

**III B. Tech II Semester Regular Examinations April- 2016**  
**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. Answering the question in **Part-A** is compulsory  
 3. Answer any **THREE** Questions from **Part-B**

\*\*\*\*

**PART –A**

- 1 a) What is CSI and Adzing? [3M]
- b) What are check rails on curves? [4M]
- c) Differentiate between – Repeating and Co-acting signals. [4M]
- d) What are visual aids? Explain their uses. [3M]
- e) What are the different types of Sub surface drainages? [4M]
- f) Define the term Break waters. Enlist the different types. [4M]

**PART –B**

- 2 a) What is Ballast? What are the different types and enumerate the requirements of Good ballast. [8M]
- b) Determine the number of sleepers required for the construction of 2000 m of BG track, with a sleeper density of  $N + 7$ . [8M]
- 3 a) What is a Transition curve, what are the different types and what are the requirements for an ideal transition curve. [8M]
- b) Write a note about (i) Momentum gradient and [8M]  
 (ii) Compensated gradient for curvature.
- 4 a) Draw a neat sketch of Right hand turn out, clearly showing the various elements. [8M]
- b) A cross over is to be laid connecting two BG parallel tracks spaced 4.5 m apart. Assuming that 1 in 8.5 crossings are to be used, work out the various details required for setting the cross over. [8M]
- 5 a) The length of runway at sea level, standard atmospheric conditions and zero gradient is 1500 m. The airport site has an elevation of 900 m, and the reference temperature as  $20^{\circ}$  C. If the proposed runway grading permits an effective gradient of 0.20 percent, determine the actual runway length required at the site. [8M]
- b) Explain with neat sketches, the various markings on Runways. [8M]
- 6 a) Explain in brief the difference between functional and structural evaluation of airfield pavements. [8M]
- b) Explain in detail the various maintenance works that are performed on Flexible airfield pavements. [8M]
- 7 a) Define (i) Semi diurnal tides, (ii) Mixed diurnal tides, (iii) Neap tides and (iv) Age of tide. [8M]
- b) What are Navigational aids? Briefly describe the different types of Floating signals [8M]

\*\*\*\*\*

**III B. Tech II Semester Regular Examinations April - 2016**  
**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. Answering the question in **Part-A** is compulsory  
3. Answer any **THREE** Questions from **Part-B**  
\*\*\*\*\*

**PART –A**

- 1 a) Name at least five causes of Rail failures? [4M]
- b) What is degree of curve? [3M]
- c) What are the objectives of Interlocking? [4M]
- d) What do you understand by the term taxiway design? [3M]
- e) Differentiate between Airport and Highway pavements. [4M]
- f) Define (i) Anchorage area, (ii) Free port and (iii) Beam. [4M]

**PART –B**

- 2 a) With the help of a neat sketch, show the various components of a typical Railway track. [8M]
- b) Explain the following terms (i) Track modulus, (ii) Coning of Wheels. Draw neat sketches, wherever necessary. [8M]
- 3 a) Write a note about - (i) Ruling gradient and (ii) Pusher gradient. [8M]
- b) Calculate the super elevation, maximum permissible speed and transition length for a 4 degree curve on a high speed BG section with a maximum allowable speed of 100 kmph. Assume the equilibrium speed to be 70 kmph and the booked speed of the goods train to be 45 kmph. [8M]
- 4 a) A turn out is to be laid off a straight BG track with a 1 in 11 crossing. Determine the lead and radius for the turn out, given the following data. Heel divergence  $d = 113$  mm, the straight length between the TNC and the tangent point of the crossing curve,  $h = 1.325$ m, crossing angle  $\alpha = 3^{\circ}25'40''$  and switch angle  $\beta = 1^{\circ}8'20''$ . [8M]
- b) Describe the three aspects in Upper quadrant signalling. Briefly describe one method of interlocking used by Indian Railways. [8M]
- 5 a) The length of runway under standard conditions is 1730 m. The airport site has an elevation of 290 m. Its reference temperature is  $31.60^{\circ}\text{C}$ . If the runway is to be constructed with an effective gradient of 0.15 percent, determine the corrected runway length. [8M]
- b) What is a Wind rose diagram? What are its types? Explain one. [8M]
- 6 a) Explain in detail the causes for Airfield Rigid pavement failures. [8M]
- b) Discuss the Flexible overlay designs for strengthening airfield pavements. [8M]
- 7 a) Differentiate between a Jetty and a Wharf. State the conditions under which you will prefer their construction. [8M]
- b) Write short notes about (i) Transition sheds and (ii) Work houses. [8M]

\*\*\*\*\*

**III B. Tech II Semester Regular Examinations, April - 2016**  
**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. Answering the question in **Part-A** is compulsory  
3. Answer any **THREE** Questions from **Part-B**  
\*\*\*\*\*

**PART -A**

- |   |                                                             |      |
|---|-------------------------------------------------------------|------|
| 1 | a) What is Tilting of Rails?                                | [3M] |
|   | b) What is cant deficiency? Draw a neat sketch of the same. | [4M] |
|   | c) Differentiate between - Stud switch and Split switch     | [4M] |
|   | d) What are the different types of airports?                | [3M] |
|   | e) Write a note about Surface drainages?                    | [4M] |
|   | f) Differentiate between Natural and Artificial harbours.   | [4M] |

**PART -B**

- |   |                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 2 | a) What are Sleepers? What are the advantages and disadvantages of Concrete sleepers?                                                                                                                                                                                                                                                                                                                                                        | [8M] |
|   | b) Determine the number of sleepers required for the construction of 1800 m of BG track, with a sleeper density of $N + 5$ .                                                                                                                                                                                                                                                                                                                 | [8M] |
| 3 | a) What are the basic requirements of an Ideal railway alignment?                                                                                                                                                                                                                                                                                                                                                                            | [8M] |
|   | b) A rising gradient of 1 in 120 meets a falling gradient of 1 in 230 on a group A route. The point of intersection has a chainage of 1000 m and its R.L. is 135 m. Calculate the length of the vertical curve, the R.L. and the chainage of the various points in order to set a curve at this location.                                                                                                                                    | [8M] |
| 4 | a) What essential purposes are served by Signalling and Interlocking? What do you understand by route relay interlocking?                                                                                                                                                                                                                                                                                                                    | [8M] |
|   | b) Two BG tracks cross each other at an angle of 1 in 10. Calculate the important dimensions of the diamond crossing.                                                                                                                                                                                                                                                                                                                        | [8M] |
| 5 | a) Explain the various Surveys to be conducted and the data to be collected for Airport site selection                                                                                                                                                                                                                                                                                                                                       | [8M] |
|   | b) The runway length required for landing at sea level in standard atmospheric conditions is 3000 m. Runway length required for takeoff at sea level in standard atmospheric conditions is 2500 m. Aerodrome reference temperature is $25^{\circ}$ C and that of the standard atmosphere at aerodrome elevation of 150 m is $14.025^{\circ}$ C. If the effective runway gradient is 0.5 percent, determine the runway length to be provided. | [8M] |
| 6 | a) Explain in detail the causes for airfield flexible pavement failures.                                                                                                                                                                                                                                                                                                                                                                     | [8M] |
|   | b) What data is collected for the design of sub surface drainage system for an airport?                                                                                                                                                                                                                                                                                                                                                      | [8M] |
| 7 | a) What are the various services that are required for the maintenance of shipping terminals?                                                                                                                                                                                                                                                                                                                                                | [8M] |
|   | b) What is Dredging? Classify the different types of dredging works.                                                                                                                                                                                                                                                                                                                                                                         | [8M] |

