



DG-3124

**B. Sc. (Physics) (Sem. V) Examination**  
**March/April – 2016**  
**Engineering Physics**

Time : Hours]

[Total Marks : 50

**Instructions :**

(1)

नीचे दर्शायेव निशानीवाणी विगतो उत्तरवही पर अवश्य लपवी.  
Fillup strictly the details of signs on your answer book.

Name of the Examination :  
B. Sc. (Physics) (Sem. V)

Name of the Subject :  
Engineering Physics

Subject Code No. : 3 1 2 4 Section No. (1, 2,...): Nil

Seat No. :  
[ ] [ ] [ ] [ ] [ ] [ ]

Student's Signature

- (2) Draw a neat diagram wherever necessary.  
(3) Symbols used in the paper have their usual meaning.  
(4) Figures to the right indicates full marks.  
(5) Studebt can use non-programmable scientific calculator wherever necessary.

**1 : Answer in brief.**

08

1. Define compound pendulum.
2. State Wien's law.
3. Define time of reverberation.
4. What are supersonic wave?
5. Define time of reverberation.
6. What are supersonic wave & infrasonic waves?
7. State law gravitation??
8. What are natural satellites?

**2 : (A) Answer any ONE :**

10

1. State Kepler's laws of planetary motion. Give proof of Kepler's laws.
2. Explain thermal conductivity. Describe Lee's method for determining thermal conductivity of a poor conductor.

**2 : (B) Answer any ONE :**

04

1. Calculate the escape velocity on the surface of the moon, taking its radius as 1700 km, and mass  $7.3 \times 10^{22}$  kg.
2. The surface of a furnace is at  $1700^\circ\text{C}$ . Assuming that it is a black body, how much heat is radiated by  $1.0 \text{ m}^2$  of this surface in one hour?  
Take Stefan's constant  $\sigma = 5.7 \times 10^{-8} \text{ Wm}^{-2}\text{K}^{-4}$ .

- 3 : (A) Answer any ONE :** **10**
1. What do you understand by a black body-? State and explain Kirchoff's law of heat radiations.
  2. Define reverberation period for a hall. Explain clearly what, caused reverberation and how it can be minimised.
- 3 : (B) Answer any ONE :** **04**
1. A quartz crystal of thickness of 0.001 *metre* is vibrating at resonance. Calculate the fundamental frequency. Given  $Y$  for quartz =  $7.9 \times 10^{10}$  *Newton/m<sup>2</sup>* and  $\rho$  for quartz =  $2650$  *kg/m<sup>3</sup>*.
  2. A very small hole in an electric furnace is used to treating metals acts nearly as a black body. If the hole has an area  $200$  *mm<sup>2</sup>*, and it is desired to maintain the metal at  $1100$  °C, how much energy travels per second through this hole  
 $\sigma = 5.7 \times 10^{-8}$  *Wm<sup>-2</sup>°K<sup>-4</sup>*
- 4 : Write Short Note (Any Two).** **14**
1. Sources of error in the measurement of "g"
  2. Newton's law of cooling
  3. Acoustics of buildings
  4. Escape Velocity
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