

05 V TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2075 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Road Safety (Elective II) (CE76522)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.

1. What is the global and national statistics of road crashes? Briefly explain about the pillar of UN Decade of Road Safety 2011-2020. (3+5)
2. What are the various factors contributing to road crashes? Explain about crash data recording system. (3+5)
3. What are the various criteria for countermeasures selection? Explain about the various counter measures to be adopted on road design. Give specific examples in context of hill roads of Nepal (3+7)
4. What is road Safety Audit (RSA)? Discuss in detail about the various stages of RSA. (2+6)
5. Discuss about Crash Modification factor (CMF). The CMF for single vehicles runoff accidents for 1% increase in grade is 1.04. What is the effect of increasing the grade 2% to 4%. (3+3)
6. Recent study on public transportation shows that Sajha Yatayat driver drives 4800Km during the entire year. The probability of having crashes is 95 per 180million vehicle-Kms. What is the probability of driver having at least one crashes during his driving carrier of 25 years? (8)
7. Vehicles from West and B from South weigh 4 and 5 tonne respectively approaching at right angle collide with each other. After collision vehicle A skids 18m in a direction 65° North of East and Vehicle B skids 8m in a direction of 32° South of East. The initial skid resistance of vehicles A and B are 3.5 and 10m respectively. Calculate the initial speeds of vehicles if skid resistance of pavement is 0.61 (8)
8. A road safety audit team inspects a critical curve along a hill road. They found extra widening of 1.5m and speed limit value on curve as 40kmph. Check whether the geometric features and speed limit is adequate from safety aspect. The curve is assumed to have radius of 20m, super elevation of 6.7% and coefficient of friction as 0.15. Assume length of wheel base as 6.1 m (8)

9. Based on following data, determine all crash and fatalities rate.

(8)

Crashes: 300, Fatal crashes: 10

Fatalities: 15

Area population: 40,000

Registered vehicles: 25,000

Annual VKT: 8,000,000

10. Write short notes on: (Any two)

(2*4=8)

- a. Safe System Approach
- b. Human Vehicle Environment
- c. Crash Estimation
- d. Crash Ranking
