	all Ticket Number :	R-1	9]
Co	de: 19A235T		-]
	II B.Tech. I Semester Regular Examinations March 2021 Basic Electronics, Electrical & Mechanical Technology	,		
	(Civil Engineering)	,		
Мс		ne: 3	Hours	5
	Answer five questions by choosing one question from each unit ($5 \times 14 = 70$) Mark	<s)<="" td=""><td></td></s>	
	Use separate booklets for Part-A & Part-B ********			
	PART-A			
		Marks	СО	Bloom
	UNIT–I			
a)	State and explain the Kirchoff's laws?	7M	CO1	Ľ
b)	Explain the principle operation of DC motor?	7M	CO1	Ľ
	OR			
a)	Explain the principle operation of DC generator?	7M	CO1	Ľ
b)	Mention applications of DC motor?	7M	CO1	Ľ
	UNIT–II			
a)	Enumerate the various losses in a transformer?	7M	CO2	L1&L:
b)	Explain the principle operation of single phase transformer?	7M	CO2	L1&L:
2)	OR	714		
a) b)	Define the term of Efficiency and regulation of a transformer?	7M 7M	CO2	L1&L
b)	Explain the principle operation of three phase induction motor?	7M	CO2	L1&L
a)	UNIT–III Explain the VI characteristics of a diode?	7M	CO3	L1&L3
b)	Explain the operation of full wave rectifier with neat diagram?	7M	CO3	L1&L3
0)	OR	7 101	003	LIQLO
a)	Explain the principle of CRT?	7M	CO3	L1&L3
b)	What are the applications of CRO?	7M	CO3	
,	PART-B			
	UNIT-IV			
a)	Explain TIG Welding with a neat sketch	7M	CO4	I
b)	Differentiate between TIG and MIG Processes	7M	CO4	1
	OR			
a)	Restate the following			
	i) COP ii) Wet bulb temperature iii) Relative Humidity iv) Ton of Refrigeration			
	v) temperature and humidity required for the comfort air conditioning.	7M	CO5	
b)	Discuss about Room Air Conditioners.	7M	CO5	I
,				
a)	Explain the working principle of two stroke petrol engine	7M	CO4	
b)	Summarize the functions of main components of an IC Engine	7M	CO4	I
\sim	OR			
a)	Interpret Positive Displacement compressor with reference to Reciprocating Air Compressor	7M	CO5	
b)	Restate the advantages of multi compression	7M	CO5	
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	F	Hall Ticket Number :			_
	Co	ode: 19A131T	R- 1	9	
		II B.Tech. I Semester Regular Examinations March 202	1		—
		Building Materials and Construction			
		(Civil Engineering)			
	Mo	ax. Marks: 70 Answer all five units by choosing one question from each unit (5 x 14 = ********	Time: 70 Marl		rs
			Marks	CO	Blooms Level
	、				
1.	a) Þ	Briefly discuss classification of the building stones?	7M	CO1	L2
	b)	Briefly explain (i) stone quarrying and (ii) characteristics of good brick earth? OR	7M	CO1	L2
2.	a)	What are the various methods of manufacture of bricks? Discuss any one			
	L)	method.	7M	CO1	L2
	b)	Briefly compare between clam burning and kiln burning of bricks?	7M	CO1	L2
3.	a)	What are the uses of bituminous material and gypsum in construction work?	7M	000	L2
	ь)	Also explain their quality required for building works?	7M	CO2	L2 L2
	b)	State the general properties of any two roofing materials? OR	7 171	CO2	LZ
4.	a)	Briefly explain the use of colored cement, rapid hardening Portland cement,			
		high alumina cement and low heat cement?	7M	CO2	L2
	b)	Briefly explain compare the binding material cement and lime? UNIT-III	7M	CO2	L2
5.	a)	What are the properties of good timber for building works? Briefly explain.	7M	CO3	L2
	b)	Explain the characteristics of galvanized iron and Fiber-reinforced plastics for building construction?	7M	CO3	L2
		OR			
6.	a)	What are the different types of defects in timber?	7M	CO3	L2
	b)	Explain natural seasoning and artificial seasoning of timber?	7M	CO3	L2
_					
7.	a)	Differentiate between cavity and partition wall with the help of sketches?	7M	CO4	L2
	b)	Explain with neat sketches different types of masonry works? OR	7M	CO4	L2
8.	a)	Explain the various types of shallow foundation?	7M	CO4	L2
	b)	List various types of bonds in brick walls and briefly explain any two with the help of sketches?	7M	CO4	L2
		UNIT–V			
9.	a)	List different types of staircases and explain any two with neat sketch?	7M	CO5	L2
	b)	Explain different types of floors?	7M	CO5	L2
		OR			
10.	-	What is plastering? Discuss different types of paints?	7M	CO5	L2
	b)	Differentiate the following with reference to roofs (i) flat and curved Roofs.(ii) King and Queen Post Trusses.	7M	CO5	L2

