DG-3124
B. Sc. (Physics) (Sem. V) Examination
March/April – 2016
Engineering Physics

Time : Hours] [Total Marks : 50

Instructions :

(1) Fill up 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. : 3124 Section No. (1, 2,.....), Nil

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) Student 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
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°C. Assuming that it is a black body, how much heat is radiated by 1.0 $m^2$ of this surface in one hour? Take Stefan’s constant $\sigma = 5.7 \times 10^{-8} Wm^{-2}K^{-4}$.
3: (A) Answer any ONE:
1. What do you understand by a black body? State and explain Kirchhoff'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:
1. A quartz crystal of thickness of 0.001 metre is vibrating at resonance. Calculate the fundamental frequency. Given \( Y \) for quartz = \( 7.9 \times 10^{10} \text{ Newton/m}^2 \) and \( \rho \) for quartz = 2650 kg/m\(^3\).
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\(^2\), and it is desired to maintain the metal at 1100 °C, how much energy travels per second through this hole \( \sigma = 5.7 \times 10^{-8} \text{ W m}^{-2}\text{K}^{-4} \).

4: Write Short Note (Any Two).
1. Sources of error in the measurement of "g"
2. Newton's law of cooling
3. Acoustics of buildings
4. Escape Velocity