

MAHATMA GANDHI INSTITUTE OF TECHNOLOGY (Autonomous) B.Tech.VII Semester End Examinations (Civil Engineering)

(Model Question Paper)

Course Title: Transportation Engineering

Time: 3 hours

Course Code: CE701PC

Max. Marks: 70

Note: Answer ALL Questions Part-A (10 x 2 = 20 Marks)

Q. No.		Ste	m of the (Question			Μ	L	CO	PO			
				Uni	t-I		•	•					
1. a)	Write any two	recommen	ndations o	of Jayakar	Committee	e .	2	5,6	1	1,2,5			
1. b)	What are oblig	atory poir	nts? Expla	in.			2	3,4	1	1,2,5			
				Unit-	II								
1. c)	List out the di	fferent typ	bes of desi	ign contro	ols to be ad	opted for	2	1,2	2	1,2,3			
1 1)	geometric desi	gn.					2	2.4		1.0.0			
1. d)	Explain PIEV	theory?		TT •4 1	TT		2	3,4	2	1,2,3			
	Distinguish h	- 4 41		Unit-J	. 11 	les Cret			[
1. e)	Distinguish D	etween tr	ne traffic	engineer	ing variat	bles Spot	2	1,2	3	1,2,3			
	Distinguish be	etween col	lision and	l conditio	n diagram	in traffic							
1. f)	engineering		insion and		n ulagram	in traine	2	1,2	3	1,2,3			
	engineering.			Unit-l	V								
	Draw a near	t sketch	of trum	net inter	change a	nd show							
1. g)	movements in	it.	or truin	pet inter	enunge u		2	1,2	4	1,2,6			
	Draw a neat s	sketch of	cross inter	rsection a	nd show t	he traffic		1.0		1.0.4			
1.h)	islands.						2	1,2	4	1,2,6			
				Unit-	V		1						
1 :)	Draw a neat phase diagram showing the components of								F	1.0.2			
1.1)	bituminous con	ncrete mix	2	1,2	5	1,2,3							
1. j)	Define the terr	n vehicle o	lamage fa	ctor.			2	1,2	5	1,2,3			
	Part-B (5 x 10=50 Marks)												
			1 4/1	0 (0 # 10	Stem of the Ouestion								
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3. b) Calculate stopping sight distance for the design speeds of 80kmph for the following categories of gradients. Take coefficient of friction as 0.35 and reaction time as 2.5 sec. (a) Level Road (b) Upward gradient of 2% (c) Downward gradient of 3%. 5 3.4 2 1.2.3 OR 3. c) A two-lane highway with a design speed of 80 km/h is aligned yate and the indust cannot be increased beyond this, what is the allowable speed? 5 3.4 2 1.2.3 3. d) A two-lane highway with a design speed? If the maximum superelevation rate of 0.07 is not to be exceeded, and the radius cannot be increased beyond this, what is the allowable speed? 5 3.4 2 1.2.3 3. d) A vertical summit curve on a highway is to be designed for a speed of 55 kmph and for the safe-stopping sight distance of 130 m. The curve connects an upgrade of 2% and a down grade of 3%. Assume the height of the object above the roadway as 0.15 m, calculate the length of the vertical curve. 5 1.2 3 1.2.3 Unit-HII 4. a) Explain the factors affecting the capacity of highway? 5 1.2 3 1.2.3 Unit-HII 4. a) Explain the factors affecting the capacity of highway? 5 1.2 3 1.2.3 Unit-HII <td< th=""><th>3. a)</th><th>Formulate the expression for overtaking sight distance from the</th><th>5</th><th>3,4</th><th>2</th><th>1,2,3</th></td<>	3. a)	Formulate the expression for overtaking sight distance from the	5	3,4	2	1,2,3	
