	Hal	II Ticket Number :			
			R-19	7	
	Мс	Je: 19A342T II B.Tech. II Semester Supplementary Examinations November Fluid Mechanics and Hydraulic Machinery (Mechanical Engineering) ax. Marks: 70 Swer any five full questions by choosing one question from each unit (5x14)	ne:3 F		
		******	Marks	со	E
1.		UNIT–I A pipe containing an oil of specific gravity 0.9. A differential manometer connected at the two points A and B shows a difference in mercury level as 15cm. Find the difference of pressure at the two points.	14M	CO1	L
2		OR		004	
	a) b)	What are the important fluid properties? Write their units? Distinguish between simple manometer and a differential manometer.	7M 7M	CO1 CO1	
	D)	UNIT-II	7 101	001	
3.		A horizontal venturimeter with inlet and throat diameters 30 cm and 15 cm respectively is used to measure the flow of water. The reading of differential manometer connected to the inlet and throat is 20 cm of mercury. Determine the rate of flow. Take Cd=0.98.	14M	CO2	I
		OR			
4.		Derive the Euler's equation of motion along a streamline UNIT-III	14M	CO2	
5.		Derive an expression for the force exerted by a jet striking the curved plate at one end tangentially when the plate is symmetrical.	14M	CO3	
6.		OR A jet of water if diameter 75mm moving with a velocity 25m/s strikes a fixed plate in such a wat that the angle between the jet and plate is 60°. Find the force exerted by the jet on the plate i) In the direction normal to the plate and ii) In the direction of the jet.	14M	CO3	I
7.		A Pelton wheel turbine develops 9000 Kw under a head of 300m. The turbine speed is 550 rpm and ratio of jet dia to wheel dia is 1/10. The hydraulic, volumetric and mechanical efficiencies are 0.98, 0.95 and 0.92 respectively. The speed ratio is 0.46 and coefficient of velocity is 0.98. Calculate the no of jets.	14M	CO4	
		OR			
8.		Explain the different types of the Efficiencies of a turbine.	14M	CO4	
9.		The following details refer to working of a single acting reciprocating pump. Find the slip, coefficient of discharge and theoretical power required to drive the pump. Piston diameter = 15 cm , Crank radius = 15 cm , Diameter of delivery pipe = 10 cm , Discharge of the pump = $0.31 \text{ m}3$ /min. Total lift= 15 m , Speed of the pump = 60 rpm .	14M	CO5	[
0.		OR What are the equations for work done and discharge of a reciprocating			
υ.		pump? Define the slip and coefficient of discharge of a reciprocating pump.	14M	CO5	I

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		x. Marks: 70 wer any five		vestic	ons k
1.		Draw the so working func			
2.		Classify spec	ial cas	ting	proce
3.		Briefly descri and limitatior			
4.		Classify diffe to their cause			
5.		Describe em	bossir	ng, co	oinin
6.		What is the Explain how	-		
7.	a) b)	Differentiate Describe few			
8.		Explain rotar	y forgi	ing a	nd s
9.		Explain blow	moulo	ding	proc
10.		How do yo thermoplastic		-	-

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II B.Tech. II Semester Supplementary Examinations Novembe	r 2023	
Manufacturing Processes		
(Mechanical Engineering)	•	
	me: 3 H	
nswer any five full questions by choosing one question from each unit (5x14 ********	- 70 M	iaiks j
	Marks	СО
Draw the schematic sketch of Gating system for casting. Mention the		CO1
working function of each gating system elements? OR	14111	001
	1 4 5 4	CO1
Classify special casting processes and explain 'Investment casting' process?	1411	COT
UNIT-II Briefly describe the 'shield metal are welding presses'. Cive its adventeres		
Briefly describe the 'shield metal arc welding process'. Give its advantages and limitations over gas welding?		CO2
OR		002
Classify different weld defects and explain any five weld defects with regard		
to their causes and effects?		CO2
UNIT–III		
Describe embossing, coining process and differentiate them?	14M	CO3
OR		
What is the significance of recrystallization temperature in metal working?		
Explain how it effects the grain growth?	14M	CO3
UNIT–IV		
Differentiate between hot extrusion and cold extrusion processes?		CO4
Describe few defects of rolled products and state their remedies.	8M	CO4
OR		
Explain rotary forging and state its applications and advantages?	14M	CO4
UNIT-V		
Explain blow moulding process and applications?	14M	CO5
How do you classify polymeric materials? Explain the properties of		
thermoplastic materials?	14IVI	CO5

