Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech. Summer 2017 - 18 Examination

Semester: 1, 2 **Date: 24/05/2018**
Subject Code: 03192101 **Time: 2:00pm to 4:30pm**
Subject Name: Engineering Physics **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 (A) Attempt all of the following questions. **(15)**

1. 1 Bel = _____ dB
2. Full form of CVD is _____
3. A crack within the body of the material can be precisely located using _____ waves.
4. The minimum audible intensity of sound is _____ watt/m^2
5. _____ Laser is a solid state laser.
6. Define reverberation.
7. Which pumping technique is used in He: Ne laser?
8. What is the principle of solar cell?
9. Core diameter of single mode fibre is more than that of multi-mode fibre. True or False?
10. Define Total Internal Reflection.
11. Metallic glasses are made up from
    (a) Glasses (b) Metals (c) Metals and glasses (d) none of these
12. In Compton effect, wavelength of scattered photon
    (a) Increases (b) Decreases (c) remains constant (d) either (a) or (b)
13. Nd: Yag laser emits
    (a) Visible light (b) UV light (c) Infra-red light (d) none of these
14. Which of the following is not related to pressure
    (a) torr (b) mbar (c) Pa (d) horsepower
15. Which law is useful to calculate electric field?
    (a) Gauss's law (b) Biot-Savart's law (c) Ampere's law (d) Faraday's law

Q.2 Answer the following questions. (Attempt any three) **(15)**

A) Explain Nd: YAG laser with construction and working using suitable diagram.
B) Derive the formula for acceptance angle and numerical aperture of an optical fiber.
C) Explain Ball milling method for the synthesis of Nanomaterials.
D) Explain the production of ultrasonic waves using magnetostriction oscillator.

Q.3 A) Discuss various factors affecting the acoustics of building with their remedies. **(07)**

B) Answer the following

1. Write any five applications of Nanotechnology. **(05)**
2. A fiber has core and cladding refractive index 1.5 and 1.46 respectively. Calculate its critical angle, acceptance angle and Numerical aperture. **(03)**

OR

B) Answer the following questions

1. Explain the phenomena that could not be explained by classical physics. **(04)**
2. A photon of wavelength 1.5 Å strikes an electron at rest and scattered at an angle of 45° to its original direction. Find the wavelength of the photon after scattering. **(04)**
   (mass of electron = $9.1X10^{-31}$ kg, Planck's constant = $6.625X10^{-34}$ J-sec
   Velocity of light = $3X10^{8}$ m/s)

Q.4 A) Explain rotary pump with its construction and working using suitable diagram. **(07)**

OR

A) What is the physical meaning of gradient, divergence and curl? **(07)**
Find out divergence and curl of a vector $F = x^2 \hat{\imath} + 3yz^2 \hat{\jmath} - 2xz \hat{k}$ at a point (1,2,3)

B) Answer the following questions

1. Write any four applications of superconductors. **(04)**
2. Write any four applications of Lasers. **(04)**