PAPER ID-420515

Subject Code: KCE602

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM VI) THEORY EXAMINATION 2021-22
TRANSPORTATION ENGINEERING

Time: 3 Hours *Total Marks: 100*

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2*10 = 20**

Q.no	Questions	CO
(a)	What is the role of transportation in modern transportation system?	1
(b)	What is an arterial road?	1
(c)	What is bump integrator?	2
(d)	What do you mean by camber?	2
(e)	Define traffic capacity and jam density.	3
(f)	Define Level of service.	3
(g)	Explain radius of relative stiffness.	4
(h)	What are the factors responsible for warping stresses in CC pavement?	4
(i)	Explain the defect "fatty surface" in flexible pavement.	5
(j)	What do you mean by alligator cracking?	5

SECTION B

2. Attempt any *three* of the following: **10*3 = 30**

Q.no	Questions	CO
(a)	Explain the historical development of road construction. What are salientfeatures of early roman roads?	1
(b)	A national highway passing through rolling terrain in heavy rainfall area has a horizontal curve of radius 500 m. Calculate the length of transition curve using the fallowing data. • Allowable rate of superelevation= 1 in 150 • Pavement rotated about the inner edge of the pavement • Pavement width excluding extra widening= 7 m • Design speed of vehicle= 80 kmph	2
(c)	What do you mean by grade separated intersection? Draw diagram of various interchange on the basis of shape.	3
(d)	Derive the equation of Green shield stream model and explain it with diagram.	4
(e)	Name any 5 test which are performed for aggregates. Explain any one test. Calculate aggregate impact value if weight of aggregate before and after the test is 500 gms and 400 gms respectively.	5

SECTION C

3. Attempt any *one* part of the following: **10*1 = 10**

Q.no	Questions	CO
(a)	Provide salient features of 1st and 2nd twenty year road development plan.	1
(b)	Write short notes on: a. Central road fund b. Jayakar Committee	1

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM VI) THEORY EXAMINATION 2021-22
TRANSPORTATION ENGINEERING

4. **Attempt any *one* part of the following:** **10 *1 = 10**

Q.no	Questions	CO
(a)	The speeds of the overtaking and overtaken vehicle are 70 and 40 kmph, respectively on a two way traffic road. If the acceleration of overtaking vehicle is 0.99 m/sec^2 a) Calculate safe overtaking sight distance b) Calculate the minimum and desirable length of overtaking zone c) Draw the neat-sketch of the overtaking zone and show the position of the sign post	2
(b)	An ascending gradient of 1 in 100 meets a descending gradient of 1 in 120. Design a summit curve for a speed of 80 kmph so as to have an OSD of 470 m.	2

5. **Attempt any *one* part of the following:** **10*1 = 10**

Q.no	Questions	CO
(a)	Enlist and discuss briefly the various factors considered in the design of rotary intersection. Also write down the advantages and disadvantages of rotary.	3
(b)	What are traffic control devices? Explain Regulatory, warning and Guiding devices.	3

6. **Attempt any *one* part of the following:** **10*1 = 10**

Q.no	Questions	CO
(a)	The average normal flow of traffic on cross roads A and B during design period are 400 and 250 PCU per hour the saturation flow values are 1250 & 1000 pcu/hr respectively. The all road time required for pedestrian crossing is 12 seconds. Design two phase traffic signal by Webster design.	4
(b)	Write the difference between flexible and rigid pavement. For a traffic stream speed density relationship was found to be U = 79.46 – 0.59k. Calculate the time headway corresponding to max flow.	4

7. **Attempt any *one* part of the following:** **10*1 = 10**

Q.no	Questions	CO
(a)	What is the difference between WMM and WBM? Explain Semi dense bituminous concrete.	5
(b)	Explain the process of overlay design using Benkelman Beam Deflection Method.	5