\*\*\*\*\*

**III B. Tech II Semester Regular Examinations, April - 2016**  
**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. Answering the question in **Part-A** is compulsory  
 3. Answer any **THREE** Questions from **Part-B**  
 \*\*\*\*\*

**PART –A**

- 1 a) What is Creep? What are its causes? [3M]  
 b) Write about the engineering surveys to be performed for railway line construction. [4M]  
 c) Differentiate between - Stock rail and Tongue rail. [4M]  
 d) What are the various characteristics of a good aircraft? [3M]  
 e) Enlist the uses of different types of Airport Pavements. [4M]  
 f) Enumerate the requirements of good port. [4M]

**PART -B**

- 2 a) Name the different modes of transportation. Enumerate the advantages and disadvantages of (i) Road and (ii) Rail transportation. [8M]  
 b) What is meant by wear of Rails? Enumerate the various types of Rail wear and enlist the methods by which it can be measured. [8M]
- 3 a) Explain, with neat sketches, the various considerations for providing extra clearances on Horizontal curves. [8M]  
 b) A curve of 500 m radius on a BG section has a limited transition of 50 m. Calculate the maximum permissible speed and super elevation for the same. The maximum sectional speed is 90 kmph. [8M]
- 4 a) Differentiate between Mechanical and Electrical signalling systems. [8M]  
 b) Design a turn out for a BG track if the number of the crossing is 12 and the heel divergence is 124 mm. Assume a simple circular curve from the toe of the switch to the TNC. [8M]
- 5 a) The length of runway under standard conditions is 1620 m. The airport site has an elevation of 270 m. Its reference temperature is 32.90° C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length. [8M]  
 b) Compare the recommendations of FAA and ICAO with reference to airport master planning. [8M]
- 6 a) Discuss the Rigid overlay designs for strengthening airfield pavements. [8M]  
 b) Discuss in brief the various factors to be considered in the design of Airfield pavements. [8M]
- 7 a) Define (i) Harbour, (ii) EIS, (iii) Off shore Moorings and (iv) Turning basin. [8M]  
 b) What are Wharves? Write a note about Open type wharves and Solid type wharves. Draw neat sketches. [8M]

\*\*\*\*\*



### 1. Group - A (Short Answer Questions)

S. No	QUESTION	Blooms Taxonomy Level	Course Outcome
<b>UNIT-I HIGHWAY DEVELOPMENT AND PLANNING:</b>			
1	What is the Necessity for highway planning in our country?	Remember	A
2	Write about Jayakar Committee and its Recommendations?	Understand	A
3	Write about First Twenty year road development plan?	Remember	A
4	What are the salient features of First Twenty year road development plan?	Analyze	A
5	Write about Second Twenty year road development plan?	Understand	A
6	What are the salient features of Second Twenty year road development plan?	Remember	A
7	Write about Third Twenty year road development plan?	Remember	A
8	What are the salient features of Third Twenty year road development plan?	Remember	A
9	Write about the difference between First and Second twenty year road development plan?	Understand	A

S. No	QUESTION	Blooms Taxonomy Level	Course Outcome
10	Write about Highway development in India?	Remember	B
<b>UNIT-II HIGHWAY PLANNING</b>			
1	Explain the classification of Roads?	Understand	C
2	Draw neat sketches of various road patterns.	Remember	C
3	What is an Highway alignment?	Analyze	C
4	Explain various factors controlling alignment?	Analyze	C
5	What are the characteristics of good road?	Understand	C
6	Explain the necessity of highway surveys?	Analyze	C
7	What are various engineering surveys that are to be conducted for highway alignment?	Remember	C
8	What are the different plans to be prepared after planning surveys are carried out?	Analyze	C
9	Write a short notes on Highway project report?	Analyze	C
10	List out advantages of good road?	Remember	C
<b>UNIT-III HIGHWAY GEOMETRIC DESIGN</b>			
1.	What is Camber?	Understand	D
2.	What is the need of camber on pavement and its recommendations?	Analyze	D
3.	What is skid resistance?	Remember	D
4.	What are the factors on which skid resistance depends?	Analyze	D
5.	What is Stopping sight distance?	Remember	D
6.	What is over taking sight distance?	Analyze	D
7.	Write about over taking zones?	Understand	D
8	Write about Intermediate sight distance and head light sight distance?	Understand	D
9.	Write about Transition curve?	Understand	D
10.	Write about Vertical curves?	Remember	D
<b>UNIT-IV TRAFFIC ENGINEERING</b>			
1.	Define Traffic volume, Traffic Density and Traffic Capacity?	Understand	E

S. No	QUESTION	Blooms Taxonomy Level	Course Outcome
2.	How the traffic volume data is collected and presented in traffic engineering?	Analyze	E
3.	Write about spot speed studies?	Analyze	E
4.	Write about speed and delay studies?	Analyze	E
5.	Write about floating car method?	Understand	E
6.	Describe On street and off street parking?	Remember	E
7.	Describe various causes for road accidents?	Remember	E
8.	Distinguish between On street and Off street parking?.	Understand	E
9.	Discuss various methods for collecting origin and destination data?	Understand	E
10.	Explain various measures that may be taken to prevent accidents?	Remember	E
<b>UNIT-V</b>			
<b>TRAFFIC REGULATION AND MANAGEMENT</b>			
1	Show various types of traffic signs with neat sketches.	Understand	F
2	What is Road Marking?	Understand	F
3	What is the need for road markings?	Analyze	F
4	What are the types of road markings?	Remember	F
5	What are the different types of traffic signal systems?	Understand	F
6	Explain the design procedure of Traffic signals according to Webster method?	Remember	F
7	Explain the design procedure of Traffic signals according to I.R.C Method?	Understand	F
8	What is Intelligent transport system(ITS)?	Remember	F
9	Explain applications of ITS?	Understand	F
10	What is the need for ITS and state its advantages?	Understand	F
<b>UNIT-VI</b>			
<b>INTERSECTION DESIGN</b>			
1	Define intersection? What are the types of Intersections?	Understand	G
2	What are the basic forms of Intersection?	Understand	G
3	What are the various types of at grade Intersections?	Understand	G
4	What are various types of Grade separated Intersections?	Analyze	G
5	What is Channelization?	Remember	G
6	Write about Rotary Intersection?	Analyze	G
7	What are the advantages of Rotary Intersection?	Understand	G
8	What are the Limitations of Rotary Intersection?	Analyze	G
9	Explain various safety measures to be taken to prevent accidents at Rotary?	Analyze	G
10	What are the requirements of at grade Intersection?	Analyze	G