OR3. c)A two-lane highway with a design speed of 80 km/h is aligned with a horizontal curve of radius 180 m. Calculate the superelevation required to maintain this speed? If the maximum superelevation rate of 0.07 is not to be exceeded, and the radius cannot be increased beyond this, what is the allowable speed? The transverse friction coefficient cannot exceed 0.15.53.421,2,33. d)A vertical summit curve on a highway is to be designed for a speed of 65 kmph and for the safe-stopping sight distance of 130 m. The curve connects an upgrade of 2% and a down grade of 3%. Assume the height of the driver's cyc to be 1.50 m and the height of the object above the roadway as 0.15 m, calculate the height of the vertical curve.51.231,2,3 Unit-III 4. a)Explain the relationship between traffic stream variables flow, speed and density with the help of neat diagrams.51.231,2,3 ORUnit-IIIUnit-IVORORORUnit-IVORORORORCurit-IVORORORCurit-IVORCurit-IVORCurit-IVORCurit-IVCurit-IVCurit-IV </td <td>3. b)</td> <td>Calculate stopping sight distance for the design speeds of 80kmph for the following categories of gradients. Take coefficient of friction as 0.35 and reaction time as 2.5 sec. (a) Level Road (b) Upward gradient of 2% (c) Downward gradient of 3%.</td> <td>5</td> <td>3,4</td> <td>2</td> <td>1,2,3</td>	3. b)	Calculate stopping sight distance for the design speeds of 80kmph for the following categories of gradients. Take coefficient of friction as 0.35 and reaction time as 2.5 sec. (a) Level Road (b) Upward gradient of 2% (c) Downward gradient of 3%.	5	3,4	2	1,2,3	
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speed of 65 kmph and for the safe-stopping sight distance of 130 m. The curve connects an upgrade of 2% and a down grade of 3%. Assume the height of the diver's cyc to be 1.50 m and the height of the object above the roadway as 0.15 m, calculate the length of the vertical curve.Image: Constraint of the diver's cyc to be 1.50 m and the height of the object above the roadway as 0.15 m, calculate the length of the vertical curve.4. a)Explain the relationship between traffic stream variables flow, speed and density with the help of neat diagrams.51.231.2.34. b)Explain the relationship between traffic stream variables flow, speed and density with the help of neat diagrams.51.231.2.34. c)Define the term spot speed. Explain the method of data collection and analysis. Where will you use the information in traffic engineering?51.231.2.34. d)Explain the causes of road accidents and preventive measures to sketches.51.231.2.35. a)What are Traffic signs? Explain different types with neat sketches.51.241.2.65. b)Draw a neat sketch of Cross intersection and show conflicting movements. Suggest suitable traffic islands and draw to reduce the conflicts.51.251.251.231.2.3, 12OROROR0dense of road accidents and preventive measures to sketches.51.241.2,600 <th cols<="" td=""><td>3. d)</td><td>A vertical summit curve on a highway is to be designed for a</td><td>5</td><td>3,4</td><td>2</td><td>1,2,3</td></th>	<td>3. d)</td> <td>A vertical summit curve on a highway is to be designed for a</td> <td>5</td> <td>3,4</td> <td>2</td> <td>1,2,3</td>	3. d)	A vertical summit curve on a highway is to be designed for a	5	3,4	2	1,2,3
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design flexible overlay over flexible pavement.	0. u)	assessment of strength of existing payment How will you	5	5,0	5	1,2,3,	
		design flexible overlay over flexible pavement.				12	



