



--	--	--	--	--	--	--	--	--	--

10CV63

Sixth Semester B.E. Degree Examination, Jan./Feb. 2021
Transportation Engineering - II

Time: 3 hrs.

Max. Marks:100

Note:1. Answer any FIVE full questions, selecting atleast TWO questions from each part.
2. Missing data, if any, can be suitably assumed.

PART - A

- 1 a. Write a note on Coning of wheels, with sketches. (06 Marks)
b. Draw a neat sketch, showing the details of a double line BG track with electric traction. (06 Marks)
c. What is meant by wear of rails? How do you classify the wear? Discuss the various causes of wear. (08 Marks)
- 2 a. Calculate the maximum permissible train load that can be pulled by a locomotive having four pairs of driving wheels, carrying an axle load of 24 tonnes each. The train has to run at a speed of 75 kmph, on a straight, level, BG track. Also calculate the reduction in speed, if the train climbs the gradient 1 in 150. If the train climbs the gradient with 3° curve, then what should be the reduction in speed? Take $\mu = 0.166$. (08 Marks)
b. For a BG track, calculate the quantity of materials per km length of track. Assume a sleeper density of $(1.0936D + 4)$. (06 Marks)
c. With neat sketch, explain various types of spikes and also mention the requirements of a good spike. (06 Marks)
- 3 a. Calculate the maximum permissible speed on a 3° curve of a BG track when the length of transition curve is 60m and the super elevation is 7 cm. The maximum values of cant deficiency and speed likely to be sanctioned are 6cm and 70 kmph respectively. (06 Marks)
b. A 6° curve diverges from a 3° main curve in reverse direction in the layout of a BG yard. If the speed on the main line is restricted to 60 kmph, find the restricted speed on the branch track. (08 Marks)
c. Explain the following : i) Grade compensation ii) Negative super elevation. (06 Marks)
- 4 a. Calculate the elements of a BG turnout, if the heel divergence is 11.43 cm, Number of crossing is 16 and angle of switch is 1° 8' 0". Straight arm of crossing = 0.9m. (08 Marks)
b. Explain briefly the working of semaphore signal with the help of a neat sketch. (06 Marks)
c. Draw a neat sketch of a Cross over between two parallel tracks. (06 Marks)

PART - B

- 5 a. Briefly explain the various classification of Airport. (06 Marks)
b. What is Wind rose diagram? Explain any one method of Orientation of runway. (06 Marks)
c. Briefly explain the various aircraft characteristics required for planning and design of Airports. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 6 a. An Airport is planned at an elevation of 380m above MSL. The monthly mean of maximum and average daily temperatures for the hottest month at the site are 40°C and 28°C respectively. The effective gradient is 0.18 percent. Determine the length of runway required at the proposed site if the basic runway length is 1900m. (08 Marks)
- b. Write a note on : i) Airport marking ii) Airport lighting. (06 Marks)
- c. Design an exit taxiway to connect a runway and a parallel taxiway for a turn off speed of 65 kmph, deceleration rate is 0.9m/sec^2 , radius of entrance curve is 520m. The total angle of turn is 24° , separation clearance available is 130m. (06 Marks)
- 7 a. What is the importance of tunnel ventilation? Explain the methods adopted for tunnel ventilation. (06 Marks)
- b. Explain by means of sketches, the step by step procedure adopted in Needle beam method of tunneling. (06 Marks)
- c. Write a short note on :
i) Tunnel lining ii) Tunnel drainage. (08 Marks)
- 8 a. What is a Dry Dock? Explain the construction and use of dry dock. (06 Marks)
- b. List all the factors which have to be considered for the selection of site for the construction of a new harbour. (08 Marks)
- c. Explain the different types of Break waters. (06 Marks)
