STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.

(For candidates admitted during the academic year 2004-05 & thereafter)

SUBJECT CODE : **PH/AC/GP42**

B.Sc. DEGREE EXAMINATION APRIL 2007

BRANCH IV - CHEMISTRY

FOURTH SEMESTER

COURSE : **ALLIED – CORE**

PAPER : **GENERAL PHYSICS – II**

TIME : **2 ½ HOURS** MAX. MARKS : 70

SECTION - B

ANSWER ANY FIVE QUESTIONS: (5 x 6 = 30)

1. In young's double slit experiment the light has a frequency 6×10^{14} hz and distance between center of adjacent fringes is 0.75mm. If the screen is 1.5m away, what is the distance between the slits.

2. Write down the four Maxwell's equation explaining each term in detail.

3. Explain in detail a) the principle of working and b) applications of ammonia maser.

4. How fast would a rocket have to go relative to an observer for its length to be contracted to 99% of its length at rest.

5. With necessary details draw the circuit diagram for transistor characteristics for a a) NPN transistor in common emitter mode and b) PNP transistor in common base mode.

6. Using diodes, construct a logic 'AND' gate and explain its working. Present the output in the form of a truth table.

7. The applied input a.c power to a half wave rectifier is 100 watts. The d.c output pwer obtained is 40 watts. What is the rectification efficiency? What happens to the remaining power?

SECTION - C

ANSWER ANY TWO QUESTIONS: (2 x 20 = 40)

8. State and prove the Gauss law in electrostatics and apply the same to determine the field due to a spherical charge distribution.

9. With a neat diagram, describe the magnetometer method of tracing the hysteresis curve.

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10. Explain the principle, working and applications of a) He – Ne laser b) Optic fibre.

11. a) State and prove De – Morgan's theorem.

b) With the help of Boolean algebra and logic circuits prove the following idendity for all possible inputs. AC + ABC = AC.

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