Code No: RT31015 **R13** SET - 1

III B. Tech I Semester Regular/Supplementary Examinations, October/November-2017

TRANSPORTATION ENGINEERING – I

(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**

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PART –A

1	a)	What are the salient features of Jayakar Committee report?	[3M]
	b)	What are the objectives of highway geometric design?	[4M]
	c)	Discuss the scope of traffic engineering?	[4M]
	d)	What are the limitations of group Index Classification?	[3M]
	e)	Explain how climatic variation affects pavement design?	[4M]
	f)	Briefly list the method of construction of gravel road?	[4M]

PART -B

2	a)	Briefly outline the highway development in India also write it's any two practical examples.	[8M]
	b)	What are the objects of reconnaissance in engineering surveys? Discuss the scope of aerial survey for the purpose.	[8M]
3	a)	Derive an expression for finding the stopping sight distance at level and at grades.	[8M]
	b)	Explain curve resistance & compensation in gradient on horizontal curves?	[8M]
4	a)	What the objectives and application are of spot speed studies?	[8M]
	b)	What are the advantages and disadvantages of traffic signal?	[8M]
5	a)	Explain CBR and the test procedure for laboratory test.	[8M]
	b)	Enumerate the steps involved in Marshall Method of design.	[8M]
6	a)	Enumerate the various methods of flexible pavement design.	[8M]
	b)	Estimate the thickness of cement concrete pavement using the method suggested by IRC. Modulus of elasticity of concrete =3 $\times 10^5$ kg/cm^2, Modulus of rupture of concrete =40 kg/cm^2, Poisson's ratio of concrete =0.15, Modulus of sub grade reaction =6kg/cm^2, Wheel load =5100kg, Radius of contact area=15 cm.	[8M]
7	a)	What are the requirements of materials, plants and equipments for CC road construction? Discuss briefly.	[8M]
	b)	Give a descriptive note on Pavement Evaluation Techniques.	[8M]

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Code No: RT31015 **R13** SET - 2

III B. Tech I Semester Regular/Supplementary Examinations, October/November -2017

TRANSPORTATION ENGINEERING – I

(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**

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PART –A

1	a)	Explain the necessity and objectives of highway planning.	[3M]
	b)	Explain the role of pavement surface characteristics in highway geometric design.	[4M]
	c)	Discuss the various traffic studies.	[4M]
	d)	What are the limitations of CBR test?	[3M]
	e)	Discuss the effects of repeated applications of loads on pavement.	[4M]
	f)	Enumerate the steps for the preparation of sub grade.	[4M]

PART -B

2	a)	Explain how the master plan is prepared and the road development program is phased?	[8M]
	b)	Explain obligatory points with sketches; discuss how these control the alignment?	[8M]
3	a)	Derive an expression for calculating the overtaking sight distance on a highway.	[8M]
	b)	Enumerate the various design factors controlling the vertical alignment of highways.	[8M]
4	a)	Explain how the speed and delay studies are carried out. What are the various uses of delay studies?	[8M]
	b)	Draw a neat sketch of a full clover leaf and show the movement of traffic.	[8M]
5	a)	Explain the test procedure of crushing valve test for aggregate.	[8M]
	b)	Enumerate the steps involved in bituminous mix design.	[8M]
6	a)	Explain group index method of pavement design. What are the limitations of the method?	[8M]
	b)	Estimate the thickness of cement concrete pavement using the method suggested by IRC. Modulus of elasticity of concrete =3.5 $\times 10^5$ kg/cm^2, Modulus of rupture of concrete =30 kg/cm^2, Poisson's ratio of concrete =0.17, Modulus of sub grade reaction =5 kg/cm^2, Wheel load =4800 kg, Radius of contact area=13 cm.	[8M]
7	a)	What are the requirements of material, plants & equipments for bituminous pavement construction? Discuss briefly.	[8M]
	b)	Write a descriptive note on maintenance of highways.	[8M]

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Code No: RT31015 **R13** SET - 3

III B. Tech I Semester Regular/Supplementary Examinations, October/November -2017

TRANSPORTATION ENGINEERING – I

(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**

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PART –A

1	a)	What is the highway development plans to be prepared during planning surveys?	[3M]
	b)	Enumerate the factors governing the width of carriage way.	[4M]
	c)	What is the difference between traffic signal and marking?	[4M]
	d)	What are the principles of CBR method?	[3M]
	e)	Explain the concept of ESWL.	[4M]
	f)	List different methods of road construction. Discuss the advantages of each.	[4M]

PART -B

2	a)	Discuss the second twenty year road plan and its salient features.	[8M]
	b)	What are the uses of map study in engineering surveys for highway location?	[8M]
3	a)	Discuss the factors to be considered in deciding the sight distance at intersection?	[8M]
	b)	Explain ruling, maximum and exceptional gradients. Specify the values recommended by IRC?	[8M]
4	a)	Explain the relationship between speed, travel, time, volume, density and capacity.	[8M]
	b)	What are various types of parking facilities designed for traffic needs?	[8M]
5	a)	Explain the test procedure of Los angle abrasion test for aggregate.	[8M]
	b)	Discuss the properties of bitumen.	[8M]
6	a)	Explain the CBR method of pavement design?	[8M]
	b)	Calculate the stress at interior, edge and corner of a CC pavement by westergaard's equation? Modulus of elasticity of concrete =3 $\times 10^5$ kg/cm^2, pavement thickness = 18 cm, Poisson's ratio of concrete =0.15, Modulus of sub grade reaction = 8.5 kg/cm^2, Wheel load = 4800kg, Radius of contact area=16 cm.	[8M]
7	a)	Explain with neat sketches the requirements of joint filler and sealer.	[8M]
	b)	Write a short note on alligator and reflection cracking.	[8M]

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Code No: RT31015 **R13** SET - 4

III B. Tech I Semester Regular/Supplementary Examinations, October/November -2017

TRANSPORTATION ENGINEERING – I

(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**

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PART –A

1	a)	Write a short note on Indian road congress.	[3M]
	b)	Discuss the effects of right of way.	[4M]
	c)	What are the factors affecting the LOS?	[4M]
	d)	What are the principles of penetration test?	[3M]
	e)	Explain MC Load method of pavement design.	[4M]
	f)	Write down the construction steps for WBM road.	[4M]

PART -B

2	a)	What are the policies and goals of the third road development plan 1981-2001?	[8M]
	b)	Explain how the final location and detailed survey of a highway are carried out?	[8M]
3	a)	Derive an expression for finding the extra widening required on horizontal curve.	[8M]
	b)	State the various considerations in deciding the ruling gradient of Highway.	[8M]
4	a)	Explain the various measures that may be taken to prevent accidents.	[8M]
	b)	Explain briefly about separated intersections. Discuss the advantages and limitations.	[8M]
5	a)	Explain the test procedure of shape test for aggregates.	[8M]
	b)	Write down the principles of various tests carried out on bitumen. Explain any two methods.	[8M]
6	a)	Discuss the applications of burmister's two layer theory in pavement design.	[8M]
	b)	Calculate the stress at interior, edge and corner of a CC pavement by Westergaard's equation? Modulus of elasticity of concrete = 4×10^5 kg/cm^2, pavement thickness =20 cm, Poisson's ratio of concrete =0.13, Modulus of sub grade reaction = 6 kg/cm^2, Wheel load =5200kg, Radius of contact area=17 cm.	[8M]
7	a)	Explain with neat sketches about the expansion and contractions joints.	[8M]
	b)	Write a short note on maintenance management system.	[8M]

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