S. No	QUESTION	Blooms Taxonomy Level	Course Outcome
<b>UNIT-VII</b>			
<b>INTRODUCTION TO RAILWAY ENGINEERING AND GEOMETRIC DESIGN OF RAILWAY TRACK</b>			
1	What are the requirements of permanent way?	Analyze	H
2	Describe a permanent way cross section with a neat sketch?	Understand	H
3	Define Rails. Enlist its Functions and types?	Understand	H
4	Explain percussion theory related to rail creep?	Understand	H
5	Explain wave theory related to rail creep?	Analyze	H
6	What are the effects of creep?	Remember	H
7	What are the preventive measures of rail creep?	Remember	H
8	What are the functions and types of sleepers?	Remember	H
9	Discuss the functions and materials used for Ballast?	Remember	H
10	Discuss about Rail Fastening?	Remember	H
<b>UNIT-VIII</b>			
<b>AIRPORT ENGINEERING</b>			
1	What are the various surveys that are to be conducted for Airport site selection?	Remember	H
2	What are the factors which affects while selecting the site for Airport?	Remember	H
3	What factors should be considered in the geometric design of Runway?	Remember	H
4	Explain computation of Runway length?	Remember	H
5	Discuss about the correction for Run way length?	Analyze	H
6	Discuss about classification of Airport?	Analyze	H
7	Write a short notes on Run way orientation?	Analyze	H
8	Define Wind Rose Diagram?	Remember	H
9	What are the uses of Wind Rose Diagram?	Analyze	H
10	Explain about Type-1 wind rose diagram with a neat sketch?	Analyze	H

**2. Group - II (Long Answer Questions)**

S. No	Question	Blooms Taxonomy Level	Program Outcome
<b>UNIT-I HIGHWAY DEVELOPMENT AND PLANNING</b>			
1	What is the Neccessity for highway planning in our country? Write about Jayakar committee and its Recommendations?	Remember	A
2	Write short notes on the following a) Nagpur road plan and its salient features along with two plan formulas b) Central Road Fund	Remember	A
3	Write about Jayakar Committee and its Recommendations and write about I.R.C in detail?	Understand	B
4	Write about First Twenty year road development plan and its salient features?	Understand	B
5	Write about Lucknow Road plan and its salient features ?	Remember	A
6	Write about Second Twenty year road development plan and its salient features?	Analyze	A
7	a) Discuss the Third twenty year road plan and its objectives b) Compare First & Second Twenty year Road Development plans?	Analyze	B
8	Write about Third Twenty year road development plan and its salient features?	Analyze	A
9	Explain in detail about Road development plans in India?	Analyze	A
10	Write about the difference between First and Second twenty year road development plan?	Remember	A
<b>UNIT-II HIGHWAY PLANNING</b>			
1	Explain the classification of Roads and also list five advantages of Roads?	Analyze	C
2	Draw neat sketches of various road patterns with explain the necessity of Road patterns?	Understand	C
3	What is an Highway alignment and various factors controlling alignment?	Understand	C
4	Explain with sketches various factors controlling alignment?	Analyze	C
5	What are the characteristics of good road and the need for a good road?	Analyze	C

S. No	Question	Blooms Taxonomy Level	Program Outcome
6	Explain the necessity of highway surveys and Enlist them?	Analyze	C
7	What are various engineering surveys that are to be conducted for highway alignment?	Analyze	C
8	What are the different plans to be prepared after planning surveys are carried out?	Analyze	C
9	Write a short notes on Highway project report and Explain the steps for a new Highway project?	Analyze	C
10	List out the different plans to be prepared after planning surveys are carried out?	Remember	C
<b>UNIT-III HIGHWAY GEOMETRIC DESIGN</b>			
1.	What is Camber and explain its need on highway?	Remember	D
2.	What are the various types of cambers and explain the need of camber on pavement and its recommendations?	Analyze	D
3.	What is skid resistance and what are the factors on which it depends?	Remember	D
4.	What are the factors controlling the geometric elements ?	Analyze	D
5.	What is Stopping sight distance? Also derive an expression for SSD.	Remember	D
6.	What is over taking sight distance? Also derive an expression for OSD	Analyze	D
7.	Write about over taking zones? Explain them with neat sketches.	Analyze	D
8	Write about Intermediate sight distance and head light sight distance and explain them in detail?	Analyze	D
9.	Write about Design of Transition curves in detail? Explain the concept of shift?	Remember	D
10.	Write about the design of Vertical curves and Explain with an example?	Remember	D
<b>UNIT-IV TRAFFIC ENGINEERING</b>			
1.	Define Traffic volume, Traffic Density and Traffic Capacity? Explain each in detail?	Remember	E
2.	Write about traffic volume studies and explain how the data is collected and presented in traffic engineering?	Analyze	E
3.	Explain the procedure for conducting spot speed studies. How do you analyze the Spot speed data?	Understand	E

S. No	Question	Blooms Taxonomy Level	Program Outcome
4.	Write about speed and delay studies? Explain them with any two methods.	Remember	E
5.	Write about floating car method? Also write its advantages and limitations.	Analyze	E
6.	Describe in detail about parking studies?	Analyze	E
7.	Describe various causes for road accidents and write about measures that are to be taken to reduce the road accidents?	Analyze	E
8.	Distinguish between On street and Off street parking?.	Remember	E
9.	Discuss various methods for collecting origin and destination data?	Remember	E
10.	Explain various measures that may be taken to prevent accidents?	Remember	E
<b>UNIT-V</b>			
<b>TRAFFIC REGULATION AND MANAGEMENT</b>			
1	Show various types of traffic signs with neat sketches.Explain each in detail	Understand	F
2	What is Road Marking? What is the need for road markings and What are the types of road markings?	Remember	F
3	Explain the classification of Traffic Signs. Give the specifications of each type with suitable sketches and give at least two examples for each type.	Remember	F
4	Describe various types of traffic signs used in traffic control and regulation giving at least two examples for each type. Support your answer with suitable sketches and specifications for the signs.	Remember	F
5	What are the different types of traffic signal systems and enumerate them with neat sketches.	Understand	F
6	Explain the design procedure of Traffic signals according to Webster method ?	Remember	F
7	Explain the design procedure of Traffic signals according to I.R.C Method?	Analyze	F
8	What is Intelligent transport system(ITS) and Explain applications of ITS?	Understand	F
9	What is Road Marking? What is the need for road marking. What are the types of road markings. Discuss in detail.	Remember	F
10	What is the need for ITS and state its advantages and disadvantages?	Remember	F
<b>UNIT-VI</b>			
<b>INTERSECTION DESIGN</b>			
1	Define intersection? What are the types of Intersections and explain the necessity of Intersections?	Remember	G

S. No	Question	Blooms Taxonomy Level	Program Outcome
2	What are the basic forms of Intersection and explain each with two types ?	Analyze	G
3	What are the various types of at grade Intersections and explain them with neat sketches?	Analyze	G
4	What are various types of Grade separated Intersections and explain them with neat sketches?	Analyze	G
5	What is Channelization and explain the importance with its advantages and disadvantages?	Analyze	G
6	Write about Rotary Intersection and explain with a neat sketch?	Remember	G
7	What are the advantages and limitations of Rotary Intersection?	Remember	G
8	What are the design factors that control the design of rotary intersection and explain them in detail?	Remember	G
9	Explain various safety measures to be taken to prevent accidents at Rotary?	Remember	G
10	What are the requirements of at grade Intersection and explain them?	Analyze	G
<b>UNIT-VII</b>			
<b>INTRODUCTION TO RAILWAY ENGINEERING AND GEOMETRIC DESIGN OF RAILWAY TRACK</b>			
1	What are the requirements of permanent way and explain with a neat sketch?	Analyze	H
2	Describe a permanent way cross section with a neat sketch and explain the functions of each part in detail?	Remember	H
3	Define Rails. Enlist its Functions and types of rails with importance to each?	Analyze	H
4	Explain percussion theory related to rail creep and write its advantages?	Analyze	H
5	Explain wave theory related to rail creep and write the limitations of the theory?	Remember	H
6	What are the effects of creep and explain the theories related to rail creep?	Analyze	H
7	What are the preventive measures of rail creep?	Understand	H
8	Explain the necessity of sleepers in railway track. What are the desirable qualities of good sleepers?	Evaluate	H
9	Discuss the functions and materials used for Ballast?	Evaluate	H
10	What is Cant Deficiency .Give its permissible values for various gauges in India?	Analyze	H

