Dayananda Sagar College of Engineering

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(Accredited by National Assessment & Accreditation Council (NAAC) with 'A' grade)

Department of Electronics & Communication Engg.

Continuous Internal Evaluation – I

Course Name : **FOVLSI**		Date :	15/06/2021
Course Code : **:18EC6DCFOV**		Day :	TUESDAY
Semester : 6th A,B,C,D		Timings :	11.15-12.45pm
Max Marks :50 Max		Duration :	1½ Hrs.

No.		Question Description	Mks	CO & Levels
Q1	(a)	Source and drain in nMOS device are isolated by _____ a) a single diode b) two diodes c) three diodes d) four diodes	1	
	(b)	What is the condition for non saturated region? a) Vds = Vgs – Vt b) Vgs lesser than Vt c) Vds lesser than Vgs – Vt d) Vds greater than Vgs – Vt	1	
	(c)	In nMOS device, gate material could be _____ a) silicon b) polysilicon c) boron d) phosphorus	1	
	(d)	CMOS inverter has _____ output impedance. a) low b) high c) very high d) none of the mentioned	1	
	(e)	In CMOS fabrication, the photo resist layer is exposed to i)visible light ii) ultraviolet light iii) infra-red light iv)fluorescent	1	
	(f)	If both the nmos and pmos are in saturation, then they act as i) current source ii) voltage source iii) divider iv) buffer	1	
	(g)	Which layer is used for power and signal lines? i) metal ii) polysilicon iii) n-diffusion iv) p-diffusion	1	
	(h)	Circuit designers need _____ circuits i) tighter ii) smaller layout iii)decreased silicon area iv) all of the mentioned	1	
	(i)	The width of n-diffusion and p-diffusion layer should be i)3λ ii) 2λ iii) λ iv)4λ	1	
	(j)	Which color is used for implant? a) red b) blue c) green d) yellow	1	
Q2	a	Explain n-MOS fabrication with neat diagram.	10	CO1 L1
Q3	a	Explain briefly λ based design rules for wire and transistor (nmos, pmos, and cmos).	6	CO2 L1
	b	Compare CMOS and bipolar technology	4	CO1 L2
Q4	a	Explain the ideal I-V characteristic of nmos transistor. Derive the equation for I_D in two regions. 1. Non-Saturated region 2. Saturated region	10	CO1 L1
		OR		
Q5	a	Analyze the DC characteristics of CMOS inverter graphically.	10	CO1 L4
Q6	a	Explain the Nand2 operation using 4:1 multiplexer and draw CMOS nand2 logic circuit	6	CO1 L3
	b	Describe briefly switching characteristics of nFET and pFET.	4	CO2 L1

		OR		
Q7	a	Sketch the circuit schematic and stick diagram and layout for the given equation $Z=\overline{AB+C}$	10	CO2 L3