

Mid-West University
Examinations Management Office
Semester End Examinations 2081

Bachelor level/ B.E. Civil/ 5th Semester

Time: 3 hours

Subject: Transportation Engineering (CE455/CE318)

Full Marks: 50

Pass Marks: 25

- *Attempt all the questions*
- *Figures in the margin indicate full marks.*
- *Assume suitable values, with a stipulation, if necessary.*
- *Candidates are required to answer the questions in their own words as far as possible.*

1. List the different modes of transportation. Compare between various modes of [1+2+2]
transportation and their constraints in the context of Nepal. Also describe classification of
highways / roads according to NRS2070 and Urban Roads.
2. What are the various requirements of an ideal highway alignment? Explain various factors [2+3]
controlling the highway alignment with neat sketch.
3. Define stopping sight distance. Calculate the minimum sight distance required to avoid the [1+4]
head on collision between the cars approaching from the opposite direction along the single
lane road. Given values of: speed is 50 kmph for both cars; total reaction time is 2.5 sec,
coefficient of longitudinal friction is 0.35; and brake efficiency is 80%. The road under
consideration has a grade of 5%.
4. What are the basic Control and criteria of highway design? Draw typical cross-section of [2+3]
highway: in cutting, in filling and urban street.
5. Derive the equation to determine the length of transition curve on horizontal alignment. [3+2]
Explain the need of transition curve for highway geometry.
6. Design the total length of the valley curve at the junction of the descending gradient of 1 in [5]
40 & an ascending gradient of 1 in 30 if the speed is 100km/hr. So as to fulfil both comfort
condition & head light sight distance for night driving. Locate the lowest point & the end
of the curve point too. Calculate their elevation of the beginning of the curve is 312.56m
above sea level. Assume other necessary data reasonably.
7. Briefly explain various problems in hill road construction and how they are overcome. Also [3+2]
draw Various Typical cross section of Hill Road.
8. Explain the different types of cross drainage structure used in highways of Nepal briefly. [2+3]
Also Explain Step by Step Procedure for Designing of Side Drain.
9. What are the desirable properties of road aggregate? Explain the Impact Test of aggregates [2+3]
in Laboratory.
10. What do you mean by ductility of bitumen? Explain the method of determining the ductility [1+2+2]
of bitumen. Differentiates Bitumen cutback and bitumen emulsion.

The End