Code No: RT32015 **R13** SET - 1

**III B. Tech II Semester Regular/Supplementary Examinations, April - 2018**

# 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 functions of sleepers in a railway track? | [3M] |
| | b) | What are the different gradients used in Railways? Briefly describe. | [4M] |
| | c) | Give a neat diagram of left hand turn out and indicate the components of the same. | [4M] |
| | d) | Explain about the turning radius of an aircraft with the help of a neat diagram. | [4M] |
| | e) | What are the various design factors to be considered in the design of runway pavement? | [4M] |
| | f) | Differentiate between a dry dock and wet dock. | [3M] |

## PART -B

| | | | |
|---|---|---|---|
| 2 | a) | Giving the cross section of a typical permanent way, indicate various components. | [4M] |
| | b) | What is creep of rails? What are the theories related to creep? Explain. | [8M] |
| | c) | What is adzing of sleepers? Why it is needed? | [4M] |
| 3 | a) | Define "Cant Deficiency". What are the permitted cant deficiency values for different gauges? | [4M] |
| | b) | In a layout of a BG yard, a $6^0$ curve branches off from a $3^0$ main curve in opposite direction. If the speed is restricted to 22 Kmph on branch line and permissible value of cant deficiency is 7.61 cm, determine the speed restriction on main line. | [8M] |
| | c) | What are the objects of providing transition curves on railways? | [4M] |
| 4 | a) | What is meant by a crossing? What are the essential requirements of a good crossing? Discuss various types of crossings in use on India Railways with the help of sketches wherever necessary. | [8M] |
| | b) | Give the classification of Signals adopted in Railways. Discuss about semaphore signals. | [8M] |
| 5 | a) | What are the factors to be considered for site selection of an airport? Discuss. | [8M] |
| | b) | The basic length of a runway at sea-level, standard atmospheric conditions and zero gradient is 1600 m. The airport site has an elevation of 950 m and the reference temperature as 27ºC.If the proposed runway grading permits an effective gradient of 0.22 percent, determine the actual runway length required at the site after making all the corrections. | [8M] |

Code No: RT32015 **R13** SET - 1

6 a) Explain the LCN Method of runway pavement design. [8M]
b) What are the typical rigid pavement failures in case of runways? Explain. [8M]

7 a) How are the harbours classified? What is the difference between a Port and a harbour? What are the requirements of a good port? [8M]
b) What is the purpose of breakwaters? Explain different types of breakwater structures with suitable sketches. [8M]

*****

Code No: RT32015 **R13** SET - 2

**III B. Tech II Semester Regular/Supplementary Examinations, April - 2018**

# 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 functions of rails in a railway track? | [3M] |
| | b) | Why extra widening is needed on a horizontal curve of a railway track? | [3M] |
| | c) | Give a neat diagram of a diamond crossing and indicate the components of the same. | [4M] |
| | d) | Explain about the different weights associated with an aircraft. | [4M] |
| | e) | What factors influence the maintenance and evaluation of airfield pavements? | [4M] |
| | f) | Explain about mound type breakwaters by giving a sketch. | [4M] |

## PART -B

| | | | |
|---|---|---|---|
| 2 | a) | What are the requirements of a good permanent way? | [8M] |
| | b) | List the functions of sleepers in a railway track? What do you understand by Adzing of sleepers and sleeper density? | [8M] |
| 3 | a) | In a layout of a BG yard, a $8^0$ curve branches off from a $4^0$ main curve in opposite direction. If the speed is restricted to 22 Kmph on branch line and permissible value of cant deficiency is 7.61 cm, determine the speed restriction on main line. | [8M] |
| | b) | What are the different gradients adopted in railway track alignment? | [4M] |
| | c) | Explain about Negative cant, Equilibrium cant and cant deficiency. | [4M] |
| 4 | a) | What are the different types of special signals used in the railway stations and yards? Explain. | [8M] |
| | b) | With the help of a neat sketch, explain the working principle of Absolute Block system for controlling the train movements. | [8M] |
| 5 | a) | What are the different corrections to be applied for basic runway length for calculating the final runway length? | [8M] |
| | b) | The basic length of a runway at sea-level, standard atmospheric conditions and zero gradient is 1800 m. The airport site has an elevation of 900 m and the reference temperature as 22ºC.If the proposed runway grading permits an effective gradient of 0.20 percent, determine the actual runway length required at the site after making all the corrections. | [8M] |
| 6 | a) | What are the methods available for the design of rigid pavements for runways? Explain the Westergaard's method of rigid pavement design. | [8M] |
| | b) | What are the typical flexible pavement failures in case of runways? Explain. | [8M] |
| 7 | a) | What is a "Harbour"? What are the types of harbours available? Explain with the help of neat sketches. | [8M] |
| | b) | Giving neat sketches, describe the purpose for which Quays, Wharves and Jetties are to be provided in ports. | [8M] |

