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M S RAMAIAH INSTITUTE OF TECHNOLOGY

(AUTONOMOUS INSTITUTE, AFFILIATED TO VTU)

BANGALORE – 560 054

SEMESTER END EXAMINATIONS – DEC 2013 / JAN 2014

Course & Branch	:	**B.E.- Civil Engineering**	**Semester**	:	**V**
Subject	:	**Transportation Engineering-II**	**Max. Marks**	:	**100**
Subject Code	:	**CV502**	**Duration**	:	**3 Hrs**

Instructions to the Candidates:

- Answer one full question from each unit.
- Missing data can be suitably assumed

UNIT – I

1.	a)	Draw a typical cross section of a permanent way and discuss in brief the basic functions of various components of a railway track.	(06)
	b)	What are the factors that affect the choice of particular gauge	(06)
	c)	A locomotive with four pairs of driving wheels is required to haul a train at a speed of 80 kmph on a level track. If the axle load of the driving wheels is 24 tonnes determine the train load the locomotive can haul. If the train tends to ascend a slope of 1 in 200, how much reduction in speed is made	(08)
2.	a)	Explain different types of rail joints with the help of sketches. Mention the merits and demerits of each type.	(08)
	b)	What are the different types of welded rails. Mention the application of each type.	(06)
	c)	Explain with sketches, the use of anchors for preventing the creep in rails.	(06)

UNIT-II

3.	a)	Define grade compensation. Calculate the compensated gradient for a BG track laid at 1 in 150 ruling gradient and having 3° curve.	(06)
	b)	Explain the necessity for negative cant in railways with the help of sketch.	(06)
	c)	If a 8° curve track diverges from a main curve of 5° in an opposite direction in the layout of BG yard, calculate the superelevation and the speed on the branch line, if the maximum speed permitted on the main line is 52 kmph.	(08)
4.	a)	Explain the various factors that affect the safe speed of trains at curves.	(06)
	b)	Explain throw of switch with the help of a sketch	(06)
	c)	Calculate all the elements required to set out a 1 in 12 turnout taking off from a straight BG track with its curve starting from the toe of the switch and passes through TNC. Given the heel divergence = 11.4cm.	(08)

UNIT-III

5.	a)	Define cross wind component and wind coverage. What are the recommended values of the same.	(06)
	b)	Explain how the basic runway length is calculated from the engine failure case	(06)

c) The length of runway under standard conditions is 1500m. The airport is to be proposed at an elevation of 110m above MSL. The airport reference temperature is 22°C. The construction plan includes the following data. Determine the actual runway length by applying corrections as per ICAO and FAA specifications. (08)

End to end of runway (m)	Grade (%)
0 to 300	+ 1.00
300 to 900	- 0.20
900 to 1500	+ 0.50
1500 to 1800	+ 1.00
1800 to 2100	- 0.30

6. a) Draw a neat cross section of runway and show the various runway geometrics adopted for instrumental landing facilities. (06)

b) Define exit taxiway. Mention the factors affecting the location of exit taxiway. (06)

c) An airport is planned at an elevation of 340 m above MSL. The monthly mean of maximum and average daily temperatures for the hottest month at the site are 38^0C and 26^0C respectively. The effective gradient is 0.16 percent. Determine the length of runway required at the proposed site if the basic runway length is 2100 m (08)

UNIT-IV

7. a) Explain how the harbors are classified depending upon the utility (06)

b) Compare mound type breakwater and the wall type breakwater. (06)

c) Explain the formation of tides. Describe spring tides and neap tides (08)

8. a) List the advantages and disadvantages of mound type breakwater. (08)

b) What is a port? List the facilities required at a major port. (06)

c) What are the advantages and disadvantages of enclosed wet docks? (06)

UNIT-V

9. a) Mention the factors to be considered during urban transport planning (06)

b) With sketches explain the different types of at grade intersections. (06)

c) What is an interchange intersection? With the help of a sketch explain a cloverleaf interchange. (08)

10. a) Mention the advantages and limitations of grade separated intersections. (06)

b) Compare metro rail system and roadway system for urban transportation. (06)

c) Explain the advantages of Intelligent Transport System. (08)

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