S. No	Question	Blooms Taxonomy Level	Program Outcome
<b>UNIT-VIII AIRPORT ENGINEERING</b>			
1	What are the various surveys that are to be conducted for Airport site selection?	Understand	H
2	What are the factors which affects while selecting the site for Airport?	Analyze	H
3	What factors should be considered in the geometric design of Runway?	Remember	H
4	Explain computation of Runway length with an example?	Remember	H
5	Discuss about the correction for Run way length?	Remember	H
6	Discuss about classification of Airports in detail with neat sketches?	Remember	H
7	Write a brief note on Run way orientation with its need in airport design?	Understand	H
8	Define Wind Rose Diagram and explain the uses of wind rose diagram with a neat sketch?	Understand	H
9	(a) What are the various corrections to be applied to standard runway length to obtain the actual length of a runway? Explain. (b) Write brief note on runway lighting system?	Analyze	H
10	The length of a runway under standard conditions is 1540 m. The airport site has an elevation of 280 m and its reference temperature is 33.50C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length.	Remember	H

### 3. Group - III (Analytical Questions)

S.No	QUESTIONS	Blooms Taxonomy Level	Program Outcome
<b>UNIT-I HIGHWAY DEVELOPMENT AND PLANNING</b>			
1	The area of a certain district in India is 18,400 sq.km and there are 16 towns as per 1981 census. Determine the lengths of different categories of roads to be provided in this district by the year 2001?	Apply	A
2	Determine the length of different categories of roads in a state in india by the year 2001, using Third road Development plan formulae and the following data: Total area of the state = 80,000 sq.km Total number of towns as per 1981 census =86 Overall road density aimed at= 82 km per 100 sq.km area	Apply	A

S.No	QUESTIONS	Blooms Taxonomy Level	Program Outcome
3	The area of a certain district in India is 13,400 sq.km and there are 12 towns as per 1981 census. Determine the lengths of different categories of roads to be provided in this district by the year 2001?	Apply	A
4	Calculate the lengths of National and State highways required in a district with a total area of 7200 km <sup>2</sup> , Developed ,Semi-developed & Undeveloped areas being 30,45 & 25 percent of the district. The no of towns with population over 1.0,0.5-1.0,0.2-0.5 and 0.1-0.2 lakhs are 3,7,12&20 respectively in a district using second twenty year plan?	Apply	A
<b>UNIT-III HIGHWAY GEOMETRIC DESIGN</b>			
1	Calculate the safe stopping sight distance for design speed of 50 kmph for two way traffic on a two lane road.	Apply	C
2	Calculate the safe stopping sight distance for design speed of 100 kmph for two way traffic on a single lane road	Apply	C
3	The radius of the horizontal circular curve is 100m. the design speed is 50kmph and the design coefficient of lateral friction is 0.15. a)Calculate the super elevation required if full lateral friction is assumed to develop b)Calculate the coefficient of friction needed if no Super elevation is provided	Apply	C
4	The speeds of overtaking and overtaken vehicles are 80 and 60 kmph respectively. If the acceleration of the overtaking vehicle is 2.5Kmph per second, calculate the safe Overtaking sight distance for two way traffic?	Apply	C
5	Calculate the safe overtaking sight distance for design speed of 50 kmph assume all other data suitably.	Apply	C
<b>UNIT-VII INTRODUCTION TO RAILWAY ENGINEERING AND GEOMETRIC DESIGN OF RAILWAY TRACK</b>			
1	What should be the equilibrium cant on a M.G Track curve for an avg speed of 100 kmph. Also find out the permissible speed allowing the maximum cant deficiency	Apply	G
2	What is the permissible speed on B.G Track with a 4° curve?	Apply	G
3	What is the permissible speed on B.G Track with a 4° curve? If the speed is to be restricted to 68 kmph, what superelevation should be given after allowing the permissible cant deficiency?	Apply	G
4	What should be the equilibrium cant on a M.G Track curve for an avg speed of 60kmph. Also find out the permissible speed allowing the maximum cant deficiency?	Apply	G

S.No	QUESTIONS	Blooms Taxonomy Level	Program Outcome
<b>UNIT-VIII AIRPORT ENGINEERING</b>			
1	The length of a runway under standard conditions is 1540 m. The airport site has an elevation of 280 m and its reference temperature is 33.5 °C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length	Apply	H
2	The length of a runway under standard conditions is 1800 m. The airport is to be provided at an elevation of 110 m above the mean sea level. The airport reference temperature is 22 °C. calculate correction for Elevation	Apply	H
3	The length of a runway under standard conditions is 1800 m. The airport is to be provided at an elevation of 110 m above the mean sea level. The airport reference temperature is 22 °C. calculate correction for Temperature	Apply	H
4	The length of a runway under standard conditions is 1800 m. The airport is to be provided at an elevation of 110 m above the mean sea level. The airport reference temperature is 22 °C. calculate correction for Gradient	Apply	H
5	The length of a runway under standard conditions is 1200 m. The airport site has an elevation of 280 m and its reference temperature is 33.5 °C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length	Apply	H

Code No: **R32016**

**R10**

**Set No. 1**

**III B.Tech II Semester Supplementary Examinations, April - 2016**  
**TRANSPORTATION ENGINEERING-II**  
(Civil Engineering)

**Time: 3 hours**

**Max. Marks: 75**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

\*\*\*\*\*

- 1 a) What is meant by wear of Rails? Enumerate the various types of Rail wear and enlist the methods by which it can be measured. [8]  
b) What is Ballast? What are the different types and enumerate the requirements of Good ballast. [7]
- 2 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. [8]  
b) What are the basic requirements of an Ideal railway alignment? [7]
- 3 a) Draw a neat sketch of Diamond and Scissors crossing. Clearly show the various rail pieces and gaps. [8]  
b) A cross over is to be laid connecting two BG parallel tracks spaced 4.5 m apart. Assuming that 1 in 8.7 crossings are to be used, work out the various details required for setting the cross over. [7]
- 4 a) What are the objectives of Interlocking? Explain the Tappet and lock system of interlocking. [8]  
b) Describe the three aspects in Upper quadrant signaling. Briefly describe one method of interlocking used by Indian Railways. [7]
- 5 a) Explain in detail the causes for airfield flexible pavement failures. [8]  
b) The runway length required for landing at sea level in standard atmospheric conditions is 3100 m. Runway length required for takeoff at sea level in standard atmospheric conditions is 2550 m. Aerodrome reference temperature is 24° C and that of the standard atmosphere at aerodrome elevation of 150 m is 14.025° C. If the effective runway gradient is 0.4 percent, determine the runway length to be provided. [7]
- 6 a) Differentiate between Airport and Highway pavements. Discuss in brief the various factors to be considered in the design of Airfield pavements. [8]  
b) Explain in detail the causes for airfield flexible pavement failures. [7]
- 7 a) Define (i) Harbour, (ii) Port, (iii) Off shore Moorings and (iv) Turning basin. What are the requirements of a good Port? [8]  
b) Briefly describe the design principles of a Wet dock. How does a Wet dock differ from a Tidal basin? [7]
- 8 a) What are light houses? Draw a neat sketch and explain its functioning. [8]  
b) Define (i) Semi diurnal tides, (ii) Mixed diurnal tides, (iii) Neap tides, (iv) Age of tide, (v) Spring range, (vi) Sieches and (vii) Equinostial tides. [7]