		Hall Ticket Number :																
	L	Code: 19A134T				<u></u>						<u> </u>]		l	R-19		
		II B.Tech	n. I Se	eme	estei	Re	gulo	ar Ex	ami	nati	ons	Ма	rch	20	21			
							-	echo										
					(Civi	il Eng	gine	ering))								
		Max. Marks: 70 Answer all five uni	ts by	cho	osinę	g on		estio *****	n froi	m ec	αch ι	unit (5 x	14		e: 3 Ho 1arks)	ours	
																Marks	со	Blooms Level
						UNI	T–I											
1.	a)	A plate 0.0254 mm dis				•								•				
		force of 0.2 kg(f)/m ² to fluid between the plates		ntain	this	spee	d. De	eterm	line t	ne d	ynam	NC VI	SCOS	Sity	of the	7M	CO1	L1
	b)	An open tank contains		er in	its b	ottom	מם ה	to 2	m de	oth a	and t	hen	oil c	ofsi	oecific	7 101	COT	LI
	2)	gravity 0.8 up to a dep					-			•								
		and at the interface of v														7M	CO1	L1
						0	R											
2.	a)	Determine the capillary in water and mercury contact with air are 0.4 specific gravity of merc and 0°, respectively.	(Hg) 073 I	. The N/m a	e val and	ues 0.44	of su N/m	urface , resp	e ten oectiv	sions /ely.	s for Assu	wate ime	er a the	nd valı	Hg in ues of	7M	CO1	L1
	b)	A wooden body of heig above the water surfac projected 37.5 mm abo wooden body and (ii) th	ce. The second sec	ne sa Ie sul	ame v rface	wood of g	len b lyceri	ody v ine. F	when Find (plac	ed ir	n gly	cerir	ne t	ank is	7M	CO1	L1
						UNI	T–II											
3.	a)	Define Pascal Law and	deriv	e the	sam	ne.										7M	C02	L2
	b)	What are manometers?	9 Give	e its c	lassi	ficati	on, a	dvan	tages	s and	limit	ation	s.			7M		
						0	R											
4.	a)	Define the terms (i) hyd	lrosta	tics,	(ii) to	tal p	ressu	ire ar	nd (iii)) cent	tre of	pres	sur	э.		6M	CO2	L2
	b)	A metallic body weighs			n air	and	250	kN in	wate	er. De	eterm	nine t	the	volu	ime of			
		body and its specific gra	avity.					_								8M	CO2	L2
5.		The velocity vector (i) V= (2xi- 2yj). Determ A (3,2).			liffere		flow			•		-		•		14M	CO4	L2 &L4
						0												
6.		A venturimeter has a di is fitted in a horizontal 5900 kg of oil is colled differential manometer for the pipe venturimeter	pipel cted read	ine to in 2 s 0.1	o me minu 85 n	asur tes a n Hg	e the and t , the	e flow he di n det	of o iffere ermin	il of nce o ne th	spec of lev e dis	ific g /els	ravi in tł	ty 0 ne l	.82. If J-tube	14M	CO3	L2

UNIT–IV

The diameter of a horizontal pipe suddenly reduces from 0.4 m to 0.2 m due to which pressure changes from 125 kN/m ² to 105 kN/m ² . If the coefficient of contraction is 0.62, then find the flow rate of water.	10M	CO4	L2 &L4
Explain the principle of water hammer in pipes.	4M	CO4	L2&L4
OR			
Three pipes connected in series have diameters as 0.3 m, 0.2 m and 0.4 m and lengths as 400 m, 200 m and 300 m and coefficients of friction as 0.007, 0.0072 and 0.0074, respectively. If the pipes join two water reservoirs A and B having a difference in water surface levels as 15 m, then determine the discharge of water			L2
considering minor energy losses and neglecting minor energy losses.	14M	CO4	&L4
UNIT-V A closed tank partially filled with water discharges through an orifice of 12.5 mm diameter and has a coefficient of discharge of 0.65. If air is pumped into the upper part of the tank, determine the pressure required to produce a discharge or 36.6 litres/minute when the water surface is 1m above the outlet.	10M	CO5	L4
Define and compare a notch and a weir.	4M		
OR			
Show by method of dimensional analysis that the resistance R to the motion of a sphere of diameter D moving with uniform velocity V through a fluid having density			
	pressure changes from 125 kN/m ² to 105 kN/m ² . If the coefficient of contraction is 0.62, then find the flow rate of water. Explain the principle of water hammer in pipes. OR Three pipes connected in series have diameters as 0.3 m, 0.2 m and 0.4 m and lengths as 400 m, 200 m and 300 m and coefficients of friction as 0.007, 0.0072 and 0.0074, respectively. If the pipes join two water reservoirs A and B having a difference in water surface levels as 15 m, then determine the discharge of water considering minor energy losses and neglecting minor energy losses. UNIT-V A closed tank partially filled with water discharges through an orifice of 12.5 mm diameter and has a coefficient of discharge of 0.65. If air is pumped into the upper part of the tank, determine the pressure required to produce a discharge or 36.6 litres/minute when the water surface is 1m above the outlet. Define and compare a notch and a weir. OR	pressure changes from 125 kN/m² to 105 kN/m². If the coefficient of contraction is 10M 0.62, then find the flow rate of water. 10M Explain the principle of water hammer in pipes. 4M OR 4M Three pipes connected in series have diameters as 0.3 m, 0.2 m and 0.4 m and lengths as 400 m, 200 m and 300 m and coefficients of friction as 0.007, 0.0072 and 0.0074, respectively. If the pipes join two water reservoirs A and B having a difference in water surface levels as 15 m, then determine the discharge of water considering minor energy losses and neglecting minor energy losses. 14M UNIT-V A closed tank partially filled with water discharges through an orifice of 12.5 mm diameter and has a coefficient of discharge of 0.65. If air is pumped into the upper part of the tank, determine the pressure required to produce a discharge or 36.6 litres/minute when the water surface is 1m above the outlet. 10M Define and compare a notch and a weir. 4M OR 10M	pressure changes from 125 kN/m² to 105 kN/m². If the coefficient of contraction is 0.62, then find the flow rate of water.10MCO4Explain the principle of water hammer in pipes.4MCO4ORThree pipes connected in series have diameters as 0.3 m, 0.2 m and 0.4 m and lengths as 400 m, 200 m and 300 m and coefficients of friction as 0.007, 0.0072 and 0.0074, respectively. If the pipes join two water reservoirs A and B having a difference in water surface levels as 15 m, then determine the discharge of water considering minor energy losses and neglecting minor energy losses.14MCO4UNIT-VA closed tank partially filled with water discharge of 0.65. If air is pumped into the upper part of the tank, determine the pressure required to produce a discharge or 36.6 litres/minute when the water surface is 1m above the outlet.10MCO5Define and compare a notch and a weir.OR10MCO5ORShow by method of dimensional analysis that the resistance R to the motion of a

