Code No: R1631015 **R16** SET - 1

III B. Tech I Semester Regular/Supplementary Examinations, March – 2021

TRANSPORTATION ENGINEERING – II

(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A (14 Marks)

1. a) What are the factors to be considered for sleeper density? [2M]
   b) Determine the weighted average of speed when 10 trains moves with 80kmph, 5 trains with 85kmph, 15 trains with 90 Kmph and 20 trains with 75kmph. [2M]
   c) List the systems of controlling the movement of train. [2M]
   d) What are the various phases recommended by FAA for airport master plan? [3M]
   e) List out special characteristics and requirements of airport drainage. [3M]
   f) What are the requirements of navigational aids? [2M]

PART –B (56 Marks)

2. a) Write the functions of sleepers. [7M]
   b) Find the number of sleepers required for constructing a B.G. railway track 640m long, using a sleeper density of M+5, where M is the length of the rail in meters. [7M]

3. a) Write in detail about various gradients used on a railway track along with minimum values of each gradient. [7M]
   b) What is negative super elevation? Explain. [7M]

4. a) Explain Facing direction, trailing direction, face point and trail points of turnouts. [7M]
   b) Explain the various functions of interlocking. [7M]

5. a) Explain about the factors to be considered for selecting a site for an airport. [7M]
   b) Explain the concept of zoning laws and write their limitations. [7M]

6. a) Explain the causes of airfield flexible pavement failures. [7M]
   b) Differentiate between Airport and Highway pavements. Discuss in brief the various factors to be considered in the design of Airfield pavements. [7M]

7. a) What are wharves? With neat sketches, write about the different types of wharves. [7M]
   b) List the navigational aids and explain their importance. [7M]

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Code No: R1631015 **R16** SET - 2

III B. Tech I Semester Regular/Supplementary Examinations, March – 2021

TRANSPORTATION ENGINEERING – II

(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A (14 Marks)

1. a) What is coning of wheels? What is its purpose? [2M]
   b) What are the objectives of providing super elevation on railway tracks? [2M]
   c) Draw the diagram of a loose heel type switch. [2M]
   d) List the various visual aids in airports. [3M]
   e) Distinguish between quays and jetties. [3M]
   f) What is the location based classification of harbors? [2M]

PART –B (56 Marks)

2. a) What do you understand by gauge? Mention the gauges used on Indian Railways and discuss their suitability at different locations with reasons. [7M]
   b) Write a short note on the following: (i) functions of rails, (ii) requirements of rails. [7M]

3. a) The wheel base of a vehicle moving on a BG track is 6 m. The diameter of the wheels is 1514 mm and the flanges project 32 mm below the top of the rail. Determine the extra width of the gauge required if the radius of the curve is 166 m. [7M]
   b) Explain the basic requirements of an Ideal railway alignment. [7M]

4. a) Define the terms: (i) Turn out, (ii) Right hand turn out, (iii) Left hand turn out, (iv) Tongue rail, (v) Stock rail and (vi) Crossing. [7M]
   b) Design a turn out for a BG track if the number of the crossing is 12 and the heel divergence is 122 mm. Assume a simple circular curve from the toe of the switch to the TNC. [7M]

5. a) The length of a runway under standard conditions is 1620 m. The airport site has an elevation of 270 m. Its reference temperature is 32.94^0 C. If the runway is to be constructed with an effective gradient of 0.20%, determine the corrected runway length. [7M]
   b) Write a note about ICAO classification of airports. [7M]

6. a) Write about LCN system of air filed pavement with relevant figures. [7M]
   b) Explain any six factors for which a harbor engineer must have consideration while planning and designing a harbor. [7M]

7. a) Explain briefly about various types of dredgers. [7M]
   b) Describe a composite breakwater with sketches. [7M]

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Code No: R1631015 **R16** SET - 3

III B. Tech I Semester Regular/Supplementary Examinations, March – 2021

TRANSPORTATION ENGINEERING – II

(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A (14 Marks)

1. a) Write down the different gauges in different countries. [2M]
   b) Explain the factors affecting safe speed on curves. [2M]
   c) Draw a neat diagram of turnout from curved main track. [2M]
   d) Write a short note on airport lighting. [3M]
   e) State the sources of sub surfaces drainage of the pavement. [3M]
   f) Write a short note on buoys. [2M]

PART –B (56 Marks)

2. a) What are the functions of sleepers in railways? Explain. [7M]
   b) Explain the different methods of welding of rails. [7M]

3. a) Explain briefly about cant deficiency and negative super elevation. [7M]
   b) Determine the length of a transition curve and draw the offsets at every 15m. Given that the design speed of the train on curve is 96 kmph on a B.G track. [7M]

4. a) Describe briefly about design calculations of turnouts. [7M]
   b) Enumerate the engineering principles of signaling system. [7M]

5. a) State what surveys are generally carried out for site selection of a runway? [7M]
   b) Explain the concept of zoning laws. [7M]

6. a) Write an overview of airport pavement design methods. [7M]
   b) Write a short note on structural evaluation of runway pavements. [7M]

7. a) Explain how the maintenance of ports and harbors is done? [7M]
   b) Write a short note on navigational aids. [7M]

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Code No: R1631015 **R16** SET - 4

III B. Tech I Semester Regular/Supplementary Examinations, March – 2021

TRANSPORTATION ENGINEERING – II

(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A (14 Marks)

1. a) Explain different types of gauges in India and abroad. [2M]
   b) Define momentum gradient. [2M]
   c) Draw a neat diagram of loose heel type switch. [2M]
   d) List the various visual aids in airports. [3M]
   e) What are the ill effects of poor drainage of airport pavements? [3M]
   f) Describe briefly about types of navigational aids. [2M]

PART –B (56 Marks)

2. a) Describe about the functions of ballast. [7M]
   b) Define creep? Explain briefly about wave theory of creep. [7M]

3. a) Evaluate different types of curves and also classify the curves based on Heads? [7M]
   b) What would be the permissible speed on the curve? If on a 7^0 M.G. track, the average speed of different trains is 50 kmph and allowable cant deficiency is half that of maximum cant deficiency. [7M]

4. a) Explain briefly about types of switches. [7M]
   b) Describe briefly the major features of absolute block system and automatic block system. [7M]

5. a) What is master plan of an airport? State its objectives in general. [7M]
   b) Draw and explain a typical sketch showing an outline of the outer horizontal, conical, inner horizontal and transitional surfaces in an airport. [7M]

6. a) Explain the features of the flexible pavement design as per CBR method. [7M]
   b) Write the possible repairs to treat distortions of asphalt airport pavement surfaces. [7M]

7. a) Write down the classification, advantages and disadvantages of harbors. [7M]
   b) Write a short note on jetties. [7M]

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