*****

Code No: RT32015 **R13** SET - 3

**III B. Tech II Semester Regular/Supplementary Examinations, April - 2018**

# 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) | Giving a typical cross section of a permanent way, indicate various components. | [4M] |
| | b) | What is the Degree of a curve? How it is related to radius of the curve? | [3M] |
| | c) | How railway signals are classified based on their location? Describe with the help of a line sketch. | [4M] |
| | d) | What are the functions and activities related to Terminal area? | [3M] |
| | e) | What is LCN method of runway Pavement Design? | [4M] |
| | f) | What is the difference between Quays and Wharves? Explain with the help of neat diagrams. | [4M] |

## PART -B

| | | | |
|---|---|---|---|
| 2 | a) | If a permanent way is to effectively serve its purpose, what are the requirements? | [8M] |
| | b) | Defining "Creep", explain the theories related to the Creep in a railway track. | [8M] |
| 3 | a) | In a layout of a BG yard, a $5^0$ curve branches off from a $3^0$ main curve in opposite direction. If the speed is restricted to 22 Kmph on branch line and permissible value of cant deficiency is 7.61 cm, determine the speed restriction on main line. | [8M] |
| | b) | Explain the terms 'Negative Cant' and 'Cant Deficiency'. | [4M] |
| | c) | What should be the equilibrium cant on a M.G. track curve for an average speed of 60 kmph. Also find out the permissible speed allowing the maximum cant deficiency. | [4M] |
| 4 | a) | Explain the working principle of a Semaphore Stop Signal by giving a neat sketch. Also give the specifications associated with semaphore signal. | [8M] |
| | b) | What are the various methods available for controlling the movement of trains on a railway track? Explain the working principle of Absolute Block System. | [8M] |
| 5 | a) | What is Wind Rose diagram? How it is used for finalizing the runway orientation at a given location? | [8M] |
| | b) | Give a typical Layout of an airport indicating the Terminal Area and the other air side facilities. What are the various types of Terminal layouts possible for an Airport with reference to the gate positions? | [8M] |
| 6 | a) | What are the possible failures of flexible pavements in case of runways and what can be the reasons for such failures? | [8M] |
| | b) | With the help of diagrams, show different kinds of subsurface drainage methods adopted in airports, especially for runway drainage. | [8M] |
| 7 | a) | Based on what factors Harbors are classified? How are they classified? Explain with the help of neat diagrams wherever needed. | [8M] |
| | b) | Why Breakwaters are needed in a harbor ? What are the various types of breakwaters? | [8M] |

*****

Code No: RT32015 **R13** SET - 4

**III B. Tech II Semester Regular/Supplementary Examinations, April - 2018**

# 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) | Write about Adzing of sleepers and sleeper density. | [4M] |
| | b) | Discuss about various gradients adopted in vertical alignment of a railway track. | [4M] |
| | c) | What are the special signals used in station yards? Describe. | [4M] |
| | d) | What are the specifications for Taxiway Lighting? | [3M] |
| | e) | Discuss about the importance of runway drainage. | [3M] |
| | f) | What are the requirements needed at a Port? | [4M] |

## PART -B

| | | | |
|---|---|---|---|
| 2 | a) | What are the functions of sleepers in a permanent way? What are the requirements to satisfy these functions? | [8M] |
| | b) | Discuss about different types of Rail Joints. | [8M] |
| 3 | a) | In a layout of a BG yard, a $8^0$ curve branches off from a $3^0$ main curve in opposite direction. If the speed is restricted to 25 Kmph on branch line and permissible value of cant deficiency is 7.61 cm, determine the speed restriction on main line. | [8M] |
| | b) | What are the different methods available for computing safe speed on a curve in a railway track? | [4M] |
| | c) | What are the objectives of Transition curves? How can we compute the length of the transition curve? | [4M] |
| 4 | a) | Give a neat diagram of a left hand turn out and indicate various components. Write a brief note about various elements. | [8M] |
| | b) | What are the various methods available for controlling the movement of trains on a railway track? Explain the working principle of Absolute Block System. | [8M] |
| 5 | a) | What are the different characteristics of an aircraft that have an influence on planning and design of airport facilities? | [8M] |
| | b) | What are the conditions assumed for computing the basic runway length? What are the corrections to be applied to arrive at the final length of a runway? | [8M] |
| 6 | a) | What are the possible failures of rigid pavements in case of runways and what can be the reasons for such failures? | [8M] |
| | b) | With the help of diagrams, show different kinds of subsurface drainage methods adopted in airports, especially for runway drainage. | [8M] |
| 7 | a) | What are the theories associated with formation of waves and tides? What protective works are needed in a harbour for safety against tides? | [8M] |
| | b) | With the help of neat diagrams explain the use and purpose of Jetties, Quays and Wharves in a commercial port. | [8M] |

*****