and viscosity μ may be expressed as

$$R = (\rho D^2 V^2) \phi \left(\frac{\mu}{\rho V D}\right)$$

L4

14M CO5

		Hall Ticket Number :	R-19		
	С	ode: 19AC34T			
		II B.Tech. I Semester Regular Examinations March 2021 Life Sciences for Engineers			
		(Common to CE, ME & CSE)			
		1ax. Marks: 70 Tir	ne: 3 Ho		
	A	Answer any five full questions by choosing one question from each unit (5 x 14	l = 70 Ma	arks)	
			Marks	со	Bloor
		UNIT–I			Leve
	a)	What is meant by classification and explain about living organisms based on the	ir		
•	u)	cellular life.	7M	1	
	b)	Differentiate between prokaryotes and eukaryotes.	7M	1	
	·	OR			
2.	a)	What is molecular taxonomy and how the organisms classify?	7M	1	
	b)	Explain about biological organisms comparing with manmade systems.	7M	1	
		UNIT–II			
3.		Explain the structure and functions of proteins.	14M	2	
		OR			
ŀ.	a)	Describe briefly about antibodies.	7M	2	
	b)	Explain the process of fermentation and its industrial applications.	7M	2	
-		UNIT-III	4 4 1 4	0	
5.		Explain the reactions that occur in glycolysis.	14M	3	
S.	a)	OR What is synapse and describe about neuromuscular junctions?	7M	3	
	a) b)	Explain about electron transport system.	7M	3	
	D)		7 101	5	
		UNIT-IV			
.	a)	What are the characteristics of Mendal's laws and explain with suitable examples?	7M	4	
	b)	Write the differences between mitosis and meiosis?	7M	4	
	·	OR			
3.	a)	Describe briefly about eukaryotic DNA replication.	7M	4	
	b)	Briefly explain about central dogma of molecular biology.	7M	4	
		UNIT–V			
).		Describe briefly about recombinant vaccines.	14M	5	
		OR			
).	a)	Write short notes on transgenic microbes.	7M	5	
	b)	Explain the salient features of animal cloning.	7M	5	

