

INTERNATIONAL CENTRE FOR APPLIED SCIENCES MAHE, MANIPAL B.Sc. (Applied Sciences) in Engg. End – Semester Theory Examinations – Nov./ Dec. 2020 III SEMESTER - ANALOG AND DIGITAL SYSTEM DESIGN (IMET 234) (Branch: Mechatronics)

Ti	me: 3 Hour	s Date: 30 November 2020 Ma	ax. Marks: 50
	✓ Answer✓ Missing	r all the questions. g data, if any, may be suitably assumed	
1A.	Convert the	e following to the specified Base:	
	a) (B9F.AI	$E_{16} = (?)_{8}$	
	b) $(2598.675)_{10} = (?)_{16}$		
	c) (378.93)	$10 = (?)_8$	(5)
	d) (AOF9.0	DEB) $_{16} = (?)_{10}$	
	e) (1010) ₂	= (?) Gray code	
1B.	Simplify us	sing Boolean laws:	
	a)F1 = A + B[AC + (B + C')D]		
	b) $F2 = (B$	+ BC)(B + B'C)(B + D)	(-)
2A.	Design a l	Full subtractor using basic logic gates with truth table.	(5)
2B.	Design a m	od 6 synchronous up counter using JK Flip flops.	(5)
3A.	Design 842	21 BCD to Excess-3 converter using 3 to 8 decoders.	(5)
3B.	Determine 0001.	the output of an R-2R Ladder Digital to Analog Converter with	input (5)
4A.	Explain bri	efly each stage of the op-amp internal circuit with its block sche	ematic. (5)
4B.	Design and	l implement a three bit odd parity generator.	(3)
4C.	Draw the b	asic differential amplifier circuit and explain its working.	(2)
5A.	Explain the following:		
	(i) (ii)	Parallel shift registers with neat diagrams. Explain the working of a Johnson counter with neat logic diagram and the count table.	am, timing (5)
5B.	Explain the diagram an	e working of monostable multivibrator using 555 timer with int ad output waveforms.	ernal block (5)
