Re-test EXAMINATION, 2019
Semester: 5th
Subject code: CT505
Subject: Transportation Engineering
Full Marks: 70
Duration: 3 hours

Instructions:
1.Questions on Part A are compulsory
2. Answer any three questions from Part B

PART-A
MARKS-25

1. Fill in the blanks: 1x10=10

a) Nagpur Road Congress was held in the year _____.
b) PIEV theory is used to analyse _____ time of driver.
c) Extra widening is the combination of _____ and _____ widening.
d) Transition curve is provided between the straight and _____ part of the horizontal curve.
e) The maximum gradient of a curve is called _____ gradient.
f) The maximum gauge distance for a B.G track is _____.
g) Aggregate impact test is used to calculate _____ property of aggregate.
h) Los Angeles test is used to calculate _____ value of aggregate.
i) The standard penetration value of CBR test is _____.
j) The ruling gradient required for plain or rolling terrain is _____ .

2. Write true or false: 1x10=10

a) Waterway is the most flexible type of transportation.
b) The drainage layer is subbase layer.
c) The penetration test is used to classify bitumen into different grades.
d) Flash and fire point test is conducted in aggregates.

e) Stopping sight distance is greater than Over taking sight distance.
f) The ratio of centrifugal force to weight of vehicle is called centrifugal ratio.
g) Spiral curve is the recommended transition curve by IRC.
h) Summit and valley curves are different types of vertical curve
i) Points and crossings are the components of highway.
j) Third twenty year road development plan was from 1981-2001.

3. Choose the correct answer : 1x5=5

a) If the super elevation of the highway provided is zero, then the design speed of highway having a curve of 200m and coefficient of friction 0.10 is
i) 40 km/h ii) 45 km/h
iii) 50 km/h iv) 55 km/h

b) Raising of outer edge of a road with respect to inner edge, is known
i) Superelevation ii) Cant
ii) Banking iv) All the above

c) The method of design of flexible pavement as recommended by IRC is
i) Group index method ii) CBR method
iii) Westergaard method iv) Impact test method

d) The minimum value of camber provided for thin bituminous surface hill roads, is
i) 2.0% ii) 2.5%
iii) 3.0% iv) 3.5%

e) Los Angels test is used to find out
i) Abrasion value ii) Impact test value
ii) Crushing strength iv) Attrition test value

PART-B
MARK- 45

(Answer any three questions)

4.a) What is PIEV theory? State and explain in brief different components of PIEV theory. 5
b) Explain the special consideration for highway alignment in hilly areas. 10

5.a) What is sight distance? Explain briefly the overtaking sight distance. 5
b) What is superelevation of road? Determine the expression for superelevation and radius of curve. 10

6. Explain briefly the highway development in India. Write the recommendation of Jayakar committee report for highway development. 5+10=15

7. The speed of an overtaking and overtaken vehicle are 70 and 40 km/h, respectively on a two way traffic road. If the acceleration of the overtaking vehicle is 0.99 m/sec2, 10+5=15
a) Calculate the minimum and desirable length of overtaking zone.
b) Draw the neat sketch of the overtaking zones and show the position of the sign post.

****