OR 2. a) Derive the relation between Modulus of elasticity, Modulus of rigidity and Bulk Modulus. SM 1 3 b) Derive an expression for the stress induced in a body due to suddenly applied load and hence find the value of extension produced in the body. 9M 1 3 a) A simply supported beam of length 8 m rests on supports 6 m apart, the right hand end is overhanging by 2 m. The beam carries a uniformly distributed load of 20 kN/m over the entire length. Draw S.F. and B.M diagrams and find the point of contra flexure, if any. 9M 2 2 b) Write down the sign conventions for shear force and bending moment in general. 5M 2 1 0.4 a) A cantilever 4 m long is loaded with a uniformly distributed load of 4 kN/ m run over a length of 1m from the free end. It also carries a point load of 3 kN at a distance of 0.5 m from the free end. Draw the Shear force Diagrams and Bending Moment diagrams. 9M 2 2 b) Derive the trelation between Shear force and bending moment. 5M 2 3 UNIT-II 5. a) Derive the bending equation from fundamentals using standard notation. 7M 3 3 b) A timber cantilever. Find the maximum bending stress produced. 7M 3 3 c) 0R a Core 7M 3 3 b) A timber cantilever. Find the maximum bending st			Hall Ticket Number :														-
II B.Tech. I Semester Regular Examinations March 2021 Mackanics of Materials (CNI Engineering) Time: 3 Hours Answer any five full questions by choosing one question from each unit { 5x 14 = 70 Marks ? C Plooms 1 a) Draw a stress – strain curve for mild steel, indicate satient points and define them. TM 1 1 1 a) Draw a stress – strain curve for mild steel, indicate satient points and define them. TM 1 1 1 a) Draw a stress – strain curve for mild steel, indicate satient points and define them. TM 1 1 1 a) Draw a stress – strain curve for mild steel, indicate satient points and define them. TM 1 1 2 a) Derive the relation between Modulus of elasticity, Modulus of rigidity and Bulk Modulus. M 1 3 3 a) A simply supported beam of length 8 m rests on supports 6 m apart, the right hand end is overthanging by 2 m. The beam carries a uniformly distributed load of 20 KNm over the entire length. Draw S.F. and B.M diagrams and find the point of contra flexure, if any. M 2 2 b) Write down the sign conventions for shear force and bending moment in general. 5M 2 1 a) A cantilever 4 m long is loaded with a UDL of 3 KWm over the entire length. Apoint load of 4 KN m run ov			Codo: 104122T										1		R-19		
Mechanics of Materials (Civil Engineering) Max. Marks: 70 Answer any five full questions by choosing one question from each unit [5 x 14 = 70 Marks] More: 50 Processing UNIT=1 1. a) Draw a stress – strain curve for mild steel, indicate salient points and define them. 7M 1 1 b) A straight circular rod tapering from diameter D: at one end to a diameter d' at the other end is subjected to an axial load P?. Obtain an expression for the elongation of the rod. 7M 1 3 c) Derive the relation between Modulus of elasticity, Modulus of rigidity and Bulk Modulus. 5M 1 3 b) Derive an expression for the stress induced in a body due to suddenly applied load and hence find the value of extension produced in the body. 9M 1 3 3. a) A simply supported beam of length B m rests on supports 6 m apart, the right hand end is overhanging by 2.m. The beam carries a uniformly distributed load of 20 kWin wore the entire length. Draw S.F. and B.M diagrams and find the point of contra flexure, if any. 9M 2 2 b) Write down the sign conventions for shear force and bending moment. 6M 2 2 3 contra flexure, fi any. 9M 2 2 2 b) Write down the sign conventions for shear force and bending moment. 6M 2 2 2 contra flexure, fi any.<		(ISeme	este	r Re	aulo	nr Fx	ami	nati	ions	Ma	rch 2	2021			
Max. Marks: 70 Time: 3 Hours Answer any five full questions by choosing one question from each unit [5 x 14 = 70 Marks] Image: Coll Boors Answer any five full questions by choosing one question from each unit [5 x 14 = 70 Marks] Image: Coll Boors Image: Coll Processing one question from each unit [5 x 14 = 70 Marks] Image: Coll Boors Image: Coll Processing Col												1110		.021			
Answer any five full questions by choosing one question from each unit { 5 x 14 = 70 Marks 00 Performance of the server t					(Civ	il Eng	gine	ering))							
UNIT-I 1. a) Draw a stress – strain curve for mid steel, indicate salient points and define them. 7M 1 1 b) A straight circular rod tapering from diameter 'D' at one end to a diameter'd' at the other end is subjected to an axial load 'P'. Obtain an expression for the elongation of the rod. 7M 1 1 c) A straight circular rod tapering from diameter 'D' at one end to a diameter'd' at the other end is subjected to an axial load 'P'. Obtain an expression for the elongation of the rod. 7M 1 3 c) Berive the relation between Modulus of elasticity, Modulus of rigidity and Bulk Modulus. 5M 1 3 b) Derive an expression for the stress induced in a body due to suddenly applied load and hence find the value of extension produced in the body. 9M 1 3 c) Durive an expression for the stress induced in a body due to suddenly applied load of 20 k/Vm over the entire length. Draw S.F. and B.M diagrams and find the point of contra flexure, if any. 9M 2 2 2 b) Write down the sign conventions for shear force and bending moment in general. 5M 2 1 OR 0.5 m from the free end. It also carries a uniformly distributed load of 4 k/V m run over a length of 1m from the free end. It also carries a point load of 3 kN at a distance of 0.5 m from the free end. Draw the Sher force Diagrams and Bending Moment diagrams. 9M 2 2 2		Ι		estions b	y ch	oosir	-			n fro	m ea	ich u	nit (5				S
 a) Draw a stress – strain curve for mild steel, indicate salient points and define them. A straight circular rod tapering from diameter 'D' at one end to a diameter'd' at the other end is subjected to an axial load 'P'. Obtain an expression for the elongation of the rod. OR a) Derive the relation between Modulus of elasticity, Modulus of rigidity and Bulk Modulus. Derive the relation between Modulus of elasticity, Modulus of rigidity and Bulk Modulus. Derive an expression for the stress induced in the body. OM A simply supported beam of length 8 m rests on supports 6 m apart, the right hand end is overhanging by 2 m. The beam carries a uniformly distributed load of 20 kN/m over the entire length. Draw S.F. and B.M diagrams and find the point of contra flexure, if any. Witte down the sign conventions for shear force and bending moment in general. OR A cantilever 4 m long is loaded with a uniformly distributed load of 3 kN at a distance of 0.5 m from the free end. It also carries a point load of 3 kN at a distance of 0.5 m from the free end. Draw the Shear force Diagrams and Bending Moment diagrams. Derive the bending equation from kindamentals using strandard notation. Derive the bending equation for kindamentals using strandard notation. Derive the stress distribution for circular section & plot stress produced. OR Derive the stress distribution for circular section & plot stress produced. OR OR<td></td><td></td><td></td><td></td><td></td><td>UN</td><td>IIT_I</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Marks</td><td>со</td><td></td>						UN	IIT_I								Marks	со	
of the rod. OR 7M 1 3 2. a) Derive the relation between Modulus of elasticity, Modulus of rigidity and Bulk Modulus. 5M 1 3 b) Derive an expression for the stress induced in a body due to suddenly applied load and hence find the value of extension produced in the body. 9M 1 3 a) A simply supported beam of length 8 m rests on supports 6 m apart, the right hand end is overhanging by 2 m. The beam carries a uniformly distributed load of 20 kN/m over the entire length. Draw S.F. and B.M diagrams and find the point of contra flexure, if any. 9M 2 2 b) Write down the sign conventions for shear force and bending moment in general. 5M 2 1 <i>QR</i> 4. A cantilever 4 m long is loaded with a unformly distributed load of 4 kN/m run over a length of 1m from the free end. It also carries a point load of 4 kN/m run over a length of 1m from the free end. It also carries a point load of 4 kN/ m run over a length of 1m from the free end. 5M 2 2 b) Derive the relation between Shear force and bending moment. 5M 2 3 3 b) A timber cantilever 200 mm wide and 300 mm deep is 3 m long. It is loaded with a U.D.L of 3 kN/m over the entire length. A point load of 4 kN is placed at the free end of the cantilever. Find the maximum bending stress produced. 7M 3 3 c Derive the stress distribution for circular section & plot	1.	,				steel	, indi			•					7M	1	1
 2. a) Derive the relation between Modulus of elasticity, Modulus of rigidity and Bulk Modulus. 5M 1 3 b) Derive an expression for the stress induced in a body due to suddenly applied load and hence find the value of extension produced in the body. 9M 1 3 a) A simply supported beam of length 8 m rests on supports 6 m apart, the right hand end is overhanging by 2 m. The beam carries a uniformly distributed load of 20 kN/m over the entire length. Draw S.F. and B.M diagrams and find the point of contra flexure, if any. b) Write down the sign conventions for shear force and bending moment in general. c) M 2 2 c) Write down the sign conventions for shear force Diagrams and Bending Moment diagrams. c) Derive the relation between Shear force and bending moment. c) Derive the relation between Shear force and bending moment. c) Derive the bending equation from fundamentals using standard notation. c) A timber cantilever 200 mm wide and 300 mm deep is 3 m long. It is loaded with a U.D.L of 3 kN/m over the entire length. A point load of 4 kN is placed at the free end of the cantilever. Find the maximum bending stress produced. c) R a) Find an expression for the slope at the supports of a simply supported beam, carrying a point load at the centre. b) A cantilever of length 6 m is carrying a point load of 25 kN at the free end. if the moment of inertia of the beam of ite. It is given as equal to 8x10⁶ N/mm² and value of E=2x10⁶ N/mm², find (i)slope of the cantilever at the free end (ii) deflection at the free end. c) A body is subjected to direct stresses in two mutually perpendicular directions accompanied by a simple shear stress. Draw the Mohr's circle of stresses and explain how you will obtain the principal stresses and principal planes. d) A body is subjected to direct stresses in two mutually perpendicular directions accompanied by a simple shear stress. Draw			•	to an axia	al loa			tain a	in exp	oress	sion fo	or the	e elon	gation	7M	1	3
