

Syllabus for Level II for Junior Technician Physical and Chemical Biology Lab

(Advt. No. IITPKD/R/NF/01/2021 Dated 03 Feb 2021)

Duration : 90 minutes

Marks: 100

Type of Question paper: MCQ's & Short Answer Type questions

Basic Physics:

1. Unit and Dimensions,
2. Characteristics of Metals, Insulators, Semiconductors, Ohm's law
3. Electromagnetic waves: Wave characteristics (Frequency, wavelength, phase and group velocity), wave nature of light
4. Optics-1(Geometrical Optics): Reflection and Refraction, Snell's law, Refractive index, Convex and Concave lenses, Image formation by a system of thin lenses, Simple telescope, Simple Microscope.
5. Optics-2(Wave Optics): Interference (Young's double slit experiment), Diffraction, (Fresnel and Fraunhofer diffraction, diffraction gratings. Measurement of wavelength and refractive index).
6. Lasers : Basic principle, Types of lasers (Solid state Lasers, Gas Lasers, Semiconductor Lasers)

Measurements (principles and instrumentation)

1. SI units, systematic and random errors in measurement, propagation of errors.
2. Electrical Measurement : voltage, current and power in single and three phase circuits, Digital voltmeter, digital multimeter, Oscilloscope,
3. Temperature measurement (Thermometers, Thermistors, RTD, Thermocouple)
4. Light intensity measurement (LDR, Photodiode, Phototransistors)
5. Pressure measurement (Absolute, gauge and differential), Pressure sensors

General Skills

1. Official Letter writing, Basic Computer knowledge (Word Processing, spreadsheet)
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