Code No: R1622016 **R16** SET - 1

II B. Tech II Semester Regular/Supplementary Examinations, April/May - 2019
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. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) Explain briefly the recommendations of Jayakar Committee.
   b) What is the meaning of highway geometric design?
   c) Write short note on manual counts in traffic volume study.
   d) Evaluate grain size analysis on highway materials.
   e) Write short notes on contact pressure.
   f) What are the reasons to raise grade line?

PART -B

2. a) Write about various road patterns?
   b) Compare Nagpur & Bombay Road development plans? What are the differences between good and improper alignment?

3. a) Derive an expression for finding the stopping sight distance at level and at grades.
   b) Explain curve resistance & compensation in gradient on horizontal curves?

4. a) Write a note on the common methods of on-street parking?
   b) What are the functions of traffic signs?

5. a) Explain CBR and the test procedure for laboratory test.
   b) Enumerate the steps involved in Marshall Method of design.

6. a) What are the variations in temperature that generally effect the pavement?
   b) Discuss the Westergaard's concept of temperature stresses.

7. a) What are requirements of filler and sealer materials for using them in the construction of cc pavements?
   b) On what factors does the selection of the base and surface course of the pavement depend upon?
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Code No: R1622016 **R16** SET - 2

II B. Tech II Semester Regular/Supplementary Examinations, April/May - 2019
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. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) What are the objectives of highway planning?
   b) Write a short note on Carriageway width?
   c) Differentiate between Parking Index and parking turnover.
   d) Explain briefly on Unified Soil classification system.
   e) Discuss about maximum wheel load.
   f) Explain mud pumping in rigid pavements.

PART -B

2. a) Explain about the four most important recommendations made by the Jayakar committee.
   b) What are the objects of reconnaissance in engineering surveys? Discuss the scope of aerial survey for the purpose.

3. a) Discuss the design factors of horizontal alignment.
   b) Calculate the safe stopping distance for design speed of 50kmph for two-way traffic on a two lane road. Assume coefficient of friction as 0.35 and reaction time of driver as 2.5seconds.
   c) The design speed of highway is 90kmph and radius R=200m. Check for safety.

4. a) What are desire lines? Explain Road side interview method of organizing OD studies.
   b) Distinguish between collision and condition diagrams? Explain different measures to be adopted for the reduction of accidents.

5. a) What are the prescribed limits of flakiness index for the road aggregates given by IRC?
   b) During aggregate crushing test on road aggregates, the weight of crushed aggregates retained on 2.36mm sieve is 400g. The original weight of aggregates is 500g.
   Determine the aggregate crushing value? During Los Angeles abrasion test on similar aggregates, the weight of powdered aggregates passing 1.70mm sieve is 1000g. The original weight of aggregates is 5kg. Determine the abrasion value?
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Code No: R1622016 **R16** SET - 2

6. a) Explain various factors influencing pavement design.
   b) What is the radius of relative stiffness for a 20cm thick slab with E = 3x 10^5 kg/cm^2 and Poisson's ratio = 0.15, resting on a subgrade having modulus of $5kg/cm^3$?

7. a) Briefly list the method of construction of gravel road.
   b) Write short notes on seal coat.
   c) Write a descriptive note on pavement evaluation.

Code No: R1622016 **R16** SET - 3

II B. Tech II Semester Regular/Supplementary Examinations, April/May - 2019
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. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) Explain briefly main features of Indian Road Congress.
   b) What are the disadvantages of steep camber?
   c) Enumerate AADT.
   d) Determine the Group index for the following data. Liquid limit of soil = 48%, Plastic Limit = 35%, soil passing through the 0.075mm sieve 52%
   e) What are the critical load stresses as per Westergaurd on a rigid pavement.
   f) How the excavation is done in highway construction?

PART -B

2. a) Briefly outline the highway development in India also write it's any two practical examples.
   b) Write a note on the road patterns.

3. a) What are the steps involved to design super elevation?
   b) What is i) Kerb ii) Road Margin iii) Width of roadway iv) Right of way

4. a) Explain spot speed, running sped, space mean speed, time mean speed and average speed. How is spot speed studies carried out?
   b) Explain various types of road markings.

5. a) List about tests in bitumen. Write about any two tests.
   b) Write about desirable properties aggregate.

6. a) How do you determine the flakiness index of road aggregates?
   b) Compute the stresses due to wheel loads for the following data.
   Pavement thickness =20cm, Wheel load = 4100kg, Radius of contact area = 18cm,
   Modulus of elasticity of concrete = 3 x 105 kg/cm2
   Modulus of subgrade reaction = 5.4 kg/cm3, Poisson's Ratio = 0.15.

7. a) Discuss the various failures of flexible pavement.
   b) Write about various processes of pavement evaluation.
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Code No: R1622016 **R16** SET - 4

II B. Tech II Semester Regular/Supplementary Examinations, April/May - 2019
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. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) List the classification of roads.
   b) Discuss road margin with neat sketches.
   c) How is the presentation of traffic volume data done?
   d) Write the formula of Group Index and explain the various terms in it
   e) What are the properties to be tested on aggregates for finding their suitability in road construction?
   f) What is Overlay? Discuss about various types of Overlays.

PART -B

2. a) Bring out the salient features of Nagpur Road Plan. Explain the functional classification of highways as per Nagpur Plan.
   b) What is master Plan? Explain the importance of master plan in highway planning?

3. a) Write a short note on overturning effect. Explain briefly the calculation of length of the transition curve.
   b) Derive an expression of summit curve for SSD.

4. a) What are the advantages and disadvantages of traffic signal?
   b) Discuss the relation between parameters of Traffic-Volume, Speed and Density.

5. a) Write about Aggregate Impact Test.
   b) Write about Marshall Mix Design.

6. Estimate the thickness of cement concrete pavement using the method suggested by IRC. Modulus of elasticity of concrete =3 ×105 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.

7. a) Write the construction process of bitumen pavement.
   b) Discuss about various failures of rigid pavements
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