[Time: 3 Hours]

[ Marks:80]

		Please check whether you have got the right question paper.  N.B: 1. Q.1 is compulsory. 2. Attempt any three questions out of the remaining questions. 3. Assume suitable data if required. 4. Figures to the right indicate full marks.	
Q.1		4. Figures to the right indicate run marks.  State the applications of the followings:  a) Total station b) Electronic Theodolite c) Remote sensing d) GIS	20
Q.2	a)	Explain with neat sketches  i) Composite curve  ii) Compound curve  iii) Reverse curve  iv) Vertical curve	10
	b)	Two tangents intersect at chainage 2032m having their deflection angle as $46^{\circ}30$ . Calculate all the data necessary for setting out a simple circular curve of 250m radius by the offsets from the chord produced method. Take P.I. = 20m.	10
Q.3	a)	Two straights intersect at chainage 4540m with a deflection angle of 40°. It is proposed to connect a circular curve of 330m radius with transition curve 60m long at each end. Compute the date necessary for setting out the combined curve having PI = 20m for circular curve and 10m for transition curve?	10
	b)	A gradient of -1.20% meets a gradient of +1.60% at a chainage of 1410m and elevation of 245.15m. A vertical curve of length 140m is to be set out with pegs at 10m interval. Calculate the elevations of the pegs by chord gradient method.	10
_		Write an exhaustive note checking the vertically of high rise structures.  Describe the Road Project in detail.	10 10
		State and explain the methods of determining azimuth. Explain the procedure of aerial survey.	10 10
Q.6		Write notes on: i) Soundings ii) Site square iii) Pentagraph iv) Form 7 and Form 12 abstract	20