* A C - 3 0 5 8 *

AC-3058

B. Sc. (Sem. - IV) Examination

April / May – 2015

Applied Physics - III

(Mathematical & Modern Physics)

Time : 2 Hours] [Total Marks : **50**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. SC. (SEM. - IV)**

Name of the Subject :

☛ **APPLIED PHYSICS - III**

☛ Subject Code No. : **3 0 5 8** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Question one is compulsory.
(3) Draw neat digram wherever necessary.
(4) Scientific calculator can be used.

1. Answer the following questions in short as directed. **8**

(i) **Give main difference between scalar and vector quantities.**

(ii) **Write statement of Gauss' theorem.**

(iii) **What do you mean by superconductivity?**

(iv) **Give two examples of type I superconductors.**

(v) **What is in-elastic collision?**

(vi) **What is space plasma?**

(vii) $\hat{j} \times \hat{j} =$ _____

(viii) **What is confinement of plasma?**

2 Answer any one

i(a) **Explain gradient divergence and curl** **8**

(b) **Prove: (a)** $\nabla (A + B) = \nabla A + \nabla B$ | **6**

ii(a) Explain gauss' divergence theorem 8

(b) **Evaluate** $\iint_S r \cdot n \, dS$ **, where S is a closed surface** **6**

3 Answer any one

i(a) **Explain in detail Meiser effect.** **8**

(b) **Give in brief elastic collision .Derive necessary equations.** **6**

ii(a) **Explain type II superconductors.** **8**

(b) What are thermal properties of superconductors? 6

4 Write short notes on: (any two) 14

(i) New super conductors.

(ii) Kinetic theory of plasma

(iii) A.C. resistivity in superconductors.

(iv) Vector integration.
