Aldel Education Trust's
**St. John College of Engineering & Management, Palghar**
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**NAAC Accredited with Grade 'A' (2017-2022)**
**Department of Civil Engineering**

# Sample Question Paper for Transportation Engineering - I (TRE-1)

**Q1. Solve all questions mandatory** **02 marks each**

Q1. a Which of the following requirement is given most importance in highway design?

I. Structural
II. Functional
III. Seasonal
IV. Maintenance

Q1.b Rough and uneven roads increase _____

I. Vehicle cost
II. Petrol cost
III. Accident cost
IV. Vehicle operation cost

Q1. c The drainage layer is _____

I. Surface course
II. Sub base
III. Base
IV. Sub grade

Q1. d The most superior material is used in _____

I. base
II. sub base
III. surface
IV. soil

Q1. e What is the most common test used in evaluating soil strength?

I. CBR
II. DCP
III. Triaxial
IV. Plate bearing test

Q1. f If one or more wheels act as a single load then it is called as _____

I. EASEL

II. EQWL
III. EQML
IV. EQVL

Q1. g The contact pressure is given by _____

I. Pa
II. a/P
III. P/A
IV. PA

Q1. h What is the standard wheel load in Ewl factor?

I. 4080 kg
II. 9160 kg
III. 8170 kg
IV. 5100 kg

Q1. i What are the major stresses in CC pavement?

I. Wheel load stress
II. Warping stress
III. Wheel load and warping stress
IV. Frictional stress

Q1. j The stiffness of slab mainly depends on _____

I. Radius of wheel
II. Radius of rotary
III. Radius of relative pavement
IV. Radius of relative pavement

Q1. k If any load is placed at interior away from all edges then it is called _____

I. Edge loading
II. Far edge loading
III. Interior loading
IV. Exterior loading

Q1. l The basic objective of traffic engineering is to achieve _____

I. Efficient, free and rapid flow of traffic with least priority given to accidents
II. Efficient, free and rapid flow of traffic with fewer accidents
III. Efficient and rapid flow of traffic
IV. Rapid flow of traffic

Q1. m The dowel should transfer _____

I. 40% of safe load
II. 40% of design load
III. 45% of safe load
IV. 45% of design load

Q1. n The "3-Es" of traffic engineering stand for?

I. Enforcement, empowerment and eradication
II. Engineering, education and expulsion
III. Engineering, education and enforcement
IV. Engineering, education and enthusiasm

Q1. o The traffic signals that are installed for pedestrians are called _____

I. Traffic control signals
II. Pedestrian signals
III. Special traffic signals
IV. Automatic signals

Q1. p The precautions should be mostly taken for drainage in _____

I. Dry areas
II. Semi dry areas
III. Water logged areas
IV. Desert areas

Q1. q The road roughness is measured by _____

I. Bump integrator
II. Laser profile
III. Both bump integrator and laser
IV. Overlay vehicle

Q1. r If any load is placed at interior away from all edges then it is called _____

I. Edge loading
II. Far edge loading

III. Interior loading

IV. Exterior loading

Q1. s The design of horizontal and vertical alignments, super elevation, gradient is worst affected by _____

I. Length of vehicle

II. Width of vehicle

III. Speed of vehicle

IV. Height of vehicle

Q1. t As per the Nagpur plan, the un-surfaced roads were meant for _____

I. National highway

II. State highway

III. Major district road

IV. Other district road and village road

**Q2 Solve any two** **10 marks each**

Q2.a What are the significant recommendations of Jayakar committee report? Explain how it is implemented in the road development of a country. Name some the ongoing project around your vicinity in brief.

Q2.b On a national highway, Two cars A and B travelling with same design speed decides to overtake other car C. Car driver A accelerates the car at 0.99m/sec$^2$ and car B accelerates the car at 0.77m/sec$^2$. Compute the overtaking distance of both the cars when they try to overtake the Car C. Also compute the time taken by Car A and car B to overtake the car C.

Q2.c a) Design Super elevation at a horizontal curve of radius 300m for speed of 65kmph. Assume suitable data and justify your answer.

b) Calculate extra width of pavement required on a horizontal curve of radius 700m on a two lane highway, Design speed being 80kmph. Assume l=6m

**Q3 Solve any four** **05 marks each**

Q3.a What are the advantages of geo-synthetics in highway construction

Q3.b Explain the stage wise construction of Bituminous Macadam.

Q3.c Define and State the situation under which following gradients are provided
i.) Ruling gradient
ii.) Limiting gradient
iii.) Exceptional gradient
iv.) Minimum gradient

Q3.d Draw the traffic signs for: i) Stop ii) Steep slope ahead iii) Pune 120 km
iv) Overtaking prohibited v) Give way

Q3.e Discuss on various rigid pavement failures