

Major Test

CEL 241 (Part-B)

Tuesday 28<sup>th</sup> November, 06

Entry No : \_\_\_\_\_ Name : \_\_\_\_\_ Group No: \_\_\_\_\_

All questions carry equal marks (Total Marks 74+6). Answer should be to the point (in brief). Answer question no 5 and question no 8 on this paper within the vacant spaces given below, each of them.

1. a) What do you mean by consistency test, and which are the experiments we perform for this test? b) How we determine the hardness of aggregate? c) In traffic volume survey why we take the volume of various classes of vehicles?
2. a) In a flexible pavement why many layers are provided ? b) Mention the functions of those layers. c) Will you provide similar layers in a rigid pavement? Justify your answer. d) Why drainage is required in urban streets and regional highways? Are they same or different explain.
3. a) When bitumen behaves i) almost as an elastic (brittle) solid. ii) almost as a viscous fluid. iii) within the visco-elastic range.  
b) While measuring the stress-strain relationship of bitumen what loading form is used and why?  
c) What do you mean by emulsion? How emulsions are produced from the base bitumen and why we do so?  
d) How a cationic and anionic emulsions are produced. Also write the equations.
4. a) We can cross the water body by using water-transport, without constructing any bridges or culvert. Then why we consider these two elements as integral parts of a transportation system. . b) Compare between bridges and culverts.  
c) Show the sketch- diagrams of various types of bridges including. i) Suspension bridge, ii) R.C.C. Beam and slab type bridge, iii) Arch type bridge, and iv) R.C.C Bowstring girder.  
d) What purpose is served by the roadside arboriculture?
5. The properties of two graphs are, a)  $e=5, v=7, p=3$ , and  $\mu = 1$ . b)  $e=4, v=3, p=1$  and  $\mu = 2$ .  
Please draw both the graphs here (below):

Graph - a

Graph- b