\*\*\*\*\*

[WWW.MANARESULTS.CO.IN](http://WWW.MANARESULTS.CO.IN)

|||||

Code No: RT32015

**R10**

**Set No. 1**

**III B. Tech II Semester Supplementary Examinations, November/December – 2016**

**TRANSPORTATION ENGINEERING – II**  
(Civil Engineering)

**Time: 3 hours**

**Max. Marks: 70**

Question Paper Consists of **Part-A** and **Part-B**  
Answering the question in **Part-A** is Compulsory,  
Three Questions should be answered from **Part-B**  
\*\*\*\*\*

**PART-A**

1. a) List the types of rail joints. [4M]
- b) What are the objectives of providing super elevation on railway tracks. [4M]
- c) List the systems of controlling the movement of train. [3M]
- d) List the various visual aids in airports. [3M]
- e) What are time of concentration and time of flow, with reference to airport drainage? [4M]
- f) How are ports classified into? [4M]

**PART-B**

2. a) Write the functions of sleepers? [8M]
- 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 metres. [8M]
3. a) What is the need for providing transition curves on railways? Explain how the length of transition curve is decided. [8M]
- b) Explain the necessity of widening of gauge on curves. [8M]
4. a) Write short notes on Warner signal, Shunting signal, Disc signal and routing signal. [8M]
- b) Explain the working principle of centralized traffic control system and automatic train control system. [8M]
5. a) Write notes on corrections for elevation and temperature for a runway? [8M]
- b) Explain about the factors to be considered for selecting a site for an airport? [8M]
6. a) How is the maintenance and rehabilitation carried out for airfield pavements? [8M]
- b) Write the procedure to evaluate an airfield pavement and steps taken to strengthen it? [8M]
7. a) Differentiate between wharf, jetty and quay? [8M]
- b) List the navigational aids and explain their importance? [8M]

\*\*\*\*\*

[WWW.MANARESULTS.CO.IN](http://WWW.MANARESULTS.CO.IN)



## III B. Tech II Semester Regular/Supplementary Examinations, April - 2017

**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. Answering the question in **Part-A** is compulsory  
 3. Answer any **THREE** Questions from **Part-B**

\*\*\*\*\*

**PART -A**

- 1 a) Define wheel gauge. What are the various gauges used in India? [3M]
- 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. [4M]
- c) Differentiate between Cole's method Issosless triangle methods? [4M]
- d) What are the various phases recommended by FAA for airport master plan? [4M]
- e) Mention about special characteristics and requirements of airport drainage. [4M]
- f) What is the location based classification of harbors? [3M]

**PART -B**

- 2 a) What is permanent way? Explain functions of various components briefly? [4M]
- b) Explain the concept creep using percussion theory? How do you rectify creep? [8M]
- c) Distinguish between suspended and bridge joints in rails. [4M]
- 3 a) What do you understand negative superelevation? [3M]
- b) Compute the maximum permissible speed for the following data on a curve of high speed B.G for the following data. Degree of curve = 1.2, Amount of super elevation = 8cm, Length of transition curve = 150 m, Maximum sanctioned speed likely to be 135kmph. [8M]
- c) Explain string line method of realignment of curves. [5M]
- 4 a) Explain the necessity of points and crossings. [6M]
- b) What is the principle stop signal? Explain its components with the help of a neat signal. [10M]
- 5 a) Explain Take off climb surface. [4M]
- b) The basic runway length of an airport at an altitude of 500m above MSL is 2800m. The airport reference temperature is 43<sup>0</sup> C and the effective gradient is 1.5%. Compute the corrected runway length as per FAA standards. [6M]
- c) What are the basic assumptions made in finalizing runway length? [6M]
- 6 a) Discuss how the analytical methods differ empirical methods and semi empirical methods for the design of airfield pavements [8M]
- b) Discuss in brief about maintenance management system in reference to airfield pavements. [8M]
- 7 a) Explain the formation of tides. Explain tidal day, spring tides and neap tides. [8M]
- b) What are the factors to be considered for the selection of harbors on a sandy coast and Lower reach of a river? [8M]

\*\*\*\*\*



**III B. Tech II Semester Regular/Supplementary Examinations, April - 2017**  
**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. Answering the question in **Part-A** is compulsory  
 3. Answer any **THREE** Questions from **Part-B**

\*\*\*\*\*

**PART -A**

- |   |                                                                                                |      |
|---|------------------------------------------------------------------------------------------------|------|
| 1 | a) What is the minimum number of sleepers required for a 2km length of rail for a broad gauge? | [3M] |
|   | b) Differentiate between ruling gradient and momentum gradient.                                | [4M] |
|   | c) What are the permissible speeds adopted for on different crossings?                         | [4M] |
|   | d) Explain various moments of aircrafts?                                                       | [4M] |
|   | e) List out special characteristics and requirements of airport drainage.                      | [4M] |
|   | f) Differentiate between break waters, dock and quay?                                          | [3M] |

**PART -B**

- |   |                                                                                                                                                                                                                                                                                                                                                                     |       |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 2 | a) What are the advantages and disadvantages of wooden sleepers?                                                                                                                                                                                                                                                                                                    | [4M]  |
|   | b) What are the requirements of ideal gauge?                                                                                                                                                                                                                                                                                                                        | [8M]  |
|   | c) What would be the length of track i) to overcome temperature stress ii) to prevent creep for equilibrium? When it is given $A= 60 \text{ cm}^2$ , $\alpha=1.12 \times 10^{-5} \text{ per } ^\circ \text{C}$ , $E= 21.5 \times 10^5 \text{ kg/cm}^2$ and rise in temperature, i.e. $t= 32^\circ \text{C}$ and assume a 750 kg/km as resistance to track movement. | [4M]  |
| 3 | a) What are the limitations of cant deficiency?                                                                                                                                                                                                                                                                                                                     | [3M]  |
|   | b) Compute the maximum permissible speed for the following data on a curve of high speed B.G for the following data. Degree of curve = 1.2, Amount of super elevation = 8cm, Length of transition curve = 150 m, Maximum sanctioned speed likely to be 135kmph.                                                                                                     | [8M]  |
|   | c) Discuss briefly about various types of transition curves used in railways.                                                                                                                                                                                                                                                                                       | [5M]  |
| 4 | a) Differentiate between Time interval system and Pilot guard systems of train movements.                                                                                                                                                                                                                                                                           | [6M]  |
|   | b) Explain various functions of interlocking.                                                                                                                                                                                                                                                                                                                       | [10M] |
| 5 | a) Explain the importance of Turning Zoning laws.                                                                                                                                                                                                                                                                                                                   | [4M]  |
|   | b) The basic runway length of an airport at an altitude of 500m above MSL is 1800m. The airport reference temperature is $45^\circ \text{C}$ and the effective gradient is 1.5%. Compute the corrected runway length as per FAA standards.                                                                                                                          | [6M]  |
|   | c) What are the basic assumptions made in finalizing runway length?                                                                                                                                                                                                                                                                                                 | [6M]  |
| 6 | a) Explain the causes of airfield flexible pavement failures.                                                                                                                                                                                                                                                                                                       | [8M]  |
|   | b) Discuss in brief about maintenance management system in reference to airfield pavements.                                                                                                                                                                                                                                                                         | [8M]  |
| 7 | a) Explain briefly about various types of dredgers.                                                                                                                                                                                                                                                                                                                 | [8M]  |
|   | b) What are the factors to be considered for the selection of harbours on a sandy coast and Lower reach of a river?                                                                                                                                                                                                                                                 | [8M]  |



