

 JECRC JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTRE	Jaipur Engineering college and research centre, Shri Ram kiNangal, via Sitapura RIICO Jaipur- 302 022.	Academic year-2020-21
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Viva Voce

Year: B. Tech. I Year Semester-I & II

Subject& Code: Engineering Physics Lab (1FY2-20)

Lab Outcomes	
LO1	learn applicability of the concepts, verify some of the fundamental principles, team work and use of optical instruments to determine the monochromatic & polychromatic wavelength of the light sources, dispersive power of prism's glass material, vertical height (by Sextant).
LO2	Measure the time constant of resistance – capacitance (R-C) circuit, band gap of semiconductor, conversion & calibration of converted galvanometer into ammeter and voltmeter, numerical aperture of an optical fiber.

Experimet No.	LO	Object of the Experiment
1.	LO1	To determine the wavelength of sodium light by Newton's ring.
		<ol style="list-style-type: none"> 1. Why do we call these fringes Newton ring? 2. Why are these fringes circular? 3. Why is broad source of light needed in seeing Newton rings? 4. On what factors does the diameter of rings depend? 5. The rings are broader at the center and go on getting thinner as the order of fringes increases. Why is it so? 6. Why the central fringe dark? 7. What will happen if glass plate is replaced by plane mirror? 8. What will happen when white light is used in Newton ring experiment? 9. Where are the rings formed? 10. What will happen when a few drops of transparent liquid are introduced between the lens and glass plate? 11. Do you get rings in the transmitted light? 12. Sometimes the center is bright. Why?



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		13. How can you determine R?
2.	LO1	To determine the wavelength of He-Ne Laser and hence determine coherent length and coherent time of He-Ne Laser.
		<ol style="list-style-type: none">1. What is laser?2. What is meant of laser?3. What is the principle of laser?4. What is the difference between mercury source and laser source?5. Is He-Ne laser is four energy level laser system?6. Give an example of three level laser.7. Define the coherence time.8. Define the coherence length.9. Mention the basic characteristics of laser light source.10. What do you mean by solid angle?11. What is wavelength of light emitted from He-Ne laser?12. What do you mean by spontaneous emission?13. What do you mean by stimulated emission?14. What do you mean by 'Population Inversion'.15. Which is the active gas in He-Ne gas laser?16. Define metastable state.17. What type of pumping source we use in He-Ne gas laser?
3.	LO1	To determine the wavelength of prominent lines of mercury by plane diffraction grating with the help of spectrometer.
		<ol style="list-style-type: none">1. What is diffraction?2. What is a diffraction grating?3. How many types of grating are there?4. What is grating element?5. How many lines are drawn on a grating?6. Is the grating used in the laboratory a real grating?7. Why do you keep the ruled surface towards the telescope?8. Why do you adjust the grating normal to the incident light?9. What is meant by order of spectrum?10. How many orders can be obtained with the help of grating?



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		11. Are the intensities of light equal in all orders of the spectrum?
4.	LO1	To determine the dispersive power of the material of a prism by spectrometer.
		<ol style="list-style-type: none">1. What is the use of collimator in the spectrometer ?2. Why are lines and circles drawn on the prism table ?3. Why do you take readings from both the verniers scales?4. Which type of eyepiece is used in the telescope of a spectrometer and why ?5. Why is Huygen's eyepiece not used in the telescope of spectrometer ?6. What is the use of tangential screws in the spectrometer ?7. Why are the telescope and the collimator not permanently set for parallel rays?8. Which source of light are you using ? And why ?9. Can you find out the dispersive power of a prism with sodium light?10. What is the type of your Mercury lamp ?11. After switching off the mercury lamp, if it is again switched on, it does not emit light at once, why ?
5	LO1	To determine the height of the building or the object above the ground by sextant.
		<ol style="list-style-type: none">1. Why this instrument is called sextant ?2. On what principle is the sextant based ?3. Why do you see two images of the same object by the telescope when the telescope of the sextant is directed towards the object ?4. Is the incident ray falling on the index mirror fixed as the index mirror rotated ?5. What is meant by zero error of sextant ?6. What is the use of coloured glass mounted on the sextant ?7. Is zero reading/error constant in a particular instrument ?8. Why are double the actual angle marked on the arc of the sextant ?9. What are other uses of sextant ? Why do you see two images of the same object by the telescope when the telescope of the sextant is directed towards the object ?10. Is the incident ray falling on the index mirror fixed as the index mirror rotated ?11. What is meant by zero error of sextant ?12. What is the use of coloured glass mounted on the sextant ?13. What is the smallest division that can be read on each scale of sextant ?
6.	LO2	To measure the numerical aperture of an optical fiber.



