



## Transportation Engineering - II (1090)

P. Pages : 3

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **all five** questions from each unit attempt **any two** bits out of a, b, c.
5. Neat diagrams must be drawn wherever necessary.
6. Figures to the right indicate full marks.
7. Assume suitable data if necessary.

### UNIT - I

1. a) i) Explain superelevation with its advantages, also derive the expression.  $e+f = \frac{V^2}{9R}$  **5**  
ii) Calculate the extra width required for the road curve having two lanes of traffic and radius of curve being 250m, Assume design speed of 60 kmph and take length of wheel base as 6.0m. **5**
- b) i) Write short note on highway financing. **5**  
ii) Describe factors controlling highway alignment. **5**
- c) Enlist various types of Roads, Eroplain briefly the material required and method of construction of a WBM Road. Also write down advantages of disadvantages of WBM road. **10**

### UNIT - II

2. a) What are the objects and uses of traffic volume survey ? Explain different methods for carrying out traffic volume studies. **10**

- b) Stat the desirable properties of road aggregates Name the tests to be conducted to ascertain these properties. Explain the test for determination of toughness of aggregate with neat sketch & its desirable limits. **10**
- c) Write short notes. **10**
- Rigid & flexible pavement.
  - Pavement evaluation.

### UNIT - III

3. a) i) Explain in brief factors governing selection of site for a airport. **5**  
ii) Write short note on runway patterns. **5**
- b) i) Explain in short Airport drainage system. **5**  
ii) Write short note on characteristics of helicopter. **5**
- c) The length of Runway under standard condition is 1800m. The airport site has an elevation of 300m. Its reference temperature is 30°C. If the runway is to be constructed with an effective gradient of 0.25%. Determine the corrected runway length. **10**

### UNIT - IV

4. a) i) Enlist various loads and stresses that are considered in the design of bridge explain any two of them in detail. **5**  
ii) Explain in short the different aspects & aesthetics of bridge design. **5**
- b) The approximate cost of one pier and one superstructure span for a multiple span bridge for various lengths of span are tabulated as follows. **10**

Span in m	cost. of one pier Rs.	Cost. of one superstructure Rs
10	25000	7000
15	28000	13815
20	32500	31000
25	33700	36000
30	34800	41000

Determine the economic span.

- c) i) What are the factors considered while selecting site for a bridge. **5**
- ii) Explain following terms in short. **5**
- a) Pier
  - b) Abutment
  - c) Linear waterway
  - d) Afflux
  - e) Scour depth.

**UNIT - V**

5. a) Enumerate maintenance work for major bridges. **10**
- b) Name the various types of bridges with their classification explain culverts and their types with neat sketches. **10**
- c) What are the different types of foundation used for bridges ? State the circumstances under which each is used. Explain any one type of foundation with neat sketch. **10**

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