AD-3221

B. Sc. (Sem. VI) Examination
March/April – 2015

Physics
(Engineering Physics)

Time : 2 Hours] [Total Marks : 50

Instructions :

(1) Fill up strictly the details of signs on your answer book.

Name of the Examination :
B. SC. (SEM. VI)

Name of the Subject :
PHYSICS (ENGINEERING PHYSICS)

Subject Code No. 3 2 2 1

Section No. (1, 2,.....)

(2) Draw neat and clean diagram wherever necessary.

(3) Symbols used in the paper have their usual meaning.

(4) Figures to the right indicate full marks.

(5) Student can use non-programmable scientific calculator wherever necessary.

1 Answer in brief. 8

(1) What do you mean by eyepiece?

(2) What is Newton's formula?

(3) Simple astronomical telescope consists of two _______ lenses.

(4) Give reason of red appearance of red glass.

(5) What is seeback effect?

(6) The value of Rydberg constant is _______ m⁻¹.

(7) In N-type semiconductor materials the majority carriers are_____.

(8) Define thermocouple

2 (A) Answer any ONE : 10

(1) Compare Ramsden's and Huygen's eyepieces and their relative merits. Also explain the construction and theory of Ramsden's eyepieces.

(2) Give the construction and theory of Huygen's eyepiece. Why a cross-wire cannot be used with it?
2 (B) Answer any ONE:
(1) A trihedral prism with refracting angle 60° provides the least deflecting angle 37° in air. Find the least deflection angle of that prism in water.
(2) The focal lengths of objective and eye lenses of an astronomical telescope are 200 cms and 5 cms. When the final image is formed at (a) infinity and (b) least distance of distinct vision, calculate the magnifying power of the telescope.

3 (A) Answer any ONE:
(1) Describe with a neat sketch the essential parts of a compound microscope showing the path of rays through the instrument. Obtain expression for its magnifying power.
(2) What do you understand by thermoelectric power? Discuss its variation with temperature and thermoelectric diagram.

3 (B) Answer any ONE:
(1) The e.m.f. in lead iron thermocouple, one junction of which is at 0°C is given by \( E = 1784t - 2.4t^2 \) (in \( \mu \text{volts} \)), where \( t \) is the temperature in °C. Find the neutral temperature and \( \pi \) and \( \sigma \).
(2) In Rutherford scatterhrmg experiment the number of particles observed at an angle of 10° is one million per min. How many particles per min will be observed at 90°.

4 Write Short Note (Any Two).
(a) Construction and theory of Huygen's eyepieces.
(b) Prism spectrometer.
(c) See beck effect.
(d) Operations of PNP and NPN transistors.