53 (CE 603) TPEN-II

2018

TRANSPORTATION ENGG-II

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer ***all*** *questions.*

1. *(a)* What are the requirements of rails ? 5

   (b) Explain permanent way with a neat sketch. 5

   (c) Explain coning of wheel. 5

   (d) Explain different type of rail joints. 5

2. *(a)* Explain composite sleeper index. 5

   (b) Derive the expression for minimum depth of ballast. 5

(c) Determine the minimum theoretical length of long welded Rail beyond which the central portion of a 52 *kg* rail would not be subjected to longitudinal movement due to 30°C temperature variation. 5

Use the following data :

RAILS	**SLEEPERS**
Cross sectional -area = 66·15 cm^2	Spacing S = 60 *cm*
$E_s = 2{\cdot}1 \times 10^6\ kg/cm^2$	Average resistance force per sleeper = 300 *kg*
$\alpha = 11{\cdot}5 \times 10^{-6}/°C$	

(d) What are the functions of sleepers ? 5

3. (a) For 3° curve if actual cant is provided for equilibrium speed of 75 *kmph* on a BG track, calculate maximum speed that can be allowed on the track. 5

(b) Give the comparison between different rail sections. 5

(c) Explain different theories related to creep of rails. 5

(d) Explain different types of sleepers. 5

4. *(a)* What are the merits of air transportation over other modes of transportation ? 5

(b) What are the different surveys to be conducted before selecting site for an airport ? 5

(c) Draw the layout of typical airport. 5

(d) Explain the engine failure case in the determination of basic runway length. 5

5. *(a)* The length of runway under standard conditions is 2000*m*. The airport site has an elevation of 300*m*. Its reference temperature is 33°*C*. If the runway is to be constructed with an effective gradient of 0·25%, determine the corrected runway length. 10

(b) Write short notes on : 2×5=10

(i) Taxiway

(ii) Apron

(iii) Terminal Building

(iv) Runway

(v) Hangar.
