

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– V (New) EXAMINATION – WINTER 2019

Subject Code: 2150601

Date: 06/12/2019

Subject Name: Highway Engineering

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

MARKS

- Q.1**
- | | | |
|-----|--|-----------|
| (a) | Define the following | 03 |
| | (1) Overtaking Sight Distance (2) Traffic volume (3) Carriage way | |
| (b) | Give the classification of the rural road. | 04 |
| (c) | Derive an expression for calculating Stopping sight distance on a highway. | 07 |

- Q.2**
- | | | |
|-----|--|-----------|
| (a) | Define camber? What are the objects of camber? | 03 |
| (b) | Explain PIEV Theory. | 04 |
| (c) | Differentiate between Nagpur and Bombay Road development plan. | 07 |

OR

- | | | |
|-----|--|-----------|
| (c) | The speeds of overtaking and overtaken vehicles are 75 and 40 kmph respectively on a two way undivided traffic road. If the acceleration of overtaking vehicle is 0.98 m/sec^2 calculate the safe overtaking sight distance. | 07 |
|-----|--|-----------|

- Q.3**
- | | | |
|-----|--|-----------|
| (a) | Define (1) Flakiness Index (2) Elongation Index (3) Specific Gravity | 03 |
| (b) | Explain ductility test on bitumen. | 04 |
| (c) | Design the rate of super elevation for a horizontal curve for highway. The radius of curve is 550 m and speed is 100 kmph. | 07 |

OR

- Q.3**
- | | | |
|-----|--|-----------|
| (a) | Describe desirable properties of the aggregate used for road construction. | 03 |
| (b) | Distinguish between flexible pavement and rigid pavement. | 04 |
| (c) | Describe Aggregate impact test with figure. | 07 |
- Q.4**
- | | | |
|-----|---|-----------|
| (a) | Explain the construction procedure of WBM road. | 03 |
| (b) | Compare tar and bitumen. | 04 |
| (c) | Describe road arboriculture | 07 |

OR

- Q.4**
- | | | |
|-----|---|-----------|
| (a) | Define (1) Running speed (2) Spot speed (3) Journey speed. | 03 |
| (b) | State the difference between road safety reviews and road safety audit. | 04 |
| (c) | Explain various measures for the reduction in accident rates. | 07 |

- Q.5**
- | | | |
|-----|---|-----------|
| (a) | Enlist types of parking. Describe any one in details. | 03 |
| (b) | Distinguish between Traffic Sign and Traffic Signal. | 04 |
| (c) | Discuss requirements for pavement widening on horizontal curve. | 07 |

OR

- Q.5**
- | | | |
|-----|--|-----------|
| (a) | Write a short note on road user's characteristics. | 03 |
| (b) | State elementary principles of alignment in hilly areas. | 04 |
| (c) | Describe sub surface drainage with figure. | 07 |
