Code No. 6084 / S

FACULTY OF ENGINEERING

B.E. 3/4 (Civil) I – Semester (Supplementary) Examination, July 2014

Subject : Transportation Engineering

Time : 3 hours **Max. Marks : 75**

Note: Answer all questions from Part - A. Answer any FIVE questions from Part - B.

PART – A (25 Marks)

1	What are the various methods of classifying roads?	2
2	Briefly explain i) Right of way ii) Service roads iii) Cycle tracks	3
3	What are the different traffic studies?	2
4	Explain level of service concept as per HCM 2000.	3
5	Explain briefly i) ESWL ii) Repetition of loads	2
6	What are the assumptions made by Westergard in the analysis of rigid pavements?	3
7	Explain the necessity of negative super elevation in permanent tracks.	3
8	Explain the necessity of Coning of Wheels.	2
9	Draw the general layout of an airport.	2
10	Explain i) Cron wind component ii) Wind coverage iii) Wind rose	2

PART – B (50 Marks)

11	a)	Explain obligatory points. With sketches, discuss how these control the alignment.	5
	b)	Explain compensation in gradient on horizontal curves. There is a horizontal curve of radius 60m on a stretch of hill road with a gradient of 5.0%. Determine the grade compensation.	5
12	a)	Explain how the speed and delay studies are carried out. What are the various uses of O & D studies?	5
	b)	Draw a neat sketch of a full clover leaf and show the movement of traffic.	5
13	a)	Discuss the desirable properties of Bitumen. Compare Tar and Bitumen.	5
	b)	Calculate the stresses at interior, edge and corner of a cement concrete pavement by Westergaard's stress equation. Take modulus of elasticity of concrete = 3×10^5 kg/cm^2, Poisson's ratio of concrete = 0.15, thickness of concrete pavement = 18 cm, modulus of sub grade reactor = 8.5 kg/cm^3, wheel load = 5100 kg, radius of loaded area = 15 cm.	5
14	a)	What are the functions and requirement of rails?	5
	b)	What would be the equilibrium cant on a M.G. curved track of 7^0 for an average speed of trains 50 kmph? Also calculate the maximum permissible speed after allowing the maximum cont deficiency.	5
15	a)	What is the role of ICAO in development of airports? Enumerate the factors to be considered for the selection of an airport site.	5
	b)	The length of runway under standard conditions is 1700 m. The airport site has an elevation of 300m. Its reference temperature is 30.12^0C. If the runway is to be constructed with an effective gradient of 0.18 percent, determine the corrected runway length.	5
16	a)	Explain i) Radius of relative stiffness ii) Modulus of sub grade reaction iii) Equivalent radius of resisting section.	5
	b)	The runway gradation map indicates that there is a rising gradient of 1.0% meeting a falling gradient of 0.70%. There is again an upgrade of 0.70%. Design the runway profile as per FAA specifications.	5
17		Explain the following	10
	i)	30^{th} highest hourly by volume (ii) Function of sleepers	
	iii)	Corrections to basic runway length (iv) Joints in cement concrete pavements	

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