MAHATMA GANDHI INSTITUTE OF TECHNOLOGY (Autonomous) B.Tech. VII Semester End Examinations (Civil Engineering) (Model Question Paper)

Note: Answer ALL Questions

Course Title: Estimation, Costing and Project Management Time: 3 hours

Course Code: CE702PC

Max. Marks: 70

$Part-A (1 \times 30 = 30 \text{ Marks})$											
Q. No.	Stem of the Question	Μ	L	CO	PO						
	Unit-I										
1. a)	Solve for the estimated quantities of the following items of a two roomed building from the given plan and section (i) Earthwork in excavation in foundation (ii) Lime concrete in foundation (iii) First class brickwork in cement mortar 1:6 in foundation (iv) 2.5 cm cc damp proof course (v) First class brickwork in lime mortar in superstructure	20	3	1	1,2,6						
1. b)	Summarize about the center line method of estimate.	10	2	1	1,2,6						
,	OR										
2. a)	 Solve to find the estimated quantities of the following items of a two roomed building from the given plan and section (i) Earthwork in excavation in foundation (ii) Lime concrete in foundation 	20	3	1	1,2,6						

	$(''') \qquad \qquad$,
	(11) First class brickwork in cement mortar 1:6 in				
	(iv) = 2.5 am as damp proof source				
	(iv) 2.5 cm cc damp proof course (v) First along brickwork in 1.6 coment morter in				
	(v) First class blickwork in 1.0 cement mortal in				
	superstructure				
	W W				
	W BOOM ROOM				
	3.5m × 4.8m				
	30cm				
	20 cm 30 cm				
	VED D				
	LI M A				
	W E				
	No.				
	truncher				
	P.L.				
	G.L. 30 cm - 30 9 5 40 cm E				
	[40cm] [40cm] 8[5 50 cm]				
	60cm 60cm				
	► 80 cm				
	SEC.AA SEC.BR				
	SEC.CC				
	Develop a preliminary estimate for a framed four storied office				
	building having a carpet area of 400 sq m for each floor. Assume				
	areas occupied by corridor, verandah, lavatories, staircase etc as				
	25% of built up area and that occupied by walls and columns as 2.5% of the same TL is the last of the same TL is the same transformed by the same t				
	8.5% of the same. The following details may be used for				
	estimation				
	(a) built-up area rate for ground floor (excluding foundation) = $R_{s1} = 500/2$ per sq m				
2. b)	(b) Built-up area rate for 1st and 2nd floor $- P_{s1} 650/$ per so m	10	3	1	1,2,6
	(c) Built-up area rate for 3rd floor – Rs1 $800/_{-}$ per sq m				
	(d) Extra for foundation = 20% of superstructure cost				
	(e) Extra for special architectural treatment = 1% of building cost				
	(f) Extra for water supply and sanitary = 7% of building cost				
	(g) Extra for electrical installation = 8% of building cost				
	(h) Extra for work charge establishment = 10% of overall cost				
	(i) Extra for other source = 5% of building cost				

	Part-B (1 x 10=10 Marks)												
Q. No.	Stem of	the Question	Μ	L	CO	PO							
		Unit-II	1		1	I							
3. a)	Construct a detailed estimate from the following data. The formation level at starting road is 7.5m and side slopes downward gradient of 1 in 16 changes to 1 in 120 downward.												
	Distance in m	R.L 01 ground											
	0	115.5											
	30	116.75	10	6	2	1,2,6							
	60	117.25											
	90	118.20											
	120	116.10											
	150	116.25											
	180	117.25											
	210	118.30											
	240	118.10											
	270	117.80											
	300	117.25											
	L	OR	1		1								
3. b)	What is meant by Bar Bending general principles to be followed schedule to estimate the quanti	Schedule and explain about the ed and advantages of bar bending ty of steel.	10	1	2	1,2,6							

Answer any THREE Questions from Part-C Part-C (3 x 10 = 30 Marks)

O No	Stem of the Question	М	T.	CO	PO			
Q.110	Unit-III	IVI	L	0	10			
4. a)	Interpret the procedure for the calculation of rate per unit sq.m of 6 mm thickness plastering	5	2	3	1,2,6			
4. b)	Find the rate analysis of 10 m^3 of Cement concrete 1:2:4 with stone ballast 40 mm. Assume the rates.	5	1	3	1,2,6			
	Unit - IV							
5. a)	Explain in detail what a contract document must contain.	5	2	4	1,2,6			
5. b)	Explain the following: (i) Years purchase method. (ii) Sinking fund method.	5	2	4	1,2,6			
Unit- V								
6. a)	What are the different stages of construction project planning	5	1	5	1,2,4,11			
6. b)	Outline the concept of PERT	5	2	5	1,2,4,11			
	Unit-III and Unit- IV				-			
7. a)	Find the rate analysis for the following item of work I-class Brick work in super structure with cement sand mortar 1:6	5	1	3	1,2,6			
7. b)	Explain the following clauses used in conditions of contract.(a) Security deposit.(b) Retention money.	5	2	4	1,2,6			
	Unit-IV and Unit- V							
8. a)	Summarize the detailed specifications of Earthwork in excavation.	5	2	4	1,2,6			
8. b)	What is meant by i) Optimistic time ii) Pessimistic time iii) Most likely time estimate.	5	1	5	1,2,4,11			



MAHATMA GANDHI INSTITUTE OF TECHNOLOGY (Autonomous) B.Tech.VII Semester End Examinations

(Civil Engineering)