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		<ol style="list-style-type: none">1. What is optical fiber?2. On what principle it is based?3. What are the various parts of the optical fiber?4. What is the purpose of cladding?5. What is the purpose of protective jacket?6. Why ultra pure glass is required in the manufacture of optical fiber ?7. What is numerical aperture?8. On what factors it depends?9. What is acceptance angle?10. What are the characteristic features of optical fiber?11. What is core?12. What is cladding?13. What is coating?14. What is physical meaning of 'numerical aperture'?
7.	LO2	Determination of energy band gap of Germanium semiconductor by reverse biased P-N junction diode.
		<ol style="list-style-type: none">1. What is a band gap?2. What is band gap in a good conductor?3. How is reverse current produced across a P-N junction and on what factors does it depend?4. What are semiconductors?5. What are intrinsic and extrinsic semiconductors?6. What are N-type and P-type semiconductors?7. What do you mean by forward and reverse biasing of junction diode?8. What is depletion layer?9. What is the effect of impurities on the conductivity of semiconductors?10. What is the order of current in forward and reverse bias arrangement?11. What are diffusion currents?12. Define Hall Effect phenomena and derive an expression for Hall voltage?
8	LO2	To study the charging and discharging of a capacitor and hence to determine the time constant.
		<ol style="list-style-type: none">1. What is condenser?2. Define the capacity of condenser?3. What is the unit of



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		<p>capacity?</p> <ol style="list-style-type: none">4. What is time constant of R-C circuit?5. Can you define time constant in terms of discharge of capacitor?6. What value of time constant will you choose if quick discharge is desired? Ans. Low value of RC.7. Mention the factors on which the capacity of a condenser depends?8. What will happen if R is reduced to zero in an RC circuit?9. What is the function of a dielectric?10. Mention one important application of RC circuit?11. Does any other current correspond to charging and discharging of a capacitor?
9	LO2	To convert a galvanometer into an ammeter of range 30 mA and calibrate it.
		<ol style="list-style-type: none">1. What is an ammeter?2. How a galvanometer is converted into an ammeter?3. What is the resistance of an ideal ammeter?4. Is it possible to make as an ideal ammeter?5. Why the resistance of an ammeter is low?6. Why an ammeter is always connected in series of any electric circuit?7. What do you mean by range of an ammeter?8. How can you change range of an ammeter?9. Can alternate current be measured with moving coil galvanometer?10. What will happen if the ammeter is connected in parallel to a circuit?
10.	LO2	To convert a galvanometer into voltmeter of range 5 Volt and calibrate it.
		<ol style="list-style-type: none">1. What is a voltmeter?2. How a galvanometer is converted into a voltmeter?3. What is the resistance of an ideal galvanometer?4. Name any instrument which acts as an ideal voltmeter?5. Why the resistance of a voltmeter is high?6. Why a voltmeter is always connected in parallel in any electric circuit?7. What do you mean by range of a voltmeter?8. How can you change range of a voltmeter?



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| | | <p>9. Can alternate potential be measured with moving coil galvanometer?</p> <p>10. What will happen if the voltmeter is connected in series with the circuit?</p> <p>11. Define sensitivity of a voltmeter?</p> |
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