



**DRR-3221**

**B. Sc. (Sem. VI) (Physics) Examination**  
**March / April - 2016**  
**Engineering Physics**

Time : Hours]

[Total Marks : 50

**Instructions :**

(1)

नीचे दशांशों में निशानीवाणी विगतो उत्तरवही पर अवश्य लिखनी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. Sc. (SEM. VI) (PHYSICS)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="ENGINEERING PHYSICS"/>	<input type="text"/>
Subject Code No. : <input type="text" value="3"/> <input type="text" value="2"/> <input type="text" value="2"/> <input type="text" value="1"/>	Section No. (1, 2,.....) : <input type="text" value="NIL"/>
Student's Signature	

- (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 ?
- (b) Answer any one : 4
- (1) A trihedral prism with refracting angle  $60^\circ$  provides the least deflecting angle  $37^\circ$  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 : 10
- (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.
- (b) Answer any one : 4
- (1) The e.m.f. in lead iron thermocouple, one junction of which is at  $0^\circ\text{C}$  is given by  $E = 1784t - 2.4 t^2$  (in  $\mu$  volts), where  $t$  is the temperature in  $^\circ\text{C}$ . Find the neutral temperature and  $\pi$  and  $\sigma$ .
  - (2) In Rutherford scattering experiment the number of particles observed at an angle of  $10^\circ$  is one million per min. How many particles per min will be observed at  $90^\circ$  ?
- 4 Write short notes : (any two) 14
- (1) Construction and theory of Huygen's eyepieces.
  - (2) Prism spectrometer
  - (3) See back effect
  - (4) Operations of PNP and NPN transistors.