Hall Ticket Number:

Code No. : 18131 (B) N

VASAVI COLLEGE OF ENGINEERING *(AUTONOMOUS)*, HYDERABAD

Accredited by NAAC with A++ Grade

B.E. (Civil Engg.) VIII-Semester Main & Backlog Examinations, May-2023

Advanced Transportation Engineering (PE-V)

Time: **3 hours** Max. Marks: **60**

*Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B***

Part-A (10× 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	List out the factors governing trip generation and attractions rates.	2	1	1	1,6
2.	Indicate different types of traffic assignment techniques used in transportation planning process.	2	2	1	1,6
3.	What are the three core features of Intelligent Transportation System (ITS).	2	1	2	1,5, 6
4.	Indicate the advantages of ITS.	2	2	2	1,5, 6
5.	What are the uses of Pavement Management System (PMS).	2	1	3	1,6
6.	Name the parameters considered for functional condition of a pavement surface.	2	1	3	1
7.	Write the factors affecting road user costs?	2	1	4	1, 6
8.	Define the concept of transport cost and benefits considered for economic evaluation of highway projects.	2	1	4	1, 6
9.	List out the Transportation System Management (TSM) actions for a urban area.	2	1	5	1, 6
10.	What are the measures to be considered for preferential treatment of high occupancy vehicles?	2	1	5	1, 6

Part-B (5×8 = 40 Marks)

11. a) The total trips produced in and attracted to the three zones A, B and C of a survey area in the design year are tabulated as: — 4 — 3 — 1 — 2, 6

Zone	Trips Produced	Trips attracted
A	2000	3000
B	3000	4000
C	4000	2000

It is known that the trips between two zones are inversely proportional to the second power of the travel time between zones, which is uniformly 20 minutes. If the trip interchange between zones B and C is known to be 600, calculate the trip interchange between zones A and B, A and C, B and A, C and B.

b) Explain in detail about factors affecting model split in transportation planning process. — 4 — 2 — 1 — 1, 6

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12. a)	Explain in detail about Advanced Traffic Management System (ATMS) also indicate the user services for ATMS.	4	2	2	1,5, 6
b)	What are the features of Advanced Public Transport Systems (APTS). Justify each feature with suitable example.	4	2	2	1,5, 6
13. a)	Differentiate the Project level and network level Pavement Management System.	4	2	3	1,6
b)	Explain the components of Pavement Management System (PMS).	4	2	3	1
14. a)	What is the present value of a sum of Rs. 1,29,700/- to be received 10 years at an interest rate of 10% ?	2	3	4	2
b)	Compare the methods, net present value and rate of return used as economic indicators.	6	2	4	1,11
15. a)	List out the measures to be considered for improved vehicular flow TSM action. Explain in detail about each measure with proper justification.	4	3	5	1,6
b)	Justify the TSM actions that can improve the Reduced Peak Period travel. Indicate advantages of each action.	4	3	5	1,6
16. a)	Differentiate the growth factor methods and synthetic methods of trip distribution.	4	3	1	1
b)	Write the applications of Advanced Traveler Information System (ATIS). Indicate the example for each application.	4	3	2	1,5,6
17.	Answer any ***two*** of the following:				
a)	Differentiate the Benkelman beam method and falling weight deflectometer method for structural evaluation of pavement.	4	3	4	2,6
b)	A single lane road 50 km long is to be widened, to two lanes at a cost of Rs. 8 lakhs per km, including all improvements. The cost of operation of vehicle on the single lane road is Rs. 1.2 per vehicle km, where as it is Rs. 1 per vehicle km on the improved facility. The average traffic may be assumed 2500 vehicles per day over a design period of 20 years. The interest rate is 10% per annum. The cost of maintenance is Rs. 5,000/- per km on the existing road and Rs. 10,000/- per km on the improved road. It the investment in the improvement scheme worthwhile.	4	3	5	2,6
c)	Explain in detail about Transit and Para transit service improvement in a urban area.	4	3	5	1,6

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	38%
iii)	Blooms Taxonomy Level – 3 & 4	42%

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