RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR
(A.Y. 2015-2016)

Electronics & Communication Engg/Pre University Course

Subject Name : Physics Subject Code: PH2103
Date: 23/08/2015 Time: 45 Min
Exam:E2S1MT1/P2S1MT1 Max Marks: 15

SECTION –A (5M)
Objective part

NOTE:

i) This consists of 5 bits, these could be multiple choice, fill in the blanks, or a combination of both, each bit carrying one mark.
ii) All 5 bits are compulsory, there is NO Choice in Section-A.

1. Resolving power of a grating's dependency is as follows
   a) Proportional to Total number of lines on grating
   b) Inversely Proportional to Total number of lines on grating
   c) Not Dependent on Total number of lines
   d) None of the above

2. The image of a point source of light with wavelength 5890 A^0 at a distance 1m from zone plate is observed at 2 m on the other side, what is focal length of zone plate
   a) 0.5 m
   b) 0.67 m
   c) 0.8 m
   d) 1 m

3. Given a convex lens of focal length 60 cm, wavelength of light is 6000 A^0 , the radius of first zone plate is ----------

4. A ray of light is incident on a glass plate of refractive index 1.732 at polarising angle, The angle of refraction is ----------

5. Two Nicol prisms are arranged such that the amount of light transmitted through them is maximum, what will be the percentage reduction in intensity of incident light when analyser is rotated through 30^o
   a) 50
   b) 25
   c) 35
   d) 60

SECTION –B (10M)
Descriptive Part:

NOTE:

- **i) This section carries 10 Marks.**
- **ii) Two Questions need to be answered out of 3 questions asked, Each Question carries 5 Marks.**
- **iii) Each individual question can have sub-questions, (a) and (b), or (a), (b), (c) etc, Total Marks for one question is 5Marks.**

1) a) Describe the construction and working of a Nicol Prism. **(3M).**

   b) Calculate the thickness of a calcite plate which would convert plane polarised light into circularly polarised light. Given μ_0 =1.658 and μ_e =1.486 and wavelength of light used is $5890A^0$. **(2M).**

2) Obtain a relation between Einstein's coefficients A and B in the case of probabilities of spontaneous and stimulated emissions **(5M).**

3) a) State and Derive Gauss Divergence Theorem **(3M).**
   b) Define Polarisation **(1M).**
   c) Write down the Maxwell's equations in electrodynamics **(1M).**

----------THE END ----------