**III B. Tech II Semester Regular/Supplementary Examinations, April - 2017**  
**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. Answering the question in **Part-A** is compulsory  
 3. Answer any **THREE** Questions from **Part-B**

\*\*\*\*\*

**PART -A**

- |   |                                                                                      |      |
|---|--------------------------------------------------------------------------------------|------|
| 1 | a) What are the factors to be considered for sleeper density?                        | [3M] |
|   | b) What is the difference between pusher gradient and momentum gradient?             | [4M] |
|   | c) What is the difference between T.N.C and A.N.C?                                   | [4M] |
|   | d) What are the recommendations given by FAA normal wind components?                 | [4M] |
|   | e) What are various methods adopted for the design of flexible airfield pavements?   | [4M] |
|   | f) What are the various types navigational aids used in fixed navigation structures? | [3M] |

**PART -B**

- |   |                                                                                                                                                                                                                                                                                                                                                                          |       |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 2 | a) What are the requirements of a welding joint?                                                                                                                                                                                                                                                                                                                         | [4M]  |
|   | b) What are the different causes of creep? How do you identify creep in the field.                                                                                                                                                                                                                                                                                       | [8M]  |
|   | c) What would be the length of track i) to overcome temperature stress ii) to prevent creep for equilibrium? When it is given $A = 60 \text{ cm}^2$ , $\alpha = 1.12 \times 10^{-5} \text{ per } ^\circ \text{C}$ , $E = 20.5 \times 10^5 \text{ kg/cm}^2$ and rise in temperature, i.e. $r = 35^\circ \text{C}$ and assume a 720 kg/km as resistance to track movement. | [4M]  |
| 3 | a) What is maximum degree of curvatures adopted on curves through tracks?                                                                                                                                                                                                                                                                                                | [3M]  |
|   | b) Compute the maximum permissible speed for the following data on a curve of high speed B.G for the following data. Degree of curve = 1.2, Amount of super elevation = 8cm, Length of transition curve = 150 m, Maximum sanctioned speed likely to be 135kmph.                                                                                                          | [8M]  |
|   | c) Explain the difference between cant deficiency and negative super elevation.                                                                                                                                                                                                                                                                                          | [5M]  |
| 4 | a) What are scissor crossings? Explain briefly.                                                                                                                                                                                                                                                                                                                          | [6M]  |
|   | b) Explain various functions of interlocking.                                                                                                                                                                                                                                                                                                                            | [10M] |
| 5 | a) List out Aircraft characteristics to be considered in planning an airport planning and design.                                                                                                                                                                                                                                                                        | [6M]  |
|   | b) What is the effect of engine failure on runway length?                                                                                                                                                                                                                                                                                                                | [10M] |
| 6 | a) Discuss in brief about maintenance management system in reference to airfield pavements.                                                                                                                                                                                                                                                                              | [8M]  |
|   | b) Explain the causes of failures in rigid pavements.                                                                                                                                                                                                                                                                                                                    | [8M]  |
| 7 | a) What are the factors to be considered for the selection of harbors on a sandy coast and Lower reach of a river?                                                                                                                                                                                                                                                       | [8M]  |
|   | b) Explain various types of break waters.                                                                                                                                                                                                                                                                                                                                | [8M]  |

\*\*\*\*\*



Code No: R32016

**R10**

**Set No. 1**

**III B.Tech II Semester Regular/Supplementary Examinations, May/June - 2015**

**Transportation Engineering-II**

**(Civil Engineering)**

**Time: 3 hours**

**Max. Marks: 75**

**Answer any FIVE Questions  
All Questions carry equal marks  
Assume any missing data suitably**

\*\*\*\*\*

- 1 a) What are the ideal requirements of Rail fastenings? [8]  
b) What are the locations at which the joints in rails are avoided? [7]
- 2 a) If a sag curve is introduced between down grade of 0.8 % followed by an up gradient of 0.6%, find out the length of parabolic vertical curve, the offsets at every 25m and R.L.s corresponding to various points on the curve. When given the R.L of the ground at sag point is 100m and allowable change of gradient is 0.25. [10]  
b) What are the various causes for the derailment of trains? [5]
- 3 a) What are the various parts of turnout? [8]  
b) Explain the requirements of a crossing. [7]
- 4 a) Define Interlocking and explain the principle involved in interlocking. [8]  
b) Explain Track circuiting. [7]
- 5 a) What is crosswind component? How do you fix the runway orientation if wind direction and wind coverage duration. [8]  
b) What are the factors to be considered for the design of taxiway? [7]
- 6 a) Explain briefly about the failures in airfield flexible pavements. [8]  
b) What are the special characteristics of an airfield drainage system? [7]
- 7 a) Explain the classification of harbours based on location [8]  
b) What are the uses of dry and wet docks? What is the role of ware houses? [7]
- 8 a) What are the differences between wharves and Jetties? [6]  
b) What are the different types of buoys used as navigational aids [4]  
c) What is Bucket ladder dredger? Explain briefly [5]

\*\*\*\*\*

[WWW.MANARESULTS.CO.IN](http://WWW.MANARESULTS.CO.IN)



Code No: R32016

**R10**

**Set No. 2**

**III B.Tech II Semester Regular/Supplementary Examinations, May/June - 2015**

**Transportation Engineering-II**

**(Civil Engineering)**

**Time: 3 hours**

**Max. Marks: 75**

**Answer any FIVE Questions  
All Questions carry equal marks  
Assume any missing data suitably**

\*\*\*\*\*

- 1 a) What are the functions of Rails? Explain the sleeper density. [8]  
b) Explain the concept of creep using percussion theory and explain the method of identifying creep. [7]
- 2 a) What is the use of preliminary survey in railway alignment? [8]  
b) Explain the necessity of design of railway track. [7]
- 3 a) What is the role of switches in turnouts? Explain briefly about various types of switches. [7]  
b) If an  $8^\circ$  curve track diverges from main curve  $6^\circ$  in an opposite direction of B.G yard. Calculate speed and super elevation of branch line if the maximum speed permitted on main line is 45kmph. [8]
- 4 a) Bring out the differences between detector locking and Tappet locking. [8]  
b) Explain the function and location of Outer signal and Home signal. [7]
- 5 a) What are the different aids available for a pilot during flight journey? [8]  
b) What are assumptions made for finding the basic runway length? [7]
- 6 a) What are the special characteristics of an airfield drainage system? [8]  
b) Discuss about Rapid runway repair and advanced runway repair systems. [7]
- 7 a) Explain classification of harbors based on utility. [8]  
b) What do you understand about the dry and wet docks and write their applications? [7]
- 8 a) Distinguish between lowest and highest astronomical tides. [8]  
b) Explain the importance and different types of navigational aids. [7]