(Model Question Paper)

Note: Answer ALL Questions

Course Title: Ground Improvement Techniques

Time: 3 hours

Course Code: CE713PE

Max. Marks: 70

	<i>Part-A (10 x 2 = 20 Marks)</i>			1	
Q. No.	Stem of the Question	Μ	L	CO	PO
	Unit-I				
1. a)	What is the need for ground modification?	2	1	1	2,3,
1. b)	List out the problematic soils.	2	1	1	2,3
	Unit-II				
1. c)	Define mechanical modification.	2	1	2	2,3
1. d)	Give the importance of blasting technique.	2	3	2	2,3
	Unit-III				
1. e)	Discuss the objectives of hydraulic modification.	2	3	3	2,3
1. f)	Differentiate the terms filter and drainage.	2	4	3	2,3
	Unit-IV				
1. g)	What is Chemical grouting?	2	1	4	2,3
1. h)	Define shotcreting.	2	1	4	2,3
,	Unit-V				
1. i)	Enumerate the applications of geosynthetics.	2	1	5	2,3
1. j)	Explain the purpose of soil nailing.	2	1	5	2,3
J/	Part-B (5 x 10=50 Marks)	I			,
Q. No.	Stem of the Question	Μ	L	CO	PO
	Unit-I				_
2. a)	Explain the applications of ground improvement.	5	1	1	2,3
2. b)	Discuss the various methods for improvement of problematic soils.	5	3	1	2,3
,	OR				
•	List out the methods of in-situ and laboratory tests to characterize	_			2.3
2. c)	problematic soils.	5		1	9 -
2. d)	What are the various soil stabilization techniques?	5	1	1	2.3
_: .)	Unit-II			_	
3. a)	Explain the Compaction Techniques for ground modification.	5	1	2	2.3
3. b)	Describe any one mechanical modification and state its suitability.	5	3	2	2.3
51.0)	OR				2,0
3 c)	Discuss the necessity of soil densification	5	3	2	23
$\frac{3.0}{3.0}$	Write about compaction piles in improving the ground modification	5	1	2	$\frac{2,3}{2,3}$
5. u)	Unit-III	5	1	2	2,5
4 a)	Explain the objectives and techniques in hydraulic modification	5	1	3	23
$\frac{4. \text{ a}}{4. \text{ b}}$	Discuss the application of geosynthetics in seenage control	5	3	3	$\frac{2,3}{2,3}$
4.0)	OR	5		5	2,5
(1 c)	Describe the Electro-Osmosis technique of dewatering	5	1	3	23
<u> </u>	Discuss the significance of Prefabricated vertical drains	5		3	$\frac{2,3}{2,3}$
4. u)	Unit_IV	5		5	2,3
	Discuss the lime grouting and compare grouting technique				23
5. a)	application	5	3	4	2,5
5 b)	Explain the Guinting technology	5	1		23
5.0)		5		4	2,3
5 0)	UN Discuss various methods of chamical modification	5	2	1	22
5.0)	Discuss various methods of chemical modification.	5	3	4	2,5
5. d)	Explain about the compaction grouting technique in ground modification	5	1	4	2,3
6 0)	UIII-V Explain the importance of Soil reinforcement has inclusions and	5	1	5	22
0. a)	Explain the importance of son remotement by inclusions and	3		3	2,3

	confinement.				
6. b)	Describe the properties and functions of Geotextiles.	5	3	5	2,3
	OR				
6. c)	List out various functions of geosynthetics in soil reinforcement	5	1	5	2,3
6. d)	Discuss the purpose of rock bolting.	5	3	5	2,3
M	Marter L. Dia m'a Terra a mu Laval, CO. Corres Outcomes DO. Des		0+-		

MAHATMA GANDHI INSTITUTE OF TECHNOLOGY (Autonomous) **B.Tech. VII Semester End Examinations**



(Civil Engineering)

(Model Question Paper)

