160

T.E Civil V CBGS

T.E. -I

01.12.2015

Q.P. Code : 5635

(3 Hours) **[Total Marks : 80**

Q 1 is compulsory. Answer **any three out of** the **remaining** questions.
Neat, labeled sketches, legible handwriting & practical examples will be appreciated.

Q.1 **(20)**

a Define : i) Gauge. ii) Cross wind component

b Draw a neat labeled sketch of an artificial harbour. Give one example in India.

c Determine the capacity of 10 gates that serve 3 classes of aircrafts given the following aircraft mix and average gate occupancy times.(Each gate is available for all classes of aircrafts) :

Aircraft mix (%)	Aircraft Class	Average occupancy time (minutes)
10	A	20
30	B	40
60	C	60

d Explain with sketch coning of wheels and tilting of rails.

Q.2 **(20)**

a Calculate all the necessary elements required to set out a 1 in 8.5 turnout,taking off from a straight BG track with its curve starting from the toe of switch i.e. tangential to the gauge face of the outer main rail and passes through theoretical nose of crossing.Take heel divergence(d) as 11.4 cms. 10

b What do you mean by creep of rails.Explain various theories of creeps.What can be done to arrest creep? 10

Q.3 **(20)**

a A 5° curve diverges out of a 2° main curve in opposite direction of a BG track. If speed is limited to 30kmph on main line and permissible cant deficiency is 5.1 cms, what would be the speed limit on branch line? 10

b Explain Marshalling yard along with its types. Draw a neat labelled sketch showing a typical marshalling yard. 10

Q.4 **(20)**

a The length of a runway under standard conditions is 1750m.The airport reference temperature is 32°C and has an elevation of 400m.The runway is to be constructed with an effective gradient of 0.20%.Determine the corrected length of the runway. 08

b What is Interlocking? Explain the concept with the help of a neat labelled sketch. 12

Q.5 **(20)**

a Write a note on Airport markings. 10

b Explain Instrumental landing system with a neat sketch. 10

Q.6 **(20)**

a A taxiway is to be designed to accommodate an aircraft with following characteristics.Determine the turning radius for which the taxiway should be designed.Wheel base = 17.6 m,Turning speed = 38 knph,coefficient of friction = 0.13,Tread of main gear = 6.6 m. 08

b Write notes on : **(Any three)** 12
1) Breakwater. 2) Semaphore Signal 3) Jetty and wharf 4) Imaginary surfaces

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