Modulus. 5M 1 3 b) Derive an expression for the stress induced in the body. 9M 1 3 a) A simply supported beam of length 8 m rests on supports 6 m apart, the right hand end is overhanging by 2 m. The beam carries a uniformly distributed load of 20 KN/m over the entire length. Draw S.F. and B.M diagrams and find the point of contra flexure, if any. 9M 2 2 b) Write down the sign conventions for shear force and bending moment in general. 5M 2 1 COR 0R 1 3 3 4 2 2 1 A cantilever 4 m long is loaded with a uniformly distributed load of 4 kN/m run over a length of 1m from the free end. It also carries a point load of 3 kN at a distance of 0.5 m from the free end. Draw the Shear force Diagrams and Bending Moment. 5M 2 2 b) Derive the relation between Shear force and bending moment. 5M 2 3 b) Derive the bending equation from fundamentals using standard notation. 7M 3 3 b) A timber cantilever. Find the maximum bending stress produced. 7M 3 3 carrying a point load of 25 kN at the free end. if the moment of incrular section & plot shear stress distribution. 14M 3 3	2	2)	Derive the relation be	utween M	oduli	-		eticity	Mo	المراد	ofr	iaidit	v and	l Bulk			
and hence find the value of extension produced in the body. 9M 1 3 Imital Imital Imital 9M 1 3 3. a) A simply supported beam of length 8 m rests on supports 6 m apart, the right hand end is overhanging by 2 m. The beam carries a uniformly distributed load of 20 kN/m over the entire length. Draw S.F. and B.M diagrams and find the point of contra flexure, if any. 9M 2 2 b) Write down the sign conventions for shear force and bending moment in general. 5M 2 1 or OR 3 3 A cantilever 4 m long is loaded with a uniformly distributed load of 4 kN/ m run over a length of 1m from the free end. It also carries a point load of 3 kN at a distance of 0.5 m from the free end. Draw the Shear force and bending moment. 5M 2 2 b) Derive the relation between Shear force and bending moment. 5M 2 3 Immotal UD. of 3 kN/m over the entire length. A point load of 4 kN is placed at the free end of the cantilever 200 mm wide and 300 mm deep is 3 m long. It is loaded with a U.D. of 3 kN/m over the entire length. A point load of 4 kN is placed at the free end of the cantilever. Find the maximum bending stress produced. 7M 3 3 0R 0R 0R 7M 3 3 3 0R 0. A cantilever of length 6 m is carrying a point load of 25 kN at the free end. If the moment of i	۷.	,	Modulus.												5M	1	3
 3. a) A simply supported beam of length 8 m rests on supports 6 m apart, the right hand end is overhanging by 2 m. The beam carries a uniformly distributed load of 20 kN/m over the entire length. Draw S.F. and B.M diagrams and find the point of contra flexure, if any. M 2 2 2 Write down the sign conventions for shear force and bending moment in general. OR A cantilever 4 m long is loaded with a uniformly distributed load of 3 kN at a distance of 0.5 m from the free end. It also carries a point load of 3 kN at a distance of 0.5 m from the free end. Draw the Shear force Diagrams and Bending Moment diagrams. Derive the relation between Shear force and bending moment. M 2 2 2 Derive the relation between Shear force and bending moment. M 2 3 UNIT-III a) Derive the bending equation from fundamentals using standard notation. A timber cantilever 200 mm wide and 300 mm deep is 3 m long. It is loaded with a U.D.L of 3 kN/m over the entire length. A point load of 4 kN is placed at the free end of the cantilever. Find the maximum bending stress produced. OR Derive the stress distribution for circular section & plot shear stress distribution. IMIT-IV T a) Find an expression for the slope at the supports of a simply supported beam, carrying a point load at the centre. M 4 2 A cantilever of length 6 m is carrying a point load of 25 kN at the free end. if the moment of inertia of the beam (i.e. I) is given as equal to 8x10° Nmm² and value of E=2x10° N/m², find (i)slope of the cantilever at the free end (ii) deflection at the free end. A body is subjected board of span 10 m loaded point load of 14 kN at its centre, in addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. M 4 3 M 5 M 5 M 6 Define and explain the following theories of f		D)	•			n pro	duce				Suuue	enny a	applie	u ioau	9M	1	3
end is overhanging by 2 m. The beam carries a uniformly distributed load of 20 kN/m over the entire length. Draw S.F. and B.M diagrams and find the point of contra flexure, if any. b) Write down the sign conventions for shear force and bending moment in general. OR 4. a) A cantilever 4 m long is loaded with a uniformly distributed load of 4 kN/ m run over a length of 1m from the free end. It also carries a point load of 3 kN at a distance of 0.5 m from the free end. It also carries a point load of 3 kN at a distance of 0.5 m from the free end. It also carries a point load of 3 kN at a distance of 0.5 m from the free end. Trave the bending moment. Derive the relation between Shear force and bending moment. JUNIT-III 5. a) Derive the bending equation from fundamentals using standard notation. b) A timber cantilever 200 mm wide and 300 mm deep is 3 m long. It is loaded with a U.D.L of 3 kN/m over the entire length. A point load of 4 kN is placed at the free end of the cantilever. Find the maximum bending stress produced. OR 6. Derive the stress distribution for circular section & plot shear stress distribution. UNIT-IV 7. a) Find an expression for the slope at the supports of a simply supported beam, carrying a point load at the centre. D O 8. A simply supported beam of span 10 m loaded point load of 14 kN at its centre, in addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. O 8. A body is subjected to direct stresses in two mutually perpendicular directions accompanied by a simple shear stress. Draw the Mohr's circle of stresses and explain how you will obtain the principal stresses of a dimer: (i) Maximum principal strain theory (ii) maximum shear strain theory. O 10. Define and explain the following theories of failure: (i) Maximum principal strain theory (ii) maximum shear strain theory. O 14M 5 2	З	a)	A simply supported be:	am of len	Ath 8	-)n su	nnort	2 6 m	n ana	rt th	o riaht	hand			
 b) Write down the sign conventions for shear force and bending moment in general. OR a) A cantilever 4 m long is loaded with a uniformly distributed load of 4 kN/ m run over a length of 1m from the free end. It also carries a point load of 3 kN at a distance of 0.5 m from the free end. Draw the Shear force Diagrams and Bending Moment diagrams. b) Derive the relation between Shear force and bending moment. b) Derive the relation between Shear force and bending moment. c) UNIT-III 5. a) Derive the bending equation from fundamentals using standard notation. b) A timber cantilever 200 mm wide and 300 mm deep is 3 m long. It is loaded with a U.D.L of 3 kN/m over the entire length. A point load of 4 kN is placed at the free end of the cantilever. Find the maximum bending stress produced. COR 6. Derive the stress distribution for circular section & plot shear stress distribution. 14M 3 3 Correct Norm², find (i)slope of the cantilever at the free end. (ii) deflection at the free end. c) N/m², find (i)slope of the cantilever at the free end (ii) deflection at the free end. M 4 3 A simply supported beam of span 10 m loaded point load of 14 kN at its centre, in addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. M 4 M 4 M 4 M 5 M 2 	0.	aj	end is overhanging by	y 2 m. T	he b	beam	n car	ries a	a uni	form	ly dis	stribu	ted lo	ad of			
OR 4. a) A cantilever 4 m long is loaded with a uniformly distributed load of 4 kN/ m run over a length of 1m from the free end. It also carries a point load of 3 kN at a distance of 0.5 m from the free end. Draw the Shear force Diagrams and Bending Moment diagrams. 9M 2 2 b) Derive the relation between Shear force and bending moment. 5M 2 0.5 m from the free end. Draw the Shear force and bending moment. 5M 2 0.5 Derive the relation between Shear force and bending moment. 5M 2 0.5 a) Derive the bending equation from fundamentals using standard notation. 7M 3 1.0 Lot of 3 kN/m over the entire length. A point load of 4 kN is placed at the free end of the cantilever. Find the maximum bending stress produced. 7M 3 6. Derive the stress distribution for circular section & plot shear stress distribution. 14M 3 1.0 LNIT-IV 7. 7. 7. a) Find an expression for the slope at the supports of a simply supported beam, carrying a point load at the centre. 7M 4 2.10 S N/mm², find (i)slope of the cantilever at the free end. (ii) deflection at the free end. 7M 4 8. A simply supported beam of span 10 m loaded point load of 14 kN at its centre, in addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. 14M 4 9. A body is subjected to direct stresses in two mutually perpendicular directions accompanied			contra flexure, if any.												9M	2	2
 4. a) A cantilever 4 m long is loaded with a uniformly distributed load of 4 kN/ m run over a length of 1m from the free end. It also carries a point load of 3 kN at a distance of 0.5 m from the free end. Draw the Shear force Diagrams and Bending Moment diagrams. 9M 2 2 2 b) Derive the relation between Shear force and bending moment. 5M 2 3 UNIT-III 5. a) Derive the bending equation from fundamentals using standard notation. 7M 3 3 3 b) A timber cantilever 200 mm wide and 300 mm deep is 3 m long. It is loaded with a U.D.L of 3 kN/m over the entire length. A point load of 4 kN is placed at the free end of the cantilever. Find the maximum bending stress produced. 7M 3 3 6. Derive the stress distribution for circular section & plot shear stress distribution. 14M 3 3 CUNIT-IV 7. a) Find an expression for the slope at the supports of a simply supported beam, carrying a point load at the centre. 7M 4 2 b) A cantilever of length 6 m is carrying a point load of 25 kN at the free end. if the moment of inertia of the beam (i.e. I) is given as equal to 8x10⁵ N/mm² and value of E=2x10⁵ N/mm², find (i)slope of the cantilever at the free end (ii) deflection at the free end. 7M 4 3 8. A simply supported beam of span 10 m loaded point load of 14 kN at its centre, in addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. 14M 4 3 14M 5 2 14M 5 2 14M 5 2 		b)	Write down the sign co	nventions	s for s			e and	d ben	ding	mom	ent i	n gene	eral.	5M	2	1
