

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2023

B.Tech-V<sup>th</sup> Semester (CE)

COURSE CODE (CREDITS): 18B11CE511

MAX. MARKS: 15

COURSE NAME: Highway Engineering

COURSE INSTRUCTORS: Dr. Amardeep

MAX. TIME: 1 Hour

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**Note:** (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems.

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1. Discuss about the highway development in India. Make a list of different governing bodies (along with their applications) formed for the development of highways in India. CO1 [2]
  2. Discuss about the types of highway in details. Discuss about their functions also. CO2 [2]
  3. What do you mean by the failure of pavement? Discuss in detail about the different types of failure occurred in flexible pavement along with their neat sketches. CO4 [2]
  4. Answer the following: [3]
    - i. NMSA of DBM, SDBC and BC
    - ii. Mixing, laying and rolling temperature for VG 20, 30 and 40 grade of bitumen
    - iii. Make a list of different physical properties required for a coarse aggregate.
  5. The stopping sight distance for a level highway is 140 m for the design speed of 90 km/h. Calculate the perception or reaction time while acceleration due to gravity and deceleration rate are  $9.8 \text{ m/s}^2$  and  $3.5 \text{ m/s}^2$  respectively. CO2 [3]
  6. The speed of overtaking and overtaken vehicles are 70 kmph and 40kmph respectively on a two-way road. If the acceleration of overtaking vehicle is  $0.99 \text{ m/sec}^2$ . CO2 [3]
    - i. Calculate safe overtaking sight distance.
    - ii. Draw a neat sketch of overtaking zone showing the position of a sign post.