STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.
(For candidates admitted during the academic year 2004-05)

B.Sc. DEGREE EXAMINATION APRIL 2007
BRANCH III - PHYSICS
SIXTH SEMESTER

COURSE   :   **MAJOR – CORE**
PAPER   :   **SOLID STATE PHYSICS**
TIME   :   **2 ½ HOURS**   MAX. MARKS : 70

SECTION - B

ANSWER ANY FIVE QUESTIONS: (5 x 5 = 25)

1.   Derive an expression for Madelung constant and obtain the value for Nacl crystal.

2.   Explain Grain boundaries.

3.   Derive an expression for maximum shear stress for a cubic crystal.

4.   Derive an expression for electrical conductivity.

5.   Explain how Hall coefficient can be determined?

6.   Derive an expression for the transition temperature.

7.   Write short notes on the origin of domains.

SECTION - C

ANSWER ANY THREE QUESTIONS: (3 x 15 = 45)

8.   Explain ionic bonding and Vander Waal's bonding.

9.   Explain in detail a) F-centre   b) V-centre.

10.   Derive an expression for
      a) Langevin's theory of paramagnetism   b) Weiss molecular field theory.

11.   Write short notes on
      a) BCS theory of superconductivity   b) TYPE-I and TYPE-II superconductivity.

12.   Explain AC Josephson's and DC Josephson's effect.

⓿⓿⓿⓿⓿⓿⓿