B. Tech.

(SEM. VI) EXAMINATION, 2006-07

TRANSPORTATION ENGINEERING - II

Time : 3 Hours] [Total Marks : 100

Note : Attempt all questions.

1. Attempt any four parts of the following : 5×4=20
   a) Discuss the various position of wear on rails and suggest suitable measures to reduce the wear of rail.
   b) Write down the various theories of creep. Explain wave action theory.
   c) Discuss the factor on which sleeper density depends and how the sleeper density is expressed?
   d) What are the different types of fish plates in use? Write down the essential requirements of fish plates?
   e) What material as ballast you would suggest for high speed track and why?
   f) How would you improve the sub-grade with special reference to black cotton soil.
   g) Calculate the elements of a turnout when it is given G=1.67 m N=12, d=13.3cm and angle of switch as 1°8'0".
2 Attempt any **four** parts of the following : \[5\times4=20\]
   a) How do you define the super-elevation? What are the objects of providing super-elevation on curves of a railway track.
   b) What is meant by crossing? What are the essential requirements of a good crossing?
   c) What do you understand by “Negative Super elevation”? Explain.
   d) What should be the equilibrium cant on a MG curve of four degrees for an average speed of 66 kmph? Also find out the maximum permissible speed after allowing the maximum cant deficiency.
   e) What are the basic requirements of good alignment? Discuss in detail.

3 Attempt any **two** parts of the following : \[10\times2=20\]
   a) What are the functions of a railway station? Discuss the various requirement of a railway station.
   b) How signals are classified? Explain with neat sketches the working of the semaphore signals.
   c) What is the necessity of relaying a track? Describe the standard method of relaying the track in India. Also discuss the various considerations.

4 Attempt any **two** parts of the following : \[10\times2=20\]
   a) What do you understand by the term basic runway length? Explain the procedure of determining the actual runway length required at particular site.
b) Explain the various factors which affect the location of exit taxiway. What do you understand by optimum location of exit taxiway?

c) Draw a neat sketch to show how lighting is done on a runway. Adopt narrow gauge pattern of lighting. What are the advantages of this pattern?

5 Attempt any two parts of the following: 10×2=20

a) What is the role of following processes in harbour layout and suggest remedies (i) wind waves (ii) tidal currents (iii) Littoral drift (iv) Siltation and Erosion.

b) What is the purpose of navigation aids? What are the various types of aids used on shore at sea.

c) What are the artificial blocks used as armours? Explain:
   i) Tetrapod
   ii) Tribar
   iii) Dolos
   Also write a short note on vertical breakwater.