\*\*\*\*\*

[WWW.MANARESULTS.CO.IN](http://WWW.MANARESULTS.CO.IN)



Code No: R32016

**R10**

**Set No. 3**

**III B.Tech II Semester Regular/Supplementary Examinations, May/June - 2015**

**Transportation Engineering-II**

**(Civil Engineering)**

**Time: 3 hours**

**Max. Marks: 75**

**Answer any FIVE Questions  
All Questions carry equal marks  
Assume any missing data suitably**

\*\*\*\*\*

- 1 a) What are the requirements of an ideal joint? [8]  
b) What are the advantages and disadvantages of wooden sleepers? [7]
- 2 a) What are the factors to be considered for the selection of good railway alignment? [8]  
b) Distinguish between Pusher gradient and Momentum gradients. [7]
- 3 a) What are the different types of switches based on assembling? Explain with the help of neat sketches. [8]  
b) Draw a sketch showing various components of a left hand turnout. [7]
- 4 a) What is the necessity and functions of interlocking? [8]  
b) Explain automatic Block system. [7]
- 5 a) Find out the corrected basic runway length from the following data. [8]  
Run way length = 3200m, Altitude above MSL =450m, Airport reference temperature = 42<sup>0</sup>C, Effective Gradient = 1.5%.  
b) What are the different aids available for a pilot during flight journey? [7]
- 6 a) Explain Burmister method of designing airfield flexible pavement. [8]  
b) Discuss about Rapid runway repair and advanced runway repair systems. [7]
- 7 a) Explain the classification of harbours based on location [8]  
b) What are the uses of dry and wet docks? What is the role of ware houses? [7]
- 8 a) Distinguish between various tidal terms with the help of a graph. [8]  
b) Describe with sketches a composite breakwater. [7]

\*\*\*\*\*

[WWW.MANARESULTS.CO.IN](http://WWW.MANARESULTS.CO.IN)



Code No: R32016

**R10**

**Set No. 4**

III B.Tech II Semester Regular/Supplementary Examinations, May/June – 2015

**Transportation Engineering-II**

(Civil Engineering)

**Time: 3 hours**

**Max. Marks: 75**

**Answer any FIVE Questions**  
**All Questions carry equal marks**  
**Assume any missing data suitably**

\*\*\*\*\*

- 1 a) What are the different components of permanent way? Explain briefly about the function of each component. [8]  
b) Discuss about causes of kinks in rails and their ill effects. [7]
- 2 a) Explain briefly about the use of various types of gradients in railways [8]  
b) If an  $8^\circ$  curve track diverges from main curve  $5^\circ$  in an opposite direction of B.G yard. Calculate speed and super elevation of branch line if the max. Speed permitted on main line is 45kmph. [7]
- 3 a) Explain Facing direction, trailing direction, face point and trail points of turnouts. [8]  
b) Explain different types of crossings based on shape. [7]
- 4 a) What are the objectives of signaling in railways? [5]  
b) Explain slotting of signals. [10]
- 5 a) Find out the corrected basic runway length from the following data: [8]  
Run way length = 3000m, Altitude above MSL =400m, Airport reference temperature =  $42^\circ\text{C}$ , Effective Gradient = 1.25%.  
b) Explain how an engine failure case affects the basic runway length. [7]
- 6 a) Explain briefly about the factors to be considered in the design of airfield pavements. [8]  
b) Explain briefly about the failures in airfield flexible pavements. [7]
- 7 a) Explain the classification of harbours based on location. [8]  
b) What are the uses of dry and wet docks? What is the role of ware houses? [7]
- 8 a) Distinguish between lowest and highest astronomical tides. [8]  
b) Describe with sketches a composite breakwater. [7]

\*\*\*\*\*

[WWW.MANARESULTS.CO.IN](http://WWW.MANARESULTS.CO.IN)



**III B. Tech II Semester Regular Examinations April- 2016**  
**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. Answering the question in **Part-A** is compulsory  
 3. Answer any **THREE** Questions from **Part-B**

\*\*\*\*

**PART –A**

- 1 a) What is CSI and Adzing? [3M]  
 b) What are check rails on curves? [4M]  
 c) Differentiate between – Repeating and Co-acting signals. [4M]  
 d) What are visual aids? Explain their uses. [3M]  
 e) What are the different types of Sub surface drainages? [4M]  
 f) Define the term Break waters. Enlist the different types. [4M]

**PART –B**

- 2 a) What is Ballast? What are the different types and enumerate the requirements of Good ballast. [8M]  
 b) Determine the number of sleepers required for the construction of 2000 m of BG track, with a sleeper density of  $N + 7$ . [8M]
- 3 a) What is a Transition curve, what are the different types and what are the requirements for an ideal transition curve. [8M]  
 b) Write a note about (i) Momentum gradient and [8M]  
 (ii) Compensated gradient for curvature.
- 4 a) Draw a neat sketch of Right hand turn out, clearly showing the various elements. [8M]  
 b) A cross over is to be laid connecting two BG parallel tracks spaced 4.5 m apart. Assuming that 1 in 8.5 crossings are to be used, work out the various details required for setting the cross over. [8M]
- 5 a) The length of runway at sea level, standard atmospheric conditions and zero gradient is 1500 m. The airport site has an elevation of 900 m, and the reference temperature as  $20^{\circ}$  C. If the proposed runway grading permits an effective gradient of 0.20 percent, determine the actual runway length required at the site. [8M]  
 b) Explain with neat sketches, the various markings on Runways. [8M]
- 6 a) Explain in brief the difference between functional and structural evaluation of airfield pavements. [8M]  
 b) Explain in detail the various maintenance works that are performed on Flexible airfield pavements. [8M]
- 7 a) Define (i) Semi diurnal tides, (ii) Mixed diurnal tides, (iii) Neap tides and (iv) Age of tide. [8M]  
 b) What are Navigational aids? Briefly describe the different types of Floating signals [8M]

\*\*\*\*\*



**III B. Tech II Semester Regular Examinations April - 2016**  
**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. Answering the question in **Part-A** is compulsory  
 3. Answer any **THREE** Questions from **Part-B**  
 \*\*\*\*\*

**PART –A**

- 1 a) Name at least five causes of Rail failures? [4M]  
 b) What is degree of curve? [3M]  
 c) What are the objectives of Interlocking? [4M]  
 d) What do you understand by the term taxiway design? [3M]  
 e) Differentiate between Airport and Highway pavements. [4M]  
 f) Define (i) Anchorage area, (ii) Free port and (iii) Beam. [4M]

