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

III B. Tech I Semester Regular/Supplementary Examinations, October/November - 2019

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 the role of various components of permanent way. [2M]
   b) Explain the term Pusher gradient. [2M]
   c) What is the use of stretcher bar in turnout? [2M]
   d) The maximum temperature in the hottest month is 43 ^{0}C and the average daily temperature is 33 ^{0}C. Compute temperature correction for an airport at an altitude of 500m above MSL. [3M]
   e) Discuss about frost heaving effect on pavements. [3M]
   f) What are the requirements of a good harbor? [2M]

PART –B (56 Marks)

2. a) What are the requirements of ideal gauge? Explain. [7M]
   b) What is creep? Explain creep using percussion theory. [7M]

3. a) How do you define super elevation? What are the objects of providing super elevation on curves of a railway track? [7M]
   b) Compute the shift and offsets for every 10m of a transition curve of length 100m ling joining the ends of a 5^0 curve and set out the curve. If the maximum cant permitted on this curve, with cant deficiency of 5cm, is 12.7cm and also compute cant on the curve. [7M]

4. a) Draw a typical left hand turnout and show various components. [7M]
   b) What are various objects of signals and explain the principles to be followed in the design of signals. [7M]

5. a) What are the factors controlling taxiway alignment? Explain. [7M]
   b) Explain briefly about the en-route aids to be used for controlling the traffic of aircrafts. [7M]

6. a) Explain LCN system of designing flexible pavements. [7M]
   b) What are various components involved in airport pavement evaluation? Explain. [7M]

7. a) Classify various types of breakwaters. Under what conditions rubble mound break water is preferred? [7M]
   b) What are the factors to be considered for the selection of harbor site? Explain. [7M]

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

III B. Tech I Semester Regular/Supplementary Examinations, October/November - 2019

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) Find the minimum number of sleepers required for a B.G having a length of 20kms. [2M]
   b) What are the various gradients used in railways? [2M]
   c) Explain facing direction and trailing direction in turnouts. [2M]
   d) What is cross wind component and discuss briefly about permissible limits as per ICAO? [3M]
   e) Discuss about Longitudinal cracking effect on pavements. [3M]
   f) What is the role of jetties? [2M]

PART –B (56 Marks)

2. a) What are the advantages of cast iron sleepers and concrete sleepers? Explain. [7M]
   b) What are the different types of joints used in rails? Explain. [7M]

3. a) Compute the maximum permissible speed on a curve of high speed B.G. track having i) degree of curve = 1.2^0 ii) amount of super elevation = 75cm, iii) length of transition curve = 150m iv) Maximum speed on the section likely to be sanctioned as 160kmph. [7M]
   b) What is the necessity of geometric design of railway track? Enumerate the significant features of design of railway track. [7M]

4. a) What is the classification and types of signals used in railways? Explain. [7M]
   b) Explain the functions and necessity of interlocking. [7M]

5. a) Explain how basic runway length is determined based on performance of jet and conventional engine aircrafts? [7M]
   b) Discuss about geometric standards of Taxiway. [7M]

6. a) What are the factors that cause failure of flexible pavements of airports? Explain. [7M]
   b) What are the functions of sub surface drainage system? Explain. [7M]

7. a) Explain briefly about quay, pier, mole, Trestle and fenders. [7M]
   b) What are various types of dredgers used in harbors? Explain briefly. [7M]

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

III B. Tech I Semester Regular/Supplementary Examinations, October/November - 2019

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 different materials used in ballast? [2M]
   b) What should be the actual ruling gradient if the ruling gradient is 1 in 200 along with a curve of 4^0 with B.G section? [2M]
   c) Explain the term Heel divergence. [2M]
   d) What is the influence of noise of aircraft on airport site selection? [3M]
   e) Distinguish between alligator cracking and shear failure of pavements. [3M]
   f) Explain wave diffraction. [2M]

PART –B (56 Marks)

2. a) What are the requirements of fish plates? Explain. [7M]
   b) Explain the requirements of ideal joint. [7M]

3 a) Compute the shift and offsets for every 15m of a transition curve of length 120m ling joining the ends of a 4.5^0 curve and set out the curve. If the maximum cant permitted on this curve, with cant deficiency of 5cm, is 12.7cm and also compute cant on the curve. [7M]
   b) Explain the terms pusher gradient, cant deficiency and weighted average speeds. [7M]

4. a) Explain briefly about Detector mechanism, Tappet Locking and slotting of signals. [7M]
   b) Draw a sketch of right hand turnout and show various components. [7M]

5. a) What are the assumptions to be made for finalizing basic run way length and also discuss about engine failure effect on the runway length? [7M]
   b) What are the various aircraft characters are to be considered in airport layout? Explain. [7M]

6. a) Discuss about the estimation run off in airport surface drainage system. [7M]
   b) Explain LCN system of designing airport pavements. [7M]

7. a) Differentiate between jetty and wharf. State the condition which you will prefer their construction. [7M]
   b) Discuss about various navigational aids required in harbors. [7M]

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

III B. Tech I Semester Regular/Supplementary Examinations, October/November - 2019

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 do you understand by adzing of sleepers? [2M]
   b) If the ruling gradient is 1 in 140 on a particular cross section of Broad gauge and at the same time a curve of 5^0 is situated on this ruling gradient, what should be the allowable gradient? [2M]
   c) What is the role of struts in turnouts? [2M]
   d) What are the data required for finalizing runway orientation? [3M]
   e) What are the aircraft wheels loads to be considered in the design of flexible pavements? [3M]
   f) What are different types of break waters? [2M]

PART –B (56 Marks)

2. a) What are the various causes of creep? Explain the suitable remedial measures for rectifying the same. [7M]
   b) What ate the requirements of ballast? Explain. [7M]

3. a) Explain the necessity of extra widening of gauge. If the wheel base of moving train is 4.2m and the degree of curve 4.5^0 and the flanges project 3cm below the top of rail. Determine the extra width required on the curve. [7M]
   b) Discuss about cant, cant deficiency and cant excess and what are the limits prescribed by Indian railways. [7M]

4. a) Explain briefly about Mechanical interlocking of signals. [7M]
   b) Explain double turnout and Diamond crossing. [7M]

5. a) What are the factors to be considered in the selection of airport site? Explain. [7M]
   b) Explain the factors influencing the selection of exit taxiways. [7M]

6. a) Explain the requirement and characteristics of airport drainage. [7M]
   b) Discuss about the factors influencing the overlay design. [7M]

7. a) What are the requirements of navigational signals and discuss about the navigational signal structures. [7M]
   b) Explain briefly about various types of dredgers used in harbors. [7M]

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