b) Derive the relation between Shear force and bending moment. 5M 2 3 LUNIT-III 0 3 3 5. a) Derive the bending equation from fundamentals using standard notation. 7M 3 3 b) A timber cantilever 200 mm wide and 300 mm deep is 3 m long. It is loaded with a U.D.L of 3 kN/m over the entire length. A point load of 4 kN is placed at the free end of the cantilever. Find the maximum bending stress produced. 7M 3 3 0R 0R 0 7M 3 3 6. Derive the stress distribution for circular section & plot shear stress distribution. 14M 3 3 0R 0 0 7M 4 2 7. a) Find an expression for the slope at the supports of a simply supported beam, carrying a point load at the centre. 7M 4 2 b) A cantilever of length 6 m is carrying a point load of 25 kN at the free end. if the moment of inertia of the beam (i.e. 1) is given as equal to 8x10 ⁵ N/mm ² and value of E=2x10 ⁵ N/mm ² , find (i)slope of the cantilever at the free end (ii) deflection at the free end. 7M 4 3 8. A simply supported beam of span 10 m loaded point load of 14 kN at its centre, in addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. 14M 4 3	4.	a)	length of 1m from the f 0.5 m from the free e	free end.	lt als	unifc to ca	ormly rries	a poi	nt loa	d of	3 kN	at a	dista	nce of			
UNIT-III 5. a) Derive the bending equation from fundamentals using standard notation. 7M 3 3 b) A timber cantilever 200 mm wide and 300 mm deep is 3 m long. It is loaded with a U.D.L of 3 kN/m over the entire length. A point load of 4 kN is placed at the free end of the cantilever. Find the maximum bending stress produced. 7M 3 3 OR 0 7M 3 3 6. Derive the stress distribution for circular section & plot shear stress distribution. 14M 3 3 T. a) Find an expression for the slope at the supports of a simply supported beam, carrying a point load at the centre. 7M 4 2 b) A cantilever of length 6 m is carrying a point load of 25 kN at the free end. if the moment of inertia of the beam (i.e. 1) is given as equal to 8x10 ⁵ N/mm ² and value of E=2x10 ⁵ N/mm ² , find (i)slope of the cantilever at the free end (ii) deflection at the free end. 7M 4 3 OR 8. A simply supported beam of span 10 m loaded point load of 14 kN at its centre, in addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. 14M 4 3 9. A body is subjected to direct stresses in two mutually perpendicular directions accompanied by a simple shear stress. Draw the Mohr's circle of stresses and explain how you will obtain the principal stresses and principal planes. 14M 5 2<			•														2
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 b) A timber cantilever 200 mm wide and 300 mm deep is 3 m long. It is loaded with a U.D.L of 3 kN/m over the entire length. A point load of 4 kN is placed at the free end of the cantilever. Find the maximum bending stress produced. 7M 3 3 0R 6. Derive the stress distribution for circular section & plot shear stress distribution. 14M 3 3 14M 3 3 14M 4 2 14M 4 3 14M 5 2 14M 5 2 14M 5 2 	5.	a)	Derive the bending equ	uation fror	n fur				na sta	anda	rd no	tatior	٦.		7M	3	3
OR 14M 3 3 6. Derive the stress distribution for circular section & plot shear stress distribution. 14M 3 3 UNIT-IV 7. a) Find an expression for the slope at the supports of a simply supported beam, carrying a point load at the centre. 7M 4 2 b) A cantilever of length 6 m is carrying a point load of 25 kN at the free end. if the moment of inertia of the beam (i.e. I) is given as equal to 8×10^5 N/mm² and value of E=2x10 ⁵ N/mm², find (i)slope of the cantilever at the free end (ii) deflection at the free end. 7M 4 3 8. A simply supported beam of span 10 m loaded point load of 14 kN at its centre, in addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. 14M 4 3 9. A body is subjected to direct stresses in two mutually perpendicular directions accompanied by a simple shear stress. Draw the Mohr's circle of stresses and explain how you will obtain the principal stresses and principal planes. 14M 5 2 0R 0R 14M 5 2 01. Define and explain the following theories of failure: (i) Maximum principal strain theory (ii) maximum shear strain theory. 14M 5 2 		,	A timber cantilever 200 U.D.L of 3 kN/m over t) mm wide the entire	e ano e lenç	d 300 gth. <i>A</i>) mm A poii	deep nt loa	o is 3 ad of	m lo 4 kN	ong. It I is pl	is lo acec	aded				
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 7. a) Find an expression for the slope at the supports of a simply supported beam, carrying a point load at the centre. b) A cantilever of length 6 m is carrying a point load of 25 kN at the free end. if the moment of inertia of the beam (i.e. l) is given as equal to 8x10⁵ N/mm² and value of E=2x10⁵ N/mm², find (i)slope of the cantilever at the free end (ii) deflection at the free end. 7M 4 3 OR 8. A simply supported beam of span 10 m loaded point load of 14 kN at its centre, in addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. 9. A body is subjected to direct stresses in two mutually perpendicular directions accompanied by a simple shear stress. Draw the Mohr's circle of stresses and explain how you will obtain the principal stresses and principal planes. 14M 5 2 OR 10. Define and explain the following theories of failure: (i) Maximum principal strain theory (ii) maximum shear strain theory. 14M 5 	6.		Derive the stress distrib	oution for	circu	ılar s	ectio		lot sh	ear s	stress	s dist	ributio	n.	14M	3	3
 b) A cantilever of length 6 m is carrying a point load of 25 kN at the free end. if the moment of inertia of the beam (i.e. I) is given as equal to 8x10⁵ N/mm² and value of E=2x10⁵ N/mm², find (i)slope of the cantilever at the free end (ii) deflection at the free end. 7M 4 3 OR 8. A simply supported beam of span 10 m loaded point load of 14 kN at its centre, in addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. 9. A body is subjected to direct stresses in two mutually perpendicular directions accompanied by a simple shear stress. Draw the Mohr's circle of stresses and explain how you will obtain the principal stresses and principal planes. 14M 5 2 OR 10. Define and explain the following theories of failure: (i) Maximum principal strain theory (ii) maximum shear strain theory. 14M 5 2 	7.	a)	•		•				of a	sim	ply s	uppo	orted I	beam,	714		0
 E=2x10⁵ N/mm², find (i)slope of the cantilever at the free end (ii) deflection at the free end. 7M 4 3 OR 8. A simply supported beam of span 10 m loaded point load of 14 kN at its centre, in addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. 9. A body is subjected to direct stresses in two mutually perpendicular directions accompanied by a simple shear stress. Draw the Mohr's circle of stresses and explain how you will obtain the principal stresses and principal planes. 14M 5 2 OR 10. Define and explain the following theories of failure: (i) Maximum principal strain theory (ii) maximum shear strain theory. 14M 5 2 		b)	A cantilever of length 6	6 m is ca	rrying										7 IVI	4	2
 8. A simply supported beam of span 10 m loaded point load of 14 kN at its centre, in addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. 9. A body is subjected to direct stresses in two mutually perpendicular directions accompanied by a simple shear stress. Draw the Mohr's circle of stresses and explain how you will obtain the principal stresses and principal planes. 14M 5 2 0R 10. Define and explain the following theories of failure: (i) Maximum principal strain theory (ii) maximum shear strain theory. 14M 5 2 			E=2x10 ⁵ N/mm ² , find (i)	•		-		•							7M	4	3
 addition to the UDL of 6 kN/m for the whole span. Find slopes at the supports and maximum deflection. Use double integration method. 14M 4 3 UNIT-V 9. A body is subjected to direct stresses in two mutually perpendicular directions accompanied by a simple shear stress. Draw the Mohr's circle of stresses and explain how you will obtain the principal stresses and principal planes. 14M 5 2 OR 10. Define and explain the following theories of failure: (i) Maximum principal strain theory (ii) maximum shear strain theory. 14M 5 2 	_			_													
UNIT-V 9. A body is subjected to direct stresses in two mutually perpendicular directions accompanied by a simple shear stress. Draw the Mohr's circle of stresses and explain how you will obtain the principal stresses and principal planes. 14M 5 2 OR 10. Define and explain the following theories of failure: 14M 5 2 (i) Maximum principal strain theory (ii) maximum shear strain theory. 14M 5 2	8.		addition to the UDL of	6 kN/m fo	or the	e who	ole sp	ban. I	Find s						4 4 1 4	4	0
accompanied by a simple shear stress. Draw the Mohr's circle of stresses and explain how you will obtain the principal stresses and principal planes. 14M 5 2 OR 10. Define and explain the following theories of failure: (i) Maximum principal strain theory (ii) maximum shear strain theory. 14M 5 2						UN	IT–V								14111	4	3
explain how you will obtain the principal stresses and principal planes. 14M 5 2 OR 10. Define and explain the following theories of failure: (i) Maximum principal strain theory (ii) maximum shear strain theory. 14M 5 2	9.		• •							•	•						
10.Define and explain the following theories of failure: (i) Maximum principal strain theory (ii) maximum shear strain theory.14M52			• •	•		pal s	tress								14M	5	2
	10.		•	•		ories o	of fail										
			(i) Maximum princ	cipal strai	n the	eory (ım sh	ear s	strain	theo	ery.		14M	5	2