Code: 19A344T II B.Tech. II Semester Supplementary Examinations November 2023 Applied Thermodynamics-I (Mechanical Engineering) Max. Marks: 70 Time: 3 H Answer any five full questions by choosing one question from each unit (5x14 = 70 M ********* UNIT-I 1. Define the following terms with respect to Diesel cycle. i) Compression ratio ii) Cut off ratio iii) Expansion ratio iv) Net work of the cycle v) mean effective pressure. 14M OR 0 2. a) Differentiate between the actual and ideal cycle and the factors responsible. 6M b) Sketch and explain Stirling cycle. 8M UNIT-II 0 3. a) Sketch and explain the valve timing diagram for 4 stroke Cl engine. 7M b) Summarize the important basic components of an IC engine? Explain them briefly. 7M OR 0 4. Illustrate the principle of working of a Magneto ignition system with a neat sketch. 14M UNIT-II 5. a) "C.I engines can accept very lean overall mixture ratios but S.I engines cannot". Explain and discuss. 7M b) Explain the various factors that influence the flame speed in S.I engine combustion. 7M OR 0 0				Iall Ticket Number :	ł	
II B.Tech. II Semester Supplementary Examinations November 2023 Applied Thermodynamics-I (Mechanical Engineering) Max. Marks: 70 Time: 3 H Answer any five full questions by choosing one question from each unit (5x14 = 70 M ************************************		7	R-19			
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Max. Marks: 70 Time: 3 H Answer any five full questions by choosing one question from each unit (5x14 = 70 M ************************************				Applied Thermodynamics-I		
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 OR Explain the four stages of combustion in CI engine with suitable diagrams. 14M UNIT-IV 7. Following observations were made during the test on a single cylinder oil engine. Bore = 300mm, I.M.E.P = 6bar, brake rope dia = 2cm, Stroke=450mm, Net brake load = 1.5 KN, speed = 300 rpm, Brake drum dia = 1.8m Calculate 	00	000	7 101	•	k	
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UNIT-IV 7. Following observations were made during the test on a single cylinder oil engine. Bore = 300mm, I.M.E.P = 6bar, brake rope dia = 2cm, Stroke=450mm, Net brake load = 1.5 KN, speed = 300 rpm, Brake drum dia = 1.8m Calculate	• •					_
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				engine. Bore = 300mm, I.M.E.P = 6bar, brake rope dia = 2cm, Stroke=450mm,	•	'
a) indicated Power b) Brake Power c) Mechanical Efficiency 14M	04	CO4	14M	Net brake load = 1.5 KN, speed = 300 rpm, Brake drum dia = 1.8m Calculate a) Indicated Power b) Brake Power c) Mechanical Efficiency		
OR	01	001	1 1101			
8. Explain the various engine performance parameters in detail. 14M	,04	CO4	14M	Explain the various engine performance parameters in detail.	3.	8
UNIT–V				UNIT–V		
9. Explain the operation of single stage centrifugal air compressor with help of		005	4 4 5 4).	9
inlet and outlet velocity triangles on the compressor vane. 14M OR	:05	CO5	1410			
0. a) Write notes on). a	С
(i) degree of reaction (ii) isentropic efficiency (iii) polytropic efficiency. 9M	05	CO5	9M	·		
b) What is meant by positive displacement? 5M	05	CO5	5M		k	

	Hal	I Ticket Number :		
	Coc	le: 19A343T	R-19	>
,		II B.Tech. II Semester Supplementary Examinations November Dynamics of Machinery	2023	
		swer any five full questions by choosing one question from each unit (5x14	ne: 3 H = 70 M	
		******** UNIT–I	Marks	со
1.		Develop an expression for torque required to lift the load by a screw jack.	14M	CO1
2.		Determine the maximum, minimum and average pressure in plate clutch when the axial force is 4 kN. The inside radius of the contact surface is 50 mm and the outside radius is 100 mm. Assume uniform wear.	14M	CO1
3.		Develop the ratio for belt tensions in band and block brake OR	14M	CO2
4.		Describe the various planes and axes of gyroscopic couple with sketch	14M	CO2
5.	a)	Classify the governors.	7M	CO3
	b)	Evaluate the vertical height of a Watt governor when it rotates at 60 r.p.m. Also find the change in vertical height when its speed increases to 61 r.p.m.	7M	CO3
		OR		
6. 7.		The arms of a Porter governor are each 250 mm long and pivoted on the governor axis. The mass of each ball is 5 kg and the mass of the central sleeve is 30 kg. The radius of rotation of the balls is 150 mm when the sleeve begins to rise and reaches a value of 200 mm for maximum speed. Determine the speed range of the governor. UNIT-IV Explain the 'static balancing' and 'dynamic balancing'. State the necessary conditions to achieve them.		CO3 CO4
		OR		001
8.		Describe the balancing of a single rotating mass by two masses rotating in different plane.	14M	CO4
9.		UNIT-V Develop an expression for Natural Frequency of Free Transverse Vibrations of a Shaft Subjected to a Number of Point Loads by Dunkerly's method.	14M	CO5
0.		A shaft 50 mm diameter and 3 meters long is simply supported at the ends and carries three loads of 1000 N, 1500 N and 750 N at 1 m, 2 m and 2.5 m from the left support. The Young's modulus for shaft material is 200 GN/m ² . Find the frequency of transverse vibration.	14M	CO5