



AD-3221
B. Sc. (Sem. VI) Examination
March/April – 2015
Physics
(Engineering Physics)

Time : 2 Hours]

[Total Marks : 50

Instructions :

(1)

<p>नीचे दर्शावेक निशानीवाणी विगतो उत्तरवही पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.</p> <p>Name of the Examination : B. SC. (SEM. VI)</p> <p>Name of the Subject : PHYSICS (ENGINEERING PHYSICS)</p> <p>Subject Code No. : 3 2 2 1 Section No. (1, 2,.....): Nil</p>	<p>Seat No. : □ □ □ □ □ □</p> <p style="text-align: center;">Student's Signature</p>
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- (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 : 4
- (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 : 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.
- 3 (B) Answer any ONE : 4
- (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 μ volts), where t is the temperature in $^\circ\text{C}$. Find the neutral temperature and π and σ .
 - (2) In Rutherford scatterhrg 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). 14
- (a) Construction and theory of Huygen's eyepieces.
 - (b) Prism spectrometer.
 - (c) See beck effect.
 - (d) Operations of PNP and NPN transistors.