

Code: 9A01606

B.Tech III Year II Semester (R09) Supplementary Examinations May/June 2017

**TRANSPORTATION ENGINEERING**

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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- 1 Explain with the help of neat sketches the significance of obligatory points in finalizing the alignment of a highway.
- 2 (a) What is camber? Why camber is to be provided for a road surface? Explain. Also give the design guidelines for camber to be provided for different types of pavement.  
(b) What factors influence the geometric design of a highway? Explain.
- 3 (a) Define spot speed. Explain the importance of spot speed and the method of conducting spot speed surveys.  
(b) With the help of neat diagrams explain the use of histogram and the cumulative speed distribution for explaining spot speed data.
- 4 At a right angled intersection of two roads, Road A has four lanes with a total width of 12.0 m and Road B has two lanes with a total width of 6.6 m. The volume of traffic approaching the intersection during design hour is 900 and 743 PCU/hours on the two approaches of Road A and 278 and 180 PCU/hour on the two approaches of Road B. Design the signal timing as per IRC guidelines.
- 5 (a) Draw a neat sketch of diamond interchange and show the movement of traffic.  
(b) Explain various limitations of rotary.
- 6 (a) Explain the design procedure of tie bars in a CC pavement.  
(b) A CC pavement has a thickness of 18 cm and has two lanes of 7.2 m width with a longitudinal joint at the centre. Design the dimensions and spacing of the tie bars using the following data:  
Allowable working stress in tension =  $1400 \text{ kg/cm}^2$   
Unit weight of concrete =  $2400 \text{ kg/m}^3$   
Coefficient of friction = 1.5  
Allowable bond stress in deformed bars in concrete =  $24.6 \text{ kg/cm}^2$ .
- 7 (a) Discuss about various components of aircraft weight.  
(b) Discuss about the baggage processing facilities required in an airport terminal.
- 8 The length of a runway under standard conditions is 1640 m. The airport site has an elevation of 280 m and its reference temperature is  $33.5^\circ\text{C}$ . If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length.

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