TE Civil. V CBGS
Transp. Engg. I

(3 Hours) [Total Marks : 80

N.B. (1) Question No. 1 is **compulsory**.
(2) Attempt any **three** questions out of remaining **five** questions.
(3) Assume any other **data** if **required**.
(4) Illustrate your answers with neat **sketches** wherever **required**.

1. Attempt any **four** :— 20
   (a) What roles do transport infrastructure of a country play ? Enlist the different modes of transport and their characteristics.
   (b) Write short notes on: Transit sheds and ware houses.
   (c) On a particular track, the speeds ofvarious trains are : 10 trains at 50kmph, 8 trains at 55kmph, 4 trains at 60 kmph. Calculate the weighted average speed and find out its deviation from the maximum speed.
   (d) What is the necessity of visual aids in connection with airport ? Name the different visual aids.
   (e) Draw a layout of an airport having 2 intersecting runway. Show the markings on it.

2. (a) It is observed that at present tracks, are mostly laid with Flat-footed rails. Give reasons for this preference in relation to other types of rail section. 8
   (b) Calculate and show it in diagram the elements required to set out a 1 in 8·5 turnout with switch angle of 1°34'27". Use the IRS method. 12

3. (a) Explain the necessity of sleepers in railway track. Using sleeper density of M+6, estimate the quantity of track material required for constructing a B.G railway track that is 6 km long, if the length of the rail is 13 m. 10
   (b) Briefly discuss the various steps involved in the construction of a new B.G railway line. 10

4. (a) What is the ballast ? Why it is used in the railway track ? Briefly describe the various types and its advantages, disadvantages and suitability. 10
   (b) Calculate actual length of runway required if basic length obtained is 1000 m. The airport is located at an elevation of 120m. Mean of average daily temperature is 38°C and the Mean of Maximum daily temperature is 47°C. Longitudinal section details are given below 10

End to end of runway (m)	Gradient(%)
1 to 400	+1%
400 to 800	−0·8%
800 to 1200	+0·6%

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5. (a) Explain various factors affecting size of Apron. Draw a neat sketch showing the basic parking configurations of aircrafts. 10

(b) Determine the capacity of 12 gates that serve three classes of aircraft using the following aircraft mix and average gate occupancy time. 10

Aircraft Class	Mix(%)	Average Occpancy Time (min)
1	50	25
2	35	45
3	50	60

6. The average wind data collected at a particular site is giVen below. Determine the calm period, the pest orientation of runways and the total wind coverage along the direction of EW, and NS by using Wind rose diagram Type IT. Permissible cross wind component is 25 kmph. 20

Wind data			
Wind direction	Duration of wind		
	6.4-25 (kmph)	25-50 (kmph)	50-75 (kmph)
N	7.4	2.7	0.2
NNE	5.7	2.1	0.3
NE	3.4	0.9	0.5
ENE	1.2	0.4	0.2
E	0.8	0.2	0.0
ESE	0.3	0.1	0.0
SE	4.3	3	0.0
SSE	5.5	3.2	0.0
S	9.7	4.6	0.0
SSW	6.3	3.2	0.5
SW	3.6	1.8	0.3
WSW	1.0	0.5	0.1
W	0.4	0.1	0.0
WNW	0.2	0.2	0.0
NW	5.3	1.9	0.0
NNW	4.0	1.3	0.3