Outline the functions of taxiway in airports. Draw cross sections of taxiway showing all components. [Diagram required – refer to the original question paper] **(SUMMER 2023, 4 Marks; WINTER 2023, 4 Marks; WINTER 2025, 4 Marks OR)**
- **Q.** Write a short note on exit taxiway. / Explain briefly about exit taxiway. Also discuss taxiway lighting. **(WINTER 2023, 7 Marks OR; WINTER 2024, 7 Marks OR; SUMMER 2026, 7 Marks OR)**

5. Aprons, Aircraft Parking and Hangars:

- **Q.** What is the function of hangar? What are the requirements of a good hangar site? **(SUMMER 2022, 3 Marks OR; SUMMER 2023, 3 Marks OR; WINTER 2024, 7 Marks OR)**
- **Q.** Explain the Nose hangars and T hangars with neat sketch. / Discuss various types of hangars with their functions. **(SUMMER 2022, 4 Marks OR; SUMMER 2023, 3 Marks OR; WINTER 2024, 7 Marks OR)**
- **Q.** Describe any two aircraft parking system with its advantage and disadvantages. **(SUMMER 2022, 4 Marks; SUMMER 2023, 4 Marks OR; SUMMER 2024, 7 Marks OR)**
- **Q.** Write short note on: Holding Apron. / Explain (i) Loading and Unloading Apron (ii) Holding Aprons. / Write a brief note on holding apron. **(SUMMER 2023, 3 Marks; WINTER 2024, 3 Marks; SUMMER 2025, 4 Marks OR)**

Other Important Questions:

1. Runway Orientation, Wind Rose and Configuration:

- **Q.** Sketch various orientation of runway with label. **(WINTER 2023, 7 Marks OR)**
- **Q.** Write brief note on runway configuration. **(WINTER 2024, 3 Marks)**

2. Runway and Taxiway Geometric Design:

- **Q.** What are the elements to be considered in the geometric design of runway? Explain in detail. **(SUMMER 2023, 7 Marks)**

3. Numerical Problems:

- **Q.** Find the design length of runway required if the length of runway at sea level under standard condition at zero gradient is 1500 m. The airport site is at an elevation of 800 m. The reference

temperature is 20°C. Proposed runway permits ascending gradient of 0.5%. **(WINTER 2022, 7 Marks)**

- **Q.** At an airport site at sea-level with standard atmospheric conditions, the runway lengths required for take-off and landing are 2000 m and 2400 m respectively. The proposed airport is situated at an altitude of 150 m. If the airport reference temperature is 25°C and if the effective runway gradient is 0.35 per cent, calculate the length of runway to be provided. **(WINTER 2023, 7 Marks)**
- **Q.** Design an exit runway joining a runway and a parallel main taxiway. The total angle of turn is 35° and the maximum turn-off speed is 80 kmph. Radius of entrance curve = 731 m, Runway width = 45 m, Taxiway width = 22.5 m. Suggest the maximum separation clearance. **(WINTER 2023, 7 Marks OR)**
- **Q.** An Airport is proposed at an elevation of 410 m above mean sea level where the mean of maximum and mean of average daily temperatures of the hottest month are 45°C and 26°C respectively. The maximum elevation difference along the proposed profile of runway is 6.5 m. If the basic length of runway is 1270 m determine the actual length of runway to be provided. **(SUMMER 2022, 7 Marks)**
- **Q.** Determine turning radius of taxiway if the speed of aircraft is 93 km/hour and coefficient of friction is 0.13. **(SUMMER 2022, 3 Marks OR)**

Chapter 7 – Terminal Area (Module 7)

Repeated Questions:

1. Airport Terminal Building:

- **Q.** Describe the airport terminal building with help of the sketch. [Diagram required – refer to the original question paper] **(SUMMER 2022, 3 Marks; WINTER 2023, 4 Marks; WINTER 2025, 4 Marks)**
- **Q.** What is terminal building? What are the facilities provided in the terminal building? **(SUMMER 2023, 3 Marks OR; SUMMER 2024, 4 Marks OR; WINTER 2024, 3 Marks; SUMMER 2025, 4 Marks)**

