Q.P.Code 103013 **Reg. No.:..... .**

First B.Sc Optometry Degree Supplementary Examinations - March 2013

PHYSICS

Time: 3 hrs **Max marks : 80**

- **Answer all questions**
- **Draw diagram wherever necessary**

Essay: **(2x15=30)**

1. Explain Huygens principle. Derive the refraction formula for a thin lens on the basis of wave theory.
2. What are nodal points and nodal planes and list its properties. Describe the construction and working of a nodal slide and show how the nodal points of a system can be located with its help.

Short notes **(5x5=25)**

3. What is meant by spherical aberration. Mention the methods used for elimination of spherical aberration.
4. Describe the construction and working of Laurent's half shade polarimeter.
5. Describe Raman effect. Explain the effect on the basis of classical and quantum theory.
6. Explain about the optics of aphakia.
7. Explain the principle and working of Nd:YAG laser.

Answer briefly **(10x2=20)**

8. Explain Lambert's law.
9. Describe how a nicol prism can be used as an analyzer.
10. What is interference. Explain how to account for the colour of thin film on the basis of interference.
11. A screen is place at a distance of 1OOcm from a circular hole illuminated by a parallel beam of light of wave length $6400A^0$. Compute the radius of the fourth half period zone.
12. If a dot is made on a paper and a calcite crystal is placed on it, what happens to the image when viewed through the calcite crystal. Explain the phenomenon behind it.
13. What are Newton's rings.
14. Explain the principle of holography.
15. How many lines per meter are there in a plane diffraction grating which gives in the second order an angle of diffraction 30° for light of wave length 520nm incident normally on it.
16. Explain the defect coma and how it can be minimized.
17. What is an optical fibre and what is the principle involved in its working.

Fill in the blanks **(5x1=5)**

18. Light coming from infinity has a wave front which is_____
19. Fraunhoffer's lines commonly visible in the sun's spectrum are example of _____
20. Lyman series in the line spectrum lie in the region.
21. At the polarizing angle, the angle between reflected and refracted ray is_____
22. The light gathering ability of an optical fibre determines its_____

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