Code No: **RT42012E** **R13** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018
TRAFFIC ENGINEERING
(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART−A *(22 Marks)*

1. a) Define spot speed. [3]
    b) Define journey speed. [4]
    c) What is the purpose of warning signs? [4]
    d) How noise levels are predicted? [4]
    e) Define capacity. [3]
    f) What are the categories of IVHS? [4]

PART−B *(3x16 = 48 Marks)*

2. a) What are the characteristics of road users? [8]
    b) Explain the procedure for conducting floating car method. [8]

3. a) What are the uses of Travel time and delay studies? [8]
    b) Explain about Car-following theories. [8]

4. a) Explain the importance of road safety audit. [8]
    b) A fixed time 2-phase signal is to be provided at an intersection having a North-South and an East-West road where only straight ahead traffic is permitted. The design hour flows from the various arms and the saturation flows for these arms are given in the following table:

	North	South	East	West
Design hour flow(q) in PCUs/ hour	800	400	750	1000
Saturation flow(s) in PCUs/ hour	2400	2000	3000	3000

Calculate the optimum cycle time and green times for the minimum overall delay. The inter green time should be the minimum necessary for efficient operation. The time lost per phase due to starting delays can be assumed to be 2 seconds. The value of the amber period is 2 seconds. Sketch the timing diagram for each phase. [8]

5. a) Discuss about various kinds of air pollutants? [8]
    b) What are the various categories in the generation of noise caused by road traffic? [8]

6. a) Explain the operating conditions of different levels of service as per HCM manual. [8]
    b) Discuss about Peak Hour Factor and Service Volume. [8]

7. a) Explain various IVHS categories used in the field of traffic engineering. [8]
    b) What are the various benefits of Intelligent vehicle highway systems? [8]

Code No: **RT42012E**   **R13**   Set No. 2

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018
TRAFFIC ENGINEERING
(Civil Engineering)

Time: 3 hours   Max. Marks: 70

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) Define traffic volume.   [3]
    b) Define running speed.   [3]
    c) What is reflector unit marking?   [4]
    d) How sound levels are measured?   [4]
    e) Define level of service.   [4]
    f) What is IVHS?   [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain the classification of urban highways in India.   [8]
    b) What are the ways of presenting spot speed data?   [8]

3. a) Explain various microscopic and macroscopic density characteristics.   [8]
    b) Discuss about density measurement techniques.   [8]

4. a) Classify the different types of traffic signs and mention the general objectives of
        each type of sign. Explain them with neat sketches.   [8]
    b) Explain various fixed and vehicle activated signals.   [8]

5. a) Explain how the noise is generated by road traffic.   [8]
    b) What is Air pollution? What are the effects of pollutants due to road traffic on
        the environment?   [8]

6. a) Explain various factors affecting capacity and level of service of roads.   [8]
    b) Discuss about Level of Service and Service Volume in the HCM manual.   [8]

7. a) What are the demerits in Intelligent Vehicle Highway Systems?   [8]
    b) What is the use of IVHS in traffic engineering?   [8]

Code No: **RT42012E**   **R13**   Set No. 3

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018
TRAFFIC ENGINEERING
(Civil Engineering)

Time: 3 hours   Max. Marks: 70

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART−A *(22 Marks)*

1. a) What is off-street parking?   [3]
    b) What is distance headway?   [4]
    c) What is condition diagram?   [3]
    d) What is noise pollution?   [4]
    e) What is basic capacity?   [4]
    f) Discuss about Traffic surveillance and monitoring.   [4]

PART−B *(3x16 = 48 Marks)*

2. a) What are the uses of collecting an accident data?   [8]
    b) What are the objectives of traffic volume studies?   [8]

3. a) What are the characteristics of distance headway?   [8]
    b) Explain various microscopic and macroscopic speed characteristics.   [8]

4. a) Outline the IRC method of traffic signal design.   [8]
    b) 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 on these roads are
        estimated as and 1000 pcu per hour respectively. The all-red time required for
        pedestrian crossings is 12 secs. Design two phase traffic signal by Webster's
        method.   [8]

5. a) What are the detrimental effects of traffic noise on environment?   [8]
    b) Write various measures for controlling the air pollution.   [8]

6. a) Explain the capacity of multi lane rural highways without access control. [8]
    b) What are the three types of capacities according to HCM-1950?   [8]

7. a) What is the role of IVHS in Traffic Surveillance?   [8]
    b) Write the various IVHS programmes used in traffic monitoring.   [8]

Code No: **RT42012E**   **R13**   Set No. 4

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018
TRAFFIC ENGINEERING
(Civil Engineering)

Time: 3 hours   Max. Marks: 70

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) What is parking accumulation?   [4]
    b) What is time headway?   [3]
    c) What is collision diagram?   [4]
    d) What is air pollution?   [4]
    e) What is HCM?   [3]
    f) What is the role of IVHS?   [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain various methods for counting traffic volume.   [8]
    b) Discuss about parking space inventory survey.   [8]

3. a) Explain various microscopic and macroscopic flow characteristics.   [8]
    b) Discuss about density contour maps.   [8]

4. a) What are the various types of traffic markings commonly used? What are the
        uses of each?   [8]
    b) Write the procedure for the design of fixed time traffic signals at cross roads by
        Webster's method.   [8]

5. a) What are the detrimental effects of air pollutants on environment?   [8]
    b) What are the techniques available for controlling traffic noise?   [8]

6. a) Differentiate between the capacity of rural and urban highways   [8]
    b) Explain the concept of Level of Service.   [8]

7. a) Explain the importance of IVHS in the field of traffic engineering.   [8]
    b) What are the benefits and costs of IVHS?   [8]