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			M TECHNOLOG	HCAL	UNIVERS	ITY	1 00	
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O P Code	: IAR082032	1F-I	(Pages:2)		ame:	J.	CHED	
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	THIRD SE	MESTER M.TE	CH. DEGREE EXAM				- Ladian	
- Branch: N	Mechanical l	Engineering			ustrial Autor	mation & R	odotics	
1 contractions of the second s		08ME	7321 (E) MEMS and	d NEMS			- l (0	
Time: 2 hour 15 minutes						Max. Ma	arks: ou	
e 5			Answer all six question is compulsory and answe		rt 'h' or part 'c	' of each que	stion.	
Module	es 1 to 6:Part '	'a' of each question	is compulsory and answe	er enner på		or cuen que		
O No			Module 1				Marks	
Q. No.	Discuss on	strain analysis i	in micro-machined st	ructures.	a		3	
1.a	Discuss on	Strain analysis i	Answer b or c					
				nd micro	sensors		6	
b Discuss in detail about the basic principle behind micro sensors.							6	
c	Discuss the	e application of	micro sensors in Nan	nomedicin	es.		0	
с т. ^с							Marks	
Q. No.			Module 2					r
2.a	Explain:			,			3	
т с.,	(i) (ii)	Top down appr Bottom up app					$T_{\rm c}$	1
			Answer b or c					
b	"Due to the used in the	he development e Biomedical fie	in the design of M	IEMS dev ement wit	vices, they a h your view	are widely s.	6	
С			es of etching used in				6	
Q. No.			Module 3				Marks	
3.a	What do y	you understand b	by MEMS and Micro	systems?			3	
			Answer b or c					
Ъ		the process of	Physical Vapor De	eposition	with a nea	at labelled	6	
	diagram.		· ·					

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Ľ	detail, how these compounds are obtained.	6
		8
Q. No.	Module 4	Marks
4.a	Define nano sensor and explain the recognition principle of nano sensor.	3
	Answer b or c	
<u>)</u> р	Narrate the importance of nano sensor in aerospace and defence sector with the detailed application.	6
Ĉ	Explain the functional process of nano cutting tool.	6
Q. No.	Module 5	Marks
5.a	State the differences between NEMS and MEMS.	4
	Answer b or c	
b	With the neat sketch, explain in detail about electromagnetic fields and quantum electro dynamic forces with their quantization.	8
c	Write short notes on:	8
	(i) Quantum resonant tunneling(ii) Quantum transport	
5		
Q. No.	Module 6	Marks
6.a	With the relevant sketch discuss about NEMS architecture.	4
	Answer b or c	
b	Examine the application of photonic band gap crystals.	8
C	Examine the surface plasmon effects and its detection methods.	8