Other Important Questions:

1. Airport Terminal Building:

- **Q.** Passenger requirements of terminal building? **(WINTER 2022, 4 Marks)**
- **Q.** List down major components of terminal area. **(SUMMER 2025, 3 Marks OR)**

Chapter 8 – Grading and Drainage (Module 8)

Repeated Questions:

1. Airport Grading and Gradient:

- **Q.** What is airport gradient? What are the requirements of gradient? / What is airport grading? What is its importance? Explain briefly the requirements of airport drainage systems. / Importance of airport grading? / Explain importance of airport grading. **(WINTER 2022, 3 Marks OR; SUMMER 2023, 7 Marks OR; WINTER 2024, 3 Marks OR; SUMMER 2026, 3 Marks OR)**

2. Airport Drainage:

- **Q.** Enumerate basic functions of airport drainage. / Basic requirements and objectives of surface drainage. / Explain briefly requirement of an airport drainage system. **(SUMMER 2022, 7 Marks OR; WINTER 2023, 4 Marks OR; SUMMER 2024, 3 Marks OR; WINTER 2024, 4 Marks; SUMMER 2025, 3 Marks)**

Other Important Questions:

None identified.

Chapter 9 – Air Traffic Control and Visual Aids (Module 9)

Repeated Questions:

1. Visual Aids, Markings and Lighting:

- **Q.** Define the term visual aid at airport. List the necessity of visual aids and explain the different visual aids. / Enlist various types of visual aids for air navigation. Explain wind direction indicator. / State the purposes for installing the visual aids at the airport and the requirements of pilots for the visual aids. / What do you mean by the term visual aid at airport? List the different visual aids. What is the necessity of visual aids? **(WINTER 2022, 7 Marks; WINTER 2023, 7 Marks OR; SUMMER 2024, 4 Marks; SUMMER 2025, 7 Marks; WINTER 2025, 7 Marks OR)**
- **Q.** Write brief note on airport markings and lighting. / Explain runway marking of airport with neat sketches. / Write a short note on runway lighting. [Diagram required – refer to the original question paper] **(SUMMER 2022, 7 Marks OR; WINTER 2024, 7 Marks OR; SUMMER 2025, 7 Marks OR; WINTER 2025, 7 Marks; SUMMER 2026, 3 Marks; SUMMER 2026, 4 Marks)**
- **Q.** Write short note on runway lighting and visual aids. **(SUMMER 2022, 7 Marks OR; WINTER 2022, 7 Marks; WINTER 2024, 7 Marks OR; SUMMER 2026, 3 Marks; SUMMER 2026, 4 Marks)**

2. Air Traffic Control and Navigation Aids:

- **Q.** What are the objectives of air traffic control? Describe runway lighting in brief. / What are purposes of air traffic control? **(SUMMER 2022, 7 Marks OR; SUMMER 2024, 3 Marks OR; WINTER 2024, 3 Marks OR; SUMMER 2025, 7 Marks OR; SUMMER 2026, 4 Marks)**

Other Important Questions:

1. Visual Aids, Markings and Lighting:

- **Q.** Write short note on Beacon light. **(SUMMER 2026, 4 Marks OR)**
- **Q.** Write short note on: (1) VFR and IFR (2) runway lighting (with sketch). [Diagram required – refer to the original question paper] **(SUMMER 2023, 7 Marks)**
- **Q.** Write short note on Visual aids for landing of aircraft. **(SUMMER 2023, 4 Marks OR)**

2. Air Traffic Control and Navigation Aids:

- **Q.** Describe the various enroute aids for controlling the air traffic on air routes. **(SUMMER 2026, 3 Marks OR)**
- **Q.** Describe various components of air traffic control network. **(WINTER 2023, 7 Marks)**
- **Q.** Note on Instrument Landing System. **(SUMMER 2022, 3 Marks)**

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