No. of Printed Pages : 3 **BICEE-018**

B.TECH. CIVIL ENGINEERING (BTCLEVI)

00151

Term-End Examination

December, 2013

BICEE-018 : PAVEMENT EVALUATION

Time : 3 hours *Maximum Marks : 70*

Note : *(i) All answers to be written in **English** only.*

*(ii) Answer **any seven** questions. All questions carry **equal** marks.*

*(iii) Non programmable calculators are **allowed**.*

(iv) Graph paper may be allowed.

1. (a) What do you meant by pavement unevenness ? What are the different factors which cause undulation on the pavement surface ? 5

(b) Compute radius of relative stifness of 17 cm thick concrete slab from the following data. 5
Modulus of elasticity of cement concrete = 2,25,010 kg/cm^2
Poisson's ration for concrete = 0.13
Modulus of subgrade reaction
K = (i) 4.0 kg/cm^2
(ii) 8.5 kg/cm^2

2. (a) Briefly explain the FWD method for pavement evaluation. 5

(b) Evaluate the pavement surface condition by Riding Comfort method and also give their applications. 5

3. (a) Explain and differentiate between Flexible and Rigid Pavements. 5

(b) Describe the distructive test method of pavement evaluation with the help of one example. 5

4. Benkelman Beam deflection studies were carried out on 15 selected points on a stretch of flexible pavement during summer season using a dual wheel load of 4085kg. 5.6 kg/cm^2 pressure. The deflection value obtained in mm after making the necessary leg correction are given below. If the present traffic consist of 750 commercial vehicle per day. Determine the thickness of bituminous overlay required if the pavement temperature during the test was 39°C and the correction factor for subsequent increase in subgrade moisture content is 1.3. Assume annual rate of traffic as 75%. Adopt IRC guidances. 10

1.40, 1.32, 1.25,1.35,1.48,1.60,1.65,1.55,1.45
1.40,1.36,1.40,1.50,1.52,1.45 mm.

5. (a) What are the general consideration for design of Rigid Pavement 5

(b) Explain the necessity of design approach of strengthening of existing pavement for "Rigid over lay over Rigid Pavement". 5

6. (a) Discuss the following (**any two**) **2x2.5=5**
   (i) Ruts and pot holes
   (ii) Patch Repairs
   (iii) Resurfacing

(b) What are the various type of failures in flexible pavement ? 5

7. Write a note on maintenance of highways. What are the various maintenance operations of highways ? 10

8. (a) A plate load test was conducted on soaked subgrade during monsoon season using a plate diameter of 30cm. The load value corresponding the mean settlement dial reading are given below. Determine the modulus of subgrade reaction for standard value. 5

Mean settlement values (mm)	0.0	0.24	0.52	0.76	1.02	1.23	1.53	1.76
Load values kg	0.0	460	900	1180	1360	1480	1590	1640

(b) What are the various factors affecting structural condition of rigid pavement ? 5

9. Describe the overlay design, principle and uses of Benkelman beam test. 10

10. Write a short notes (**any two**) : 10

(a) Function of Geosynthetics as separator in road works.

(b) Factors affecting structure of pavement.

(c) Warping cracks.