



**I D NO.**

**PRESIDENCY UNIVERSITY, BENGALURU**  
**SCHOOL OF ENGINEERING**

Weightage: 40 %

Max Marks: 80

Max Time: 2 hrs.

09 May Wednesday 2018

**ENDTERM FINAL EXAMINATION MAY 2018**

Even Semester 2017-18

Course: **CIV 206 Transportation Engineering**

IV Sem. Civil

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**Instructions:**

- (i) *Read the question properly and answer accordingly.*
  - (ii) *Question paper consists of 3 parts.*
  - (iii) *Scientific and Non-programmable calculators are permitted*
  - (iv) *Graph papers are permitted to be used if required.*
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**Part A**

(4 Q x 5 M = 20 Marks)

1. Explain in brief any five factors responsible for the selection of an airport site.
2. Draw the cross –section of a runway and a taxiway.
3. Briefly explain the various classification of an airport.
4. What are the different methods of economic evaluation of the transportation projects? Which method is most suitable and why?

**Part B**

(3 Q x 10 M = 30 Marks)

5. Determine the corrected length of a runway for an airport site with the following data:  
Basic runway length = 2500m, Elevation of the airport = 450m, Airport reference temperature = 20<sup>0</sup>C, Runway effective gradient= 0.2%.
6. A) Determine the radius of taxiway for a supersonic transport where the wheel base is 35m and tread of the main landing gear is 7.2m. The design turning speed is 60kmph. Assume  $f = 0.13$  and width of the taxiway pavement is 22.5m.

(6M)

B) As a routine maintenance work, Rs.20,00,000 each is to be spent on a particular stretch of a highway during the 3<sup>rd</sup> year, 5<sup>th</sup> year and the 7<sup>th</sup> year. Calculate the total present worth of these expenditures, if the annual discount rate is 12% (compound).

(4M)

7. Explain the different components of travel demand modelling and also draw a flow chart explaining the same.

### Part C

(2Q x 15 M = 30 Marks)

8. Plot a type 1 windrose diagram and find the best orientation of the runway, wind coverage and the calm period for the data given below:

Wind Direction	Duration of wind, per cent		
	6.4-25 Kmph	25-40 Kmph	40-60 Kmph
N	8.4	3.8	0.5
NNE	5.5	3.5	0.2
NE	3.4	0.7	0.3
ENE	2.5	0.5	0.1
E	1.2	0.4	0.2
ESE	0.8	0.3	0.0
SE	4.5	3.1	0.0
SSE	6.2	4.1	0.0
S	9.8	5.1	0.0
SSW	6.1	2.5	0.3
SW	3.8	2.1	0.2
WSW	1.5	0.8	0.1
W	0.5	0.1	0.0
WNW	0.3	0.2	0.0
NW	6.1	1.5	0.0
NNW	5.0	1.2	0.2

9. 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:

Zone	Trips produced	Trips attracted
A	2500	3500
B	3200	4500
C	4500	2000

It is known that the trips between two zones are inversely proportional to the second power of the travel time between the zones which is uniformly 25 minutes. If the trip interchange between zones B and C is known to be 650, calculate the trip interchange between zones A & B, A & C, B & A and C & B.

(8M)

B) What are the various obstructions and imaginary surfaces of an airport? Explain with a suitable diagram.

(7M)



ID NO:	
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**PRESIDENCY UNIVERSITY, BENGALURU**  
**SCHOOL OF ENGINEERING**

Weightage: 20%

Max Marks: 40

Max Time: 1 hr.

27 March Tuesday 2018

**TEST – 2**

**SET A**

Even Semester 2017-18 Course: **CIV 206 Transportation Engineering** IV Sem. Civil

**Instruction:**

- (i) Read the question properly and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and Non-programmable calculators are permitted

**Part A**

(2 Q x 6 M = 12 Marks)

1. What is permanent way and what are its components? What are the requirements of a good permanent way?
2. Write short notes on (i) Passenger car Unit (PCU) (ii) Origin and destination study.

**Part B**

(2 Q x 8 M = 16 Marks)

3. Spot speed studies were carried out at a certain stretch of a highway with mixed traffic flow and the consolidated data collected are given below:

Speed range, Kmph	No of vehicles observed	Speed range, Kmph	No of vehicles observed
0 to 10	10	50 to 60	250
10 to 20	15	60 to 70	120
20 to 30	65	70 to 80	45
30 to 40	84	80 to 90	32
40 to 50	200	90 to 100	8

Determine (i) the upper and lower values or speed limits for installing speed regulation signs at this road stretch and (ii) the design speed for checking the geometric design elements of the highway.

4. Explain with suitable diagram the fundamental relation of traffic parameters.

### Part C

(1 Q x (5M + 7M) = 12 Marks)

5. (a) What is meant by coning of wheels and why is it provided? Explain with diagram.
- (b) A broad gauge track is passing through  $3.5^\circ$  curve. The maximum speed that the train has to move is 105kmph. Design the actual cant provided and check what maximum speed can be allowed on this track.