U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Programme: B.E. **Semester: VI**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 20CV6PCTRE **Max Marks: 100**
Course: Transportation Engineering - II

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	CO	PO	Marks
1	a)	Discuss the factors involved in the selection of good alignment.	*CO1*	*PO1*	**06**
	b)	Draw a neat sketch of the cross-section of the B.G. track in cutting (double line).	*CO1*	*PO1*	**06**
	c)	Discuss and justify the phenomena of Coning of wheels and the tilting of rails.	*CO1*	*PO1*	**08**
		UNIT - II			
2	a)	Calculate the number of sleepers required to construct a B.G. track of 1200 m in length. Sleeper density of M+5.	*CO1*	*PO2*	**04**
	b)	Discuss the functions of ballast and sleepers.	*CO1*	*PO1*	**08**
	c)	Calculate the maximum permissible train load that can be pulled by a locomotive having four pairs of driving wheels carrying an axle load of 22 tonnes each. The train has to run at a speed of 85 kmph on a straight level B. G. track. Also calculate the reduction in speed, if the train has to climb a gradient of 1 in 180. If the train climbs the gradient with a 2° curve, then what would be the reduction in speed?	*CO1*	*PO2*	**08**
		UNIT - III			
3	a)	Discuss various methods adopted to calculate the maximum permissible speed on a curve.	*CO1*	*PO1*	**06**
	b)	Define gradient. Explain the different types of gradients provided in the railway track.	*CO1*	*PO1*	**06**
	c)	A 6° curve branches off from a 3° main curve in an opposite direction in the layout of a B.G yard. If the speed on the branch line is limited to 35.5kmph, determine the speed restriction on the main line. Cant deficiency = 7.6cm.	*CO2*	*PO2*	**08**
		OR			
4	a)	Discuss the necessity of Geometric Design for a Railway Track.	*CO1*	*PO1*	**04**

		b)	Calculate the maximum permissible speed on a curve of high-speed B.G. track having the following particulars: Degree of the curve=1° Amount of superelevation=8.0cm Length of transition curve=130m Maximum speed of the section likely to be sanctioned=153kmph	*CO2*	*PO2*	**08**
		c)	Define superelevation. Derive the relationship of superelevation, with gauge, speed, and radius of curve.	*CO2*	*PO1*	**08**
			UNIT - IV			
	5	a)	Draw a neat sketch of the layout of an airport and label its components. Explain any one.	*CO1*	*PO1*	**05**
		b)	Explain the procedure of orientation of the runway by using the wind rose diagram method with a neat sketch given the direction, duration, and intensity of wind.	*CO1*	*PO1*	**07**
		c)	Design an exit taxiway joining a runway and a parallel main taxiway. The total angle of turn is 30° and the turnoff speed is 80 kmph. Draw a neat sketch and show therein all the design elements.	*CO2*	*PO2*	**08**
			OR			
	6	a)	Discuss the factors affecting the selection of a site for an airport.	*CO1*	*PO1*	**06**
		b)	Mention the factors affecting the design of an exit taxiway connecting the runway and parallel taxiway.	*CO1*	*PO1*	**06**
		c)	The length of the runway under standard conditions is 1650m. The airport site has an elevation of 260m and its reference temperature is 32.5°C. If the highest point along the length of the runway is RL 98.200 and the lowest point along the length of the runway is RL 89.950. Determine the corrected length of the runway.	*CO2*	*PO2*	**08**
			UNIT - V			
	7	a)	Discuss the classification of harbours based on their location.	*CO3*	*PO1*	**06**
		b)	List component parts of a harbour with a neat sketch.	*CO3*	*PO1*	**06**
		c)	List various methods of tunnelling in soft soils and discuss any two methods.	*CO3*	*PO1*	**08**

****