PAPER ID-310644

Subject Code: NCE502

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

B. TECH
(SEM-V) THEORY EXAMINATION 2020-21
TRANSPORTATION ENGINEERING-I

Time: 3 Hours ***Total Marks: 100***

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

SECTION A

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

a.	Explain ESWL.
b.	What do you understand by Prime coat and Tack coat?
c.	What are the functions of shoulder?
d.	Define traffic capacity.
e.	How can we count traffic volume?
f.	What is camber? What are the different shapes of camber used?
g.	What do you mean by Dry lean concrete?
h.	List the factors affecting design of flexible pavements.
i.	Define rotary intersection.
j.	What do you understand by kerbed stone?

SECTION B

2. Attempt any *three* of the following: 10x3=30

a.	What are the significant recommendations of Jayakar Committee Report?
b.	Write the short notes on: (i) Central Road Research Institute (CRRI) (ii) Central Road Fund (CRF) (iii) Highway Research Board (HRB) (iv) Indian Road Congress (IRC)
c.	Write down the various advantages and disadvantages of traffic signals.
d.	Write the short notes on: (i) Thirtieth highest hourly traffic volume (ii) Method of signal design.
e.	What are the possible causes for longitudinal cracking?

SECTION C

3. Attempt any *one* part of the following: 10x1=10

a.	A cement concrete pavement has a thickness of 26 cm and lane width of 3.5m. Design the tie bars along the longitudinal joints using the data given below. Allowable working stress in steel in tie bars = 1250 kg/cm2 Unit weight of CC= 2400kg/m3 Maximum value of friction coefficient= 1.2 Allowable tensile stress in deformed tie bar= 2000 kg/cm2 Allowable bond stress in deformed bars= 24.6 kg/cm2
b.	Discuss the Bombay road plan.

4. Attempt any *one* part of the following: 10x1=10

a.	What is super elevation? Design the super elevation required at a horizontal curve of radius 300m for MDR in mountainous region.
b.	A state highway passing through a rolling terrain has a horizontal curve of radius equal to the ruling minimum radius. Design all the geometric features of this horizontal curve, assuming suitable data.

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5. Attempt any *one* part of the following: 10x1=10

a.	What is theoretical capacity? The design speed of traffic lane is 80kmph. Estimates its theoretical capacity by assuming the average length of the vehicle as 6.0m.
b.	Define Traffic volume, Traffic density, Time-mean speed, Space-mean speed, Journey speed, running speed, Spot speed.

6. Attempt any *one* part of the following: 10x1=10

a.	What are the different types of joints provided in C.C pavements? How are the joints designed?
b.	What is the rigid pavement? What are the steps for design of CC pavement thickness as per IRC guidelines?

7. Attempt any *one* part of the following: 10x1=10

a.	Write in brief the systematic procedure of designing the flexible pavement as per IRC: 37-2012.Explain the equipment required for various layers while constructing the flexible pavement.
b.	Write down the construction steps of Bituminous carpeting.