

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.

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

SUBJECT CODE : PH/AO/FP33

B.Sc. DEGREE EXAMINATION NOVEMBER 2007

BRANCH IV - CHEMISTRY

THIRD SEMESTER

REG. No. _____

COURSE : **ALLIED – OPTIONAL**
PAPER : **FUNDAMENTALS OF PHYSICS**
TIME : **30 MINS.**

MAX. MARKS : 30

SECTION - A

TO BE ANSWERED IN THE QUESTION PAPER ITSELF

ANSWER ALL QUESTIONS:

(30 x 1 = 30)

I CHOOSE THE CORRECT ANSWER:

1. The M.K.S. unit of Rigidity modulus is _____.
a) N/m b) N/m² c) Nm d) N
2. Bending of light waves around corners and their spreading into the geometrical shadow of an object is called _____.
a) interference b) diffraction c) polarization d) none of these
3. Within the elastic limit, stress is directly proportional to strain is known as _____.
a) Hooke's law b) Pascal's law c) Poisson ratio d) none
4. Grating element is a _____.
a) width of ruling b) width of slit
c) width of ruling and slit d) No. of lines on the grating
5. The radius of the Newton's rings is proportional to _____.
a) radius of curvature of the lens b) square root of wave length of light
c) square root of radius of lens aperature d) square of the order
6. The phenomenon of polarization _____.
a) Vibration lie in one plane
b) plane of vibration and plane of polarization are \perp r
c) explains transverse nature of light
d) all of them
7. The velocity above which the motion of the liquid becomes turbulent _____.
a) terminal velocity b) mean velocity
c) critical velocity d) none

III STATE WHETHER TRUE OR FALSE:

21. If a_1 and a_2 are two cross section at which the velocity of the liquid are V_1 and V_2 then $a_1v_1 = a_2v_2 = \text{constant}$.
22. Polarisation of light support the quantum nature of light.
23. Nicol prism can be used both as a polarizer an an analyzer.
24. Poisson's ratio is the ratio of longitudinal strain to volume strain.
25. Maser is a device extremely useful as a source of microwave.

IV ANSWER BRIEFLY:

26. Explain the colour of thin films.
27. Explain the Brewster's law.
28. Define the turbulent flow.
29. Define the r.m.s value of an A.C.
30. Give the principal section of the crystal?



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TIME : **2 ½ HOURS**

MAX. MARKS : 70

SECTION – B

ANSWER ANY FIVE QUESTIONS:

(5 x 6 = 30)

1. Describe the working of the helium – neon laser (He-Ne).
2. Give the theory of Newton's rings.
3. Explain the phenomenon of double refraction.
4. Explain the meaning of the term terminal velocity deduce stokes law form dimensional consideration.
5. Write a note on the distribution of three phase A.C.
6. Explain the principles on which the electron microscope works.
7. Explain the working of ammonia maser.

SECTION – C

ANSWER ANY TWO QUESTIONS:

(2 x 20 = 40)

8. Describe with theory an experiment to find the young's modulus of a beam by the method of non-uniform bending (pin and microscope)
9. Give the theory of a plane transmission grating and describe how it is used to determine the wave length of light.
10. a) Explain the Binary Addition, subtraction and multiplication.
b) Draw the circuit symbol and give the truth-table of AND, OR and NOT gates.
11. Describe the principle of Laser properties and application of laser.

