

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (OLD) - EXAMINATION – SUMMER 2017****Subject Code: 150601****Date: 08/05/2017****Subject Name: Highway Engineering****Time: 02:30 PM to 05:00 PM****Total Marks: 70****Instructions:**

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

- Q.1** (a) Explain the following (i) Jayakar committee recommendations (ii) National highway act. **07**
- (b) What are the policies and goals of the third twenty year road development plan for 1981-2001? **07**

- Q.2** (a) Discuss the special considerations while aligning roads in hilly areas. **07**
- (b) Explain briefly the important factors which control the geometric elements of highways. **07**

OR

- (b) Explain PIEV theory. Calculate the head light sight distance and intermediate sight distance required for the road having design speed 70 kmph, coefficient of friction as 0.4 and reaction time of the driver as 2.0 secs. **07**

- Q.3** (a) Explain the function of subgrade. State how the modulus of subgrade reaction, K is determined. **07**
- (b) State the characteristics of good road aggregate. Describe the procedure of aggregate impact index test. **07**

OR

- Q.3** (a) Explain briefly road emulsion and cutback. **07**
- (b) Explain briefly the Marshall method of bituminous mix design. **07**

- Q.4** (a) What are design factors for highway lighting? Discuss any two. **07**
- (b) State the steps adopted for the construction of the WBM road. **07**

OR

- Q.4** (a) What is arboriculture? Explain the method of planting trees on road-side. **07**
- (b) State the methods of subsurface drainage? Explain with neat sketch, subsurface drainage system with transverse drain. **07**

- Q.5** (a) Explain briefly factors which affect human characteristics for a high speed road. **07**
- (b) Discuss briefly the different causes of traffic accidents. **07**

OR

- Q.5** (a) State the need for off-street parking facility. Explain briefly the types of off-street parking. **07**
- (b) State the advantages and disadvantages of grade separated intersections. **07**