Note: Answer ALL Questions

Course Title: Railway and Airport Engineering

Time: 3 hours

Course Code: CE717PE

Max. Marks : 70

	<i>Part-A</i> (10 x 2 = 20 Marks)						
Q. No.	Stem of the Question	Μ	L	CO	PO		
	Unit-I						
1. a)	Define sleeper density.	2	1	1	1		
1. b)	Define Gauge.	2	1	1	1		
	Unit-II						
1. c)	Define Gradient.	2	1	2	1,2		
1. d)	Define Cant.	2	1	2	1,2		
	Unit-III			<u>.</u>			
1. e)	Define air transportation.	2	1	3	1,3		
1. f)	List functions of aviation organization.	2	1	3	1,3		
	Unit-IV						
1. g)	Define runway.	2	1	4	1,3		
1. h)	List factors controlling taxiway layout.	2	1	4	1,3		
	Unit-V						
1. i)	Explain about air traffic control.	2	2	5	1,12		
1. j)	List navigational aids required for airways.	2	1	5	1,12		
	Part-B (5 x 10=50 Marks)				-		
Q. No.	Stem of the Question	Μ	L	CO	PO		
	Unit-I				T		
2. a)	List permanent way components and draw a neat sketch of permanent way.	5	4	1	1		
2. b)	List the function of rails and explain about it.	5	4	1	1		
	OR			•	<u> </u>		
	For a sleeper density of $(n + 5)$ find the number of sleepers required						
2. c)	for constructing a Broad Gauge (B.G.) railway track of length 650	5	1	1	1		
	m.						
2. d)	List the creep theories and explain about it.	5	4	1	1		
	Unit-II						
3. a)	List types of gradients and explain about it.	5	4	2	1,2		
3. b)	Explain about negative super elevation.	5	2	2	1,2		
	OR						
3. c)	Explain about degree of curve.	5	2	2	1,2		
	On a section of B.G track, the ruling gradient is 1 in 200. If the				Τ		
3. d)	track is laid in that place at a curve of 5° , determine the allowable	5	5	2	1,2		
	ruling gradient on the curve.						
	Unit-III						
4. a)	Explain history of air transport.	5	2	3	1,3		
1 h)	Explain about corrections for temperature and elevation in runway	5	n	2	1 2		
4.0)	length.	5		5	1,3		
	OR						
4. c)	List aircraft characteristics and explain about it.	5	4	3	1,3		
4. d)	Explain about airport site selection.	5	2	3	1,3		
	Unit-IV			•			
5. a)	Explain about wind rose diagram.	5	2	4	1,3		
5. b)	List typical airport layouts and explain any one.	5	4	4	1,3		
	OR				<u> </u>		

5. c)	Explain about terminal planning process.	5	2	4	1,3				
5. d)	Distinguish between runway and taxiway.	5	4	4	1,3				
	Unit-V								
6. a)	List air traffic control systems and explain any one.	5	4	5	1,12				
6. b)	Explain radar systems used in air traffic management.	5	2	5	1,12				
	OR								
6. c)	Explain about airport lighting system.	5	2	5	1,12				
6. d)	Explain about air safety and regulations issues.	5	2	5	1,12				
M	Marke: L. Plaam's Taxonomy I aval: CO: Course Outcome: PO: Prog	romm	$-\Omega_{\rm ut}$	omo	-				



MAHATMA GANDHI INSTITUTE OF TECHNOLOGY (Autonomous) B.Tech. VII Semester End Examinations (Civil Engineering)

(Model Question Paper)

