Roll.No							

AGNEL INSTITUTE OF TECHNOLOGY AND DESIGN
ASSAGAO, GOA-403 507

INTERNAL TEST – I

Sem –I **PHYSICS** Max. Marks: 25

Date: 14/12/2020 Duration: 1 hour

Answer all Questions

Planck's constant=6.626x10 $^{-34}$ J-s, Velocity of light=3x10 ^{8} m/s

Boltzmann's constant=1.38x10 $^{-23}$ J/K, Electronic charge=1.6x10 $^{-19}$ C

1.	Derive an expression for numerical aperture of an optical fibre.	(5) (CO2)
2.	With neat diagrams explain construction and working of a He-Ne laser.	(5) (CO2)
3.	Write a short note on structure of an optical fibre.	(5) (CO2)
4.	An optical fibre has core R. I= 1.50 and cladding R. I=1.488 find i) Critical Angle ii) Acceptance angle iii) Numerical Aperture iv) Fractional index change.	(5) (CO4)
5.	If the mode of separation of He-Ne laser operating at 6328A^{o} is 1000 MHz, what must be the length of laser cavity to ensure that only one longitudinal mode oscillates.	(5) (CO4)

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Faculty Name