

University Department of Physics
Vinoba Bhave University, Hazaribag

(Group "F"(II))

List of Equipments to be purchased For M.Sc. & Research Lab. under UGC XIIth plan grant:

| SI No. | Items Details | Specification | Make | Quantity | Approx estimated cost * quantity (in Rs) |
|--------|--|--|--|----------|--|
| 1. | Automated Refractometer – Model J457 | Measurement Range:1.26 - 1.70 RI; 0 - 95% Brix Accuracy: 0.00004 RI; 0.03 Brix Electronic Temperature Control: Flexible temperature selection between 15°C - 100°C; TB option: allows 15°C -110°C with one hour boost to 120°C | Rudolph Research Analytical 55 Newburgh Road Hackettstown, NJ, 07840 USA | 1 | |
| 2. | Densitometry (i)Bicapillary pycnometer (ii)graduated dilatometer | Measurement Density: 0 to 3 g/cm ³ Ranges: Temperature: 15 °C to 30 °C (controlled via Peltier) Pressure: 0 to 10 bars Accuracy: Density: 0.0003 g/cm ³ Density: 0.0002 g/cm ³ Temperature: 0.05 °C Repeatability: Density: 0.0001 g/cm ³ Temperature: 0.02°C Resolution: Density: 0.0001g/cm ³ Temperature: 0.01°C Sample Volume: Less than 1ml Wetted Materials: Borosilicate glass, Teflon Power Consumption: 150-200 Watts | Rudolph Research Analytical 55 Newburgh Road Hackettstown, NJ, 07840 USA | 1 | |
| 3. | Ostwald' viscometer | Dynamic Viscosity Range: Less than 3 cps 3 to 141 cps 141 to 10,000 cps | CANNON Instrument Company 2139 High Tech Road State College, PA 16803 USA | 1 | |

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| | | 10,000 to 0.98E+6 cps 0.98E+6 cps and up Kinematic Viscosity Range: 6 to 100 cSt 100 to 5,000 cSt 5,000 cSt and up Accuracy: No more than 0.01 ±% Full Scale No more than 0.5 ±% Full Scale | | | |
| 4. | Liquid conductivity meter | | Systronics/Mittal | 1 | |
| 5. | Magnetic stirrer | | MARS\OSAW | 1 | |
| 6. | Solar cell characteristics | | MARS\OSAW | 3 | |
| 7. | Hysteresis Loop Tracer (CRO) | Field thin 500kv/cm for 100 micron film, Resolution 16 bit Temp. Rt-400 c with PID Control, 19" rack mountable unit | Scientific equipment/ MARS/ OMEGA | 3 | |
| 8. | Grating for Spectrometer | 1500/2000 lines/cm | INDOSAW/MARS/ OMEGA | 10 | |
| 9. | Audio/Radio Frequency oscillators | 1 Hz to 10 mHz | MARS/ OMEGA | 4 | |
| 10. | ESR Spectrometer | Sestechno | MARS/ OMEGA | 2 | |
| 11. | Flip Flop Apparatus | complete set up | MARS/ OMEGA | 6 | |
| 12. | Pulse clock generator using NAND gate | complete set up | MARS/ OMEGA | 3 | |
| 13. | Spectrometer (for Brewster's law with analyzer) | LC-20" | INDOSAW/MARS/INSF | 6 | |
| 14. | LDR Characteristics | complete set up | INDOSAW/MARS/INSF | 3 | |
| 15. | LED Characteristics | complete set up | MARS/OSAW | 3 | |
| 16. | Photo Transistor Characteristics. | complete set up | MARS/OSAW | 3 | |
| 17. | Na vapor Lamp with power supply | 55 W | INSIF /MARS | 10 | |
| 18. | U P S Trainer | 1 KVA | MARS/OSAW | 1 | |
| 19. | Relay control systems Trainer | | MARS/OSAW | 1 | |
| 20. | Liquid cells for Liquid Samples-1&3 MHz | | Mittel enterprises | 2 | |
| 21. | Cell top having stainless steel reflector controlled by micrometer (l.c.-0.001mm) matching to cells | | Mittel enterprises /MARS/ OMEGA/ OSAW | 2 | |
| 22. | Cable to connect generator for liquid cells | | Mittel enterprises /MARS/ OMEGA/ OSAW | 2 | |