Note: Answer ALL Questions

Course Title: Industrial Management

Time: 3 hours

Course Code: ME721OE

Max. Marks : 70

Part-A (10 x 2 = 20 Marks)											
Q. No.	Stem of the Question	Μ	L	CO	PO						
	Unit-I										
1. a)	Define entrepreneurship	2	1	1	1						
1. b)	What are the functions of management?	2	1	1	1						
	Unit-II										
1. c)	Distinguish between the lean and flat organization structure	2	2	2	1						
1. d)	What do you mean by Virtual organization?	2	2	2	1						
,	Unit-III	1									
1. e)	State the factors to be considered for plant location decision.	2	1	3	1						
1. f)	Write short notes on FAST diagram	2	1	3	1						
,	Unit-IV	I	1 1								
1.g)	Distinguish between method study and time study	2	2	4	1						
	What is meant by producer risk and consumer risk with respect to										
1. h)	OC curves	2	2	4	1						
	Unit-V	I	1								
1. i)	Differentiate PERT and CPM	2	2	5	1						
1. i)	What do you mean by job evaluation?	2	2	5	1						
1. J/	$Part-B (5 \times 10=50 \text{ Marks})$		- 1								
O. No.	Stem of the Question	Μ	L	CO	PO						
2.1101	Unit-I			00							
	List out Favol's principles of management. Explain any four										
2. a)	principles which you consider as very significant.	5	2	1	1						
2, b)	Discuss briefly the basic elements of hierarchical need approach.	5	2	1	1						
2.0)	OR	0									
	Explain briefly the McGregor's theory 'X' and theory 'Y'. How do										
2. c)	these theories influence the job situation?	5	2	1	1						
	Discuss the salient features of Herzberg's Two-Eactor Theory of										
2. d)	Motivation	5	2	1	1						
	Init-II										
3 a)	Explain the Line and Staff organization with its merits and demerits	5	2	2	1						
$\frac{3. a}{3. b}$	What are the methods of departmentation? Describe them briefly	5	$\frac{2}{2}$	2	1						
5.0)	OR	5	2	2	1						
3 c)	Discuss briefly the salient features of matrix organization structure	5	2	2	1						
3. d)	Discuss briefly the strengths and weaknesses of decentralization	5	$\frac{2}{2}$	$\frac{2}{2}$	1						
5. u)		5	2	2	1						
(1 c)	Compare and Contract among magg production and ich production	5	2	2	1						
4. a)	Distinguish between and dust and groups levent with reference to	3	2	3	1						
4. b)	bisinguish between product and process layout with reference to	5	2	3	1						
					L						
	UK		1								
	Consider the assembly network shown in fig. Which shows										
4. c)	precedence relationship and duration for each operation (minutes) in	10	3	3	3						
	assembling project. The required production volume in δ-nours snift is 24 assembly. Design the assembly line using DDW algorithm										
	1 is 24 assembly. Design the assembly line using Kr w algorithm.	1	1	1							

MR-21

	5		7	2	6 5	5				9					
	A job is an	h_ div	ided i	nto th	ree ol	emor	Jnit-I	V na time	e for c	ach c	lomont				
5. a)	Determine allowance	Elen Num 1 2 3 the n s 10%	nent hber	re giv	Observ (Minu 8.4 25.2 26.4 e and	ved tes)	Time	Rati Fact 120 125 95 time	ing tor %	e job	if the	5	3	4	3
	The follow	ing ta	ible g	ives t	the nu	mber	r of d	efects	in a	castin	g used				
	Casting	1	2	3	4	5	6	7	8	9	10				
5. b)	Number of defects (c) Construct a process	14 n C-ch	13 art wi	26 th 3 s	20 Sigma	9 limit	25 s and	15 comm	11 nent of	14 n the	13 casting	5	3	4	2
	-														
	Errel-: 4	1			1	de - 1	OR	a1!	1.		h a 1 C	1			
5. c)	Explain the	e work t	ang p	rıncıţ	ole of	aoub	ie san	npling	plan	with	neip of	10	2	4	1
		ι				1	Unit-V	V				1	1		<u> </u>
6. a)	Explain fac	tor co	mpar	ison r	netho	d of j	ob ev	aluatio	on in c	letail		5	2	5	1

	A project schedule has the following characteristics:									
6. b)		Estimated	Estimated duration(days)							
	Activity	Optimistic	Mo	st likely	Pessimistic					
	1-2	-2 2		3		4				
	1-3	3		5		7				
	1-4	5	8		11		5	3	5	1
	2-5	5	7		9					
	2-6	8	10		12					
	3-6	7	9		11					
	4-7	9	11		13					
	5-7	3	8		13					
	6-7	6	8		10					
	Draw the PERT network and determine expected project completion time		project							
OR										
	The following is a table showing details of a project:									
6. c)	Activity	Normal v	Normal		Crash					
		Time(days)	Cost(Rs)	Time(days)	Cost(Rs)			3	5	3
	1-2	8	100	6	200					
	1-3	4	150	2	350	10				
	2-4	2	50	1	90		10			
	2-5	10	800	5	400		-			
	3-4	5	100	1	200					
	4-5	3	80	1	100					
	Indirect cost is Rs. 70 per day.									
	(i) Draw the network of the project									
	(ii) what is the normal duration cost of the project?									
	cost?									