

ShreeH.N.Shukla College of Science Rajkot <u>PHYSICS</u> <u>T.Y.B.Sc. (Sem. V) (CBCS)</u> <u>Preliminary examination</u> <u>PAPER- 503</u>

[Time:2.30 hours] Date: 29/09/17 [Total Marks: 70]

Instructions: All questions are compulsory. The right side figure indicates total marks of the question. Draw the figure wherever necessary. Write answers of all the questions in main answer sheets.

SECTION-A

Q.1: Answer The Question in one line:

[20]

- 1. What do you means by interference fringes?
- 2. When the circular fringes are obtained in M.I.?
- 3. Write down the path difference formula in case M.I.
- 4. What is do you mean by induced birefringence?
- 5. Where pockets cell is used?
- 6. Which effect is electro optic effect?
- 7. In cotton-mountain effect the induced birefringence is given by which equation?
- 8. In which crystal the velocity of e ray is maximum along the optic axis?
- 9. In which crystal E-ray leads O-ray?
- 10. According to wave mechanics the angular momentum is given by which equation?
- 11. Which component is absent in Zeeman Effect in parallel view?
- 12. Who introduced the idea of electron spin?
- 13. Shape of an orbital is define by which quantum number?
- 14. How many maximum number of electron allowed in sub-shell?
- 15. Which quantum number gives the energy an electron?
- 16. Which type of spectra falls in visible and UV region?
- 17. If the charge in energy is due to rotation of molecule, then which spectra is observed?
- 18. Which line is observed when Raman shift is negative?
- 19. Raman Spectra are consisting of which lines?
- 20. Why Raman tube is surrounded by a water jacket?

<u>SECTION – B</u>

1.	What is interferometer?	
2.	What is Babine compensator?	
3.	Define optical axis.	
4.	What is Kerr effect?	
5.	Explain double refraction?	
6.	What do you mean by anisotropic crystal?	
Q.2 (E	B): Short questions: Write any three [3 Marks each]	[09]
1.	Explain how to determine the thickness of a thin plate of transpar	rent materia
	with M.I.?	
2.	What is cotton-Mouton effect?	
3.	Explain L.G. plate.	
4.	Write application of SEM and TEM.	
5.	Describe multiple beam interference.	
6.	What is Fabry Perot interferometer?	
Q.2 (C): Write Detail Note on [Any two] [5 Marks each]	[10]
1.	Explain construction and working of M.I.	
2.	Write a note on LED.	
3.	Explain Nichol Prism with necessary diagram.	
	Drive intensity distribution formula for multiple beam interference.	
4.		

<u>SECTION – C</u>

Q.3 (A): Short Questions: Write any three [2 Marks each]	[06]
1. What is orbital quantum number?	
2. What is Zeeman Effect?	
3. Explain "Spinning electron."	
4. What is Raman Effect?	
5. What is fine structure?	
6. Draw the experimental set up for Raman Effect.	
(B): Short questions: Write any three [3 Marks each]	[09]
1. Explain anomalous Zeeman Effect.	
2. What is stark effect?	
3. What do you mean by space quantization?	
4. Application of Raman spectra?	
5. What is rotation vibration spectra?	
6. Give comparison between Raman spectra and Fluorescence spectra.	
(C) Write Detail Note on [Any two] : [5 Marks each]	[10]
1. Explain vector atom model and normal Zeeman Effect.	
2. Explain Paschen-Back effect.	
3. Explain quantum theory of Raman Effect.	
4. Explain pure rotation spectra.	
5. Explain electronic band spectra.	

