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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(CE) (2011 Onwards) (Sem.-5)
TRANSPORTATION ENGINEERING-I
Subject Code : BTCE-504
Paper ID : [A2081]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A**1. Write briefly :**

- a) *'Even though tar is not that suitable as compared to asphalt, yet it can be used for some specific purposes'*. Explain.
- b) *'Transportation engineering is an interdisciplinary branch of engineering'*. Comment.
- c) If for some reason the required minimum OSD cannot be provided on a highway for the design speed what precautions should be taken alternatively to minimize accident hazard?
- d) Give any two reasons why widening of pavements is necessary at horizontal curves.
- e) What are the two ill effects of increase in traffic?
- f) *'Often it is said that threat to pavement is water and only due to water'*. Comment.
- g) Give any two noise abatement measures.
- h) Draw star and grid pattern of road.
- i) Define emulsion and cutback.
- j) What are three E's in relation with accident studies?

SECTION-B

2. What are the various objectives of preliminary survey for highway alignment? Enumerate the details to be collected.
3. A valley curve is formed by a descending gradient of 1 in 25 meeting an ascending gradient of 1 in 30. Design the length of valley curve to fulfill both comfort condition and head light sight distance requirement for a design speed of 80 kmph.
4. Derive an expression for calculating OSD on highway. What do you understand by Overtaking zones? What are IRC standards for the same?
5. Explain how the surface water is collected and disposed off in urban and rural roads.
6. Explain how speed and delay studies are carried out. What are the various uses of speed and delay studies?

SECTION-C

7. a) List the tangible and intangible benefits that derive from the construction of highways. (5)
- b) Explain camber. What are the objects of camber? Discuss the factors on which the amount of camber depends. Specify the recommended ranges of camber for different types of pavement surfaces. (5)
8. a) Indicate how traffic volume data are presented and the results used in traffic engineering. (3)
- b) Write short notes on thirtieth highest hourly volume, spot speed and running speed. (3)
- c) List the common types of pavement markings. What is the significance attached to
 - i) a single broken line
 - ii) a single solid broken line, and
 - iii) a combination of broken and a solid line? (4)
9. Write short notes on :
 - a) Various types of failures in flexible pavements
 - b) Pollution mitigation measures
 - c) Construction steps for CC roads.
 - d) Construction in water logged areas (2.5× 4=10)