	L	Hall Ticket Number :			
			R-1	9	7
	C	Lode: 19AC31T II B.Tech. I Semester Regular Examinations March 2021		-	
		Partial Differential Equations and Complex Variable	S		
		(Common to CE, EEE, ME & ECE)			
	N	T Answer all five units by choosing one question from each unit (5 x 14 = 7(********	ime: 3) Mark		S
			Marks	со	Blooms Level
		UNIT-I			Lover
1.	a)	Find the Laplace Transform of $f(t) = \begin{cases} \cos t , 0 < t < f \\ \sin t, t > f \end{cases}$			
			7M	CO1	L1
	b)	Find $L\left(\frac{\cos 2t - \cos 3t}{t}\right)$	714	CO1	L1
		OR	7 111	COI	LI
2.	a)	Find the Laplace transform of $e^{4t}(\sin 2t \cos t)$	7M	CO1	L1
	b)	Find the Laplace transform of $f(t) = \begin{cases} 1 & 0 \le t < 1 \\ -1 & 1 \le t < 2 \end{cases}$ having period 2			
			7M	CO1	L1
		UNIT–II			
3.	a)	Find the inverse Laplace Transform of $\frac{1}{(s^2+1)s}$	7M	CO2	L1
			7 101	002	L 1
	b)	Apply Convolution theorem to evaluate $L^{-1}\left\{\frac{s}{\left(s^{2}+a^{2}\right)^{2}}\right\}$	7M	CO2	L3
		OR		002	20
4.		Solve $\frac{d^2 y}{dt^2} + 2\frac{dy}{dt} + 2y = 5 \sin t$, if $y(0) = y'(0) = 0$			
		$dt^2 dt$ UNIT-III	14M	CO2	L3
5.		Expand $f(x) = x - x^2$ as Fourier series in the interval $(-f, f)$ and hence			
		obtain $\frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \dots = \frac{f^2}{12}$	14M	CO3	L3
6.	a)	OR Find a Fourier series to represent $f(x) = x \sin x$, $-f < x < f$ and hence			
0.	ω,				
		deduce that $\frac{1}{1.3} - \frac{1}{3.5} + \frac{1}{5.7} - \dots = \frac{1}{4}(f - 2)$	7M	CO3	L1
	b)	Express $f(x) = x^2$ as half –range sine series in $0 < x < 4$	7M	CO3	L2
7.		UNIT-IV If a string of length ℓ is initially at rest in the equilibrium position and each of			
7.					
		its points is given, the velocity $V_0 \sin^3 \frac{fx}{\ell}$ find the displacement $y(x,t)$.	14M	CO4	L2
8.		OR An insulated rod of length has its ends A and B maintained at 0°C and 100°C			
		respectively until steady state condition prevails. If B is suddenly reduced to 0°C			
		and maintained at 0°C, Find the temperature at a distance x from A at time t . UNIT–V	14M	CO4	L3
9.		Show that the function $f(z) = \begin{cases} \frac{x^3(1+i) - y^3(1-i)}{x^2 + y^2}, & \text{if } z \neq 0 \\ 0, & \text{if } z = 0 \end{cases}$ is not analytic at			
		origin, even though C-R equations are satisfied at origin. OR	14M	CO5	L2
10.	a)	Show that the function $v(x, y) = \sin x \cosh y + 2\cos x \sinh y + x^2 - y^2 + 4xy$			
	b)	satisfies Laplace equation and find the corresponding analytic function $u + iv$	7M	CO5	L1
	b)	Verify Cauchy's theorem for the function $f(z) = 3z^2 + iz - 4$ taken over the boundary of the square with vertices $1 \pm i$ and $-1 \pm i$	714	CO5	L4
		****	7 111	005	L4
			Pa	ge 1 of	1