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| 23. | Determination of wavelength of He-Ne Laser light using Grating. | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 24. | Determination of thickness of thin wire using Laser light. | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 25. | Brewster's Law using spectrometer. | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 26. | Determination of wavelength of Sodium light using Michelson interferometer. | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 27. | Determination of wavelength of Sodium light using Fabry – Perot interferometer. | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 28. | Resolving Power of Telescope | complete set up | MARS/ OMEGA/ OSAW | 4 | |
| 29. | Resolving Power of Prism | complete set up | MARS/ OMEGA/ OSAW | 4 | |
| 30. | Production and analysis of Polarised light using half and quarter wave plate. | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 31. | Logarithmic Amplifier. | complete set up | MARS/ OMEGA/ OSAW | 5 | |
| 32. | Zener diode characteristics & voltage stabilizer. | complete set up | MARS/ OMEGA/ OSAW | 6 | |
| 33. | FET characteristics | complete set up | MARS/ OMEGA/ OSAW | 6 | |
| 34. | MOSFET characteristics complete set up | complete set up | MARS/ OMEGA/ OSAW | 4 | |
| 35. | UJT characteristics | complete set up | MARS/ OMEGA/ OSAW | 5 | |
| 36. | Transistor biasing (CE mode) | complete set up | MARS/ OMEGA/ OSAW | 6 | |
| 37. | Characteristics of SCR | complete set up | MARS/ OMEGA/ OSAW | 4 | |
| 38. | Basic Logic gates and Universal gates. | complete set up | MARS/ OMEGA/ OSAW | 5 | |
| 39. | Op-amp - Integrator & Differentiator. | complete set up | MARS/ OMEGA/ OSAW | 5 | |
| 40. | Half Adder, Full Adder and 4-bit binary Adder. | complete set up | MARS/ OMEGA/ OSAW | 5 | |
| 41. | G. M. Counter for 6 digits GM counter with built in power supply | complete set up | MARS/ OMEGA/ OSAW | 2 | |

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| 42. | Measurement of Dielectric constants of solid and liquid samples | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 43. | Study of Dielectric constants and Curie temperature of ferroelectric ceramics | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 44. | Determining Optical constants of a metal by reflection of light | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 45. | Lattice dynamics kit with frequency meter | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 46. | BCD to seven segments | complete set up | MARS/ OMEGA/ OSAW | 4 | |
| 47. | Monostable Multivibrator using Oscilloscope (CRO) | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 48. | Bistable multivibrator using Oscilloscope (CRO) | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 49. | Pulse code modulation and demodulation | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 50. | Addition, Subtraction, Multiplication using 8086 microprocessor | complete set up | MARS/ OMEGA/ OSAW | 2 | |
| 51. | Thevenin theorem, | complete set up | MARS/ OMEGA/ OSAW | 4 | |
| 52. | Norton theorem, | complete set up | MARS/ OMEGA/ OSAW | 4 | |
| 53. | Active filter set up | complete set up | MARS/ OMEGA/ OSAW | 5 | |
| 54. | A to D counter type | complete set up | MARS/ OMEGA/ OSAW | 4 | |
| 55. | D to A counter type | complete set up | MARS/ OMEGA/ OSAW | 4 | |
| 56. | Connecting wires with adopter (pin) which can be fitted in built up circuit hole/ patch cords | | MARS/ OMEGA/ OSAW | 100 | |
| 57. | Battery Charger | 220-9volts (12V,5A) with fuse | MARS/ OMEGA/ OSAW | 6 | |
| 58. | Battery Eliminators | 2-4-6-8-10 & 12V, 5A | MARS/ OMEGA/ OSAW | 6 | |
| 59. | DC Voltmeter | 0-200mV | MARS/ OMEGA/ OSAW | 8 | |
| 60. | DC Milli Voltmeter | 0-250V | MARS/ OMEGA/ OSAW | 6 | |

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| 61. | DC Milli Ammeter | 0-100mA | MARS/ OMEGA/ OSAW | 6 | |
| 62. | DC Ammeter | 0-10A | MARS/ OMEGA/ OSAW | 6 | |
| 63. | AC Ammeter | 0-10A | MARS/ OMEGA/ OSAW | 6 | |
| 64. | AC Voltmeter | 0-250V | MARS/ OMEGA/ OSAW | 6 | |
| 65. | Prism | | MARS/ OMEGA/ OSAW | 10 | |
| 66. | Soldering Iron with wires | 25 W | MARS/ OMEGA/ OSAW | 1 | |
| 67. | Tool Kit | Complete Set | MARS/ OMEGA/ OSAW | 1 | |
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