B.Tech. (Agricultural Engineering)

Semester	: I (New)	Term	: I	Academic Year	: 2019-20
Course No.	: BS-PHY 111	Title	: Engineering Physics		
Credits	: 2(1+1)				
Day & Date	: Monday, 06.01.2020	Time	: 10.00 to 12.00	Total Marks	: 40

Note : 1. Solve **ANY EIGHT** questions from **SECTION "A"**.
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1 Describe Stokes's method of falling sphere to determine the coefficient of viscosity.

Q.2 State difference between Type I and Type II superconductors.

Q.3 Find the critical angle, acceptance angle and numerical aperture. Given refractive index of air, core and cladding are 1, 1.5 and 1.45 respectively.

Q.4 Explain the operation of Ruby laser with neat energy level diagram.

Q.5 Define reflection coefficient of surface. Explain the procedure to find out the reflecting power of mirror.

Q.6 Write short notes.

a) Diamagnetic substances

b) Isotope effect of superconductor

Q.7 Name and explain various types of optic fiber with neat diagram and state its application.

Q.8 Define surface tension. Explain Jaeger's method for determination of surface tension.

Q.9 Explain valence, conduction and forbidden band with neat energy level diagram.

Q.10 Derive Poiseuille's formula for the rate of flow of liquid through a capillary tube.

SECTION "B"

Q.11 Fill in the blanks.

1) Cohesive forces between two molecules _____ as the distance increases.

2) The _____ state is the excited state in which the life time of atom is greater than 10^{-8} seconds.

3) The Meissner effect is related to _____ property of superconductor.

4) The _____ communication system uses the phenomenon of total internal reflection.

Q.12 Define the following terms.

1) Surface energy

2) Lambert cosine law

3) Acceptance angle

4) Critical current strength

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