**PART –B**

- 2 a) With the help of a neat sketch, show the various components of a typical Railway track. [8M]  
 b) Explain the following terms (i) Track modulus, (ii) Coning of Wheels. Draw neat sketches, wherever necessary. [8M]
- 3 a) Write a note about - (i) Ruling gradient and (ii) Pusher gradient. [8M]  
 b) Calculate the super elevation, maximum permissible speed and transition length for a 4 degree curve on a high speed BG section with a maximum allowable speed of 100 kmph. Assume the equilibrium speed to be 70 kmph and the booked speed of the goods train to be 45 kmph. [8M]
- 4 a) A turn out is to be laid off a straight BG track with a 1 in 11 crossing. Determine the lead and radius for the turn out, given the following data. Heel divergence  $d = 113$  mm, the straight length between the TNC and the tangent point of the crossing curve,  $h = 1.325$ m, crossing angle  $\alpha = 3^\circ 25' 40''$  and switch angle  $\beta = 1^\circ 8' 20''$ . [8M]  
 b) Describe the three aspects in Upper quadrant signalling. Briefly describe one method of interlocking used by Indian Railways. [8M]
- 5 a) The length of runway under standard conditions is 1730 m. The airport site has an elevation of 290 m. Its reference temperature is  $31.60^\circ\text{C}$ . If the runway is to be constructed with an effective gradient of 0.15 percent, determine the corrected runway length. [8M]  
 b) What is a Wind rose diagram? What are its types? Explain one. [8M]
- 6 a) Explain in detail the causes for Airfield Rigid pavement failures. [8M]  
 b) Discuss the Flexible overlay designs for strengthening airfield pavements. [8M]
- 7 a) Differentiate between a Jetty and a Wharf. State the conditions under which you will prefer their construction. [8M]  
 b) Write short notes about (i) Transition sheds and (ii) Work houses. [8M]

\*\*\*\*\*



**III B. Tech II Semester Regular Examinations, April - 2016**  
**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. Answering the question in **Part-A** is compulsory  
 3. Answer any **THREE** Questions from **Part-B**  
 \*\*\*\*\*

**PART –A**

- 1 a) What is Creep? What are its causes? [3M]  
 b) Write about the engineering surveys to be performed for railway line construction. [4M]  
 c) Differentiate between - Stock rail and Tongue rail. [4M]  
 d) What are the various characteristics of a good aircraft? [3M]  
 e) Enlist the uses of different types of Airport Pavements. [4M]  
 f) Enumerate the requirements of good port. [4M]

**PART -B**

- 2 a) Name the different modes of transportation. Enumerate the advantages and disadvantages of (i) Road and (ii) Rail transportation. [8M]  
 b) What is meant by wear of Rails? Enumerate the various types of Rail wear and enlist the methods by which it can be measured. [8M]
- 3 a) Explain, with neat sketches, the various considerations for providing extra clearances on Horizontal curves. [8M]  
 b) A curve of 500 m radius on a BG section has a limited transition of 50 m. Calculate the maximum permissible speed and super elevation for the same. The maximum sectional speed is 90 kmph. [8M]
- 4 a) Differentiate between Mechanical and Electrical signalling systems. [8M]  
 b) Design a turn out for a BG track if the number of the crossing is 12 and the heel divergence is 124 mm. Assume a simple circular curve from the toe of the switch to the TNC. [8M]
- 5 a) The length of runway under standard conditions is 1620 m. The airport site has an elevation of 270 m. Its reference temperature is 32.90° C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length. [8M]  
 b) Compare the recommendations of FAA and ICAO with reference to airport master planning. [8M]
- 6 a) Discuss the Rigid overlay designs for strengthening airfield pavements. [8M]  
 b) Discuss in brief the various factors to be considered in the design of Airfield pavements. [8M]
- 7 a) Define (i) Harbour, (ii) EIS, (iii) Off shore Moorings and (iv) Turning basin. [8M]  
 b) What are Wharves? Write a note about Open type wharves and Solid type wharves. Draw neat sketches. [8M]

\*\*\*\*\*



Code No: **R32016**

**R10**

**Set No. 1**

**III B.Tech II Semester Supplementary Examinations, November/December - 2016**  
**TRANSPORTATION ENGINEERING-II**

(Civil Engineering)

**Time: 3 hours**

**Max. Marks: 75**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

\*\*\*\*\*

- 1 a) Name the different modes of transportation. Enumerate the advantages and disadvantages of (i) Road and (ii) Rail transportation. [8M]
- b) What is CSI and Adzing. Determine the number of sleepers required for the construction of 1900 mts of BG track, with a sleeper density of  $N + 5$ . [7M]
- 2 a) A curve of 500 mts radius on a BG section has a limited transition of 50 mts. Calculate the maximum permissible speed and super elevation for the same. The maximum sectional speed is 80 kmph. [8M]
- b) Explain, with neat sketches, the various considerations for providing extra clearances on Horizontal curves. [7M]
- 3 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. [8M]
- 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]
- 4 a) Differentiate between – (i) Repeating and Co-acting signals and (ii) Track circuit and Rail circuit. [8M]
- b) What essential purposes are served by Signalling and Interlocking? What do you understand by route relay interlocking? [7M]
- 5 a) Compare the recommendations of FAA and ICAO with reference to airport master planning. [8M]
- b) What is a Wind rose diagram? What are its types? Explain each type. [7M]
- 6 a) Explain in brief the difference between functional and structural evaluation of airfield pavements. [8M]
- b) Explain in detail the various maintenance works that are performed on Flexible airfield pavements [7M]
- 7 a) Write short notes about (i) Transition sheds and (ii) Work houses. [8M]
- b) What is Water transportation? What are the different types and enlist the advantages and disadvantages of water transportation. [7M]
- 8 a) What are Wharves? Write a note about Open type wharves and Solid type wharves. Draw neat sketches. [8M]
- b) What are the various services that are required for the maintenance of shipping terminals? [7M]

-000-

[WWW.MANARESULTS.CO.IN](http://WWW.MANARESULTS.CO.IN)



Code No: RT32015

**R13**

**Set No. 1**

**III B. Tech II Semester Supplementary Examinations, November/December – 2016**

**TRANSPORTATION ENGINEERING – II**  
(Civil Engineering)

**Time: 3 hours**

**Max. Marks: 70**

Question Paper Consists of **Part-A** and **Part-B**  
Answering the question in **Part-A** is Compulsory,  
Three Questions should be answered from **Part-B**  
\*\*\*\*\*

**PART-A**

1. a) List the types of rail joints. [4M]
- b) What are the objectives of providing super elevation on railway tracks. [4M]
- c) List the systems of controlling the movement of train. [3M]
- d) List the various visual aids in airports. [3M]
- e) What are time of concentration and time of flow, with reference to airport drainage? [4M]
- f) How are ports classified into? [4M]

**PART-B**

2. a) Write the functions of sleepers? [8M]
- 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 metres. [8M]
3. a) What is the need for providing transition curves on railways? Explain how the length of transition curve is decided. [8M]
- b) Explain the necessity of widening of gauge on curves. [8M]
4. a) Write short notes on Warner signal, Shunting signal, Disc signal and routing signal. [8M]
- b) Explain the working principle of centralized traffic control system and automatic train control system. [8M]
5. a) Write notes on corrections for elevation and temperature for a runway? [8M]
- b) Explain about the factors to be considered for selecting a site for an airport? [8M]
6. a) How is the maintenance and rehabilitation carried out for airfield pavements? [8M]
- b) Write the procedure to evaluate an airfield pavement and steps taken to strengthen it? [8M]
7. a) Differentiate between wharf, jetty and quay? [8M]
- b) List the navigational aids and explain their importance? [8M]

\*\*\*\*\*