Hall Ticket Number :							
Code: 19A132T						R-19	

II B.Tech. I Semester Regular Examinations March 2021

Surveying

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

Marks

4M

14M

14M

7M

- UNIT-I
- 1. a) Explain the classification of survey
 - b) The distance between two points A and B measured along slope is 504 m. Find the horizontal distance between A and B when i) The angle of slope is 12° ii) The slope is 1 in 4.5 and , iii) the difference in elevation of A and B is 65 m. 10M

OR

2. With neat sketches, explain different types of obstacles in chaining

UNIT-II

- The following consecutive readings were taken with the help of dumpy level 1.904, 2.653, 3. a) 3.906, 4.026, 1.964, 1.702, 1.592, 1.261, 2.542, 2.006 and 3.145. The instrument was shifted after fourth and seventh readings. The first reading was taken on the staff held on BM of RL 100 m. Determine the R.L. of the various points by rise and fall method. 12M 2M
 - b) Mention the uses of counter map.

OR

4. Describe briefly methods involved in calculating the areas.

UNIT-III

- 5. a) Explain the permanent and temporary adjustments of Verniar theodolite. 7M
 - b) Explain the measurement of a horizontal angle by repetition method.

OR

6. The following observations are lengths and bearings of the lines of traverse ABCDE, the length and bearing of EA have been omitted. Calculate the length and bearing of the line EA.

		Line	AB	BC	CD	DE	EA	
		Length (m)	204	226	187	192	?	
		Bearing	87° 30'	20° 20'	280° 0'	210° 3'	?	14N
			I	UNIT-I	/			I
7. a)	Explain th	e method of set	ting out a c	ourve by rac	dial offsets f	rom tanger	nts.	12N
b)	List the va	arious types of c	urves.					21
				OR				
8. a)	Explain th	e principles and	l characteri	stics of ED	Μ			61
b)	Discuss a	bout microwave	and electr	o optical sy	stem adopt	ed in total	station.	8N
				UNIT-V	,			
9. a)	Explain th	e three point pro	oblem in Pl	ane Tabling	g.			10N
b)	List the in:	struments used	in Plane Ta	able Survey	/ing.			4N
				OR				

- 10. a) Explain the difference between tangential and stadia tachometry 7M
 - b) How will you determine the stadia constants? Explain.

7M