

**Requisition list of Laboratory experiment setup for UG & PG, Dept. of Physics,  
Barasat Govt College for the FY: 2022-23**



Sl No	Item description	Brand	Requisition for	
			Semester name	Paper code
1	Expt setup to design an Amplitude Modulator using Transistor (with variable amplitude and frequency for both carrier and modulating signal) & envelope detector for demodulation of AM signal Optional: Cathode Ray Oscilloscope	* Standard	UG-SEM6 (H)	PHSADSE06P
2	Expt setup to study envelope detector for demodulation of AM signal Optional: Cathode Ray Oscilloscope	* Standard	UG-SEM6 (H)	PHSADSE06P
3	Expt setup to study FM - Generator and Detector circuit (with variable amplitude and frequency for both carrier and modulating signal) Optional: Cathode Ray Oscilloscope	* Standard	UG-SEM6 (H)	PHSADSE06P
4	Expt setup to study AM Transmitter and Receiver Optional: Cathode Ray Oscilloscope	* Standard	UG-SEM6 (H)	PHSADSE06P
5	Expt setup to study FM Transmitter and Receiver Optional: Cathode Ray Oscilloscope	* Standard	UG-SEM6 (H)	PHSADSE06P
6	Expt setup to study Time Division Multiplexing (TDM), (sampling frequency not more than 40 times of modulating signal frequency) Optional: Cathode Ray Oscilloscope	* Standard	UG-SEM6 (H)	PHSADSE06P
7	Expt setup to study Pulse Amplitude Modulation (PAM) (sampling frequency not more than 40 times of modulating signal frequency) Optional: Cathode Ray Oscilloscope	* Standard	UG-SEM6 (H)	PHSADSE06P
8	Expt setup to study Pulse Width Modulation (PWM), (Variable AF & Carrier signal generator, both frequency & amplitude variable) Optional: Cathode Ray Oscilloscope	* Standard	UG-SEM6 (H)	PHSADSE06P
9	Expt setup to study Pulse Position Modulation (PPM), (Variable AF & Carrier signal generator, both frequency & amplitude variable) Optional: Cathode Ray Oscilloscope	* Standard	UG-SEM6 (H)	PHSADSE06P
10	Expt setup to study ASK, PSK and FSK modulations & demodulations (quote separately for each item) (AF & Carrier signal generator with variable frequencies) Optional: Cathode Ray Oscilloscope	* Standard	UG-SEM6 (H)	PHSADSE06P
11	Function/Arbitrary waveform Generator (60MHz), Model -DG1062Z	RIGOL	UG-SEM4 (H) & SEM6 (H)	PHSACOR10P & PHSADSE06P
12	DSO (50MHz), Make: Scientific, Model-SM0502	Scientific	UG-SEM4 (H) & SEM6 (H)	PHSACOR10P & PHSADSE06P
13	Function Generator (5MHz), Make: Scientific, Model-SM-5072	Scientific	UG-SEM4 (H) & SEM6 (H)	PHSACOR10P & PHSADSE06P
14	Function Generator (2MHz), Make: Scientific, Model: SM-5060	Scientific	UG-SEM4 (H) & SEM6 (H)	PHSACOR10P & PHSADSE06P
15	0-15V-1A Regulated & Stabilized Power supply with digital display	* Standard	UG-SEM4 (H) & SEM6 (H)	PHSACOR10P & PHSADSE06P
16	0-5V-1A Regulated & Stabilized Power supply with digital display	* Standard	UG-SEM4 (H) & SEM6 (H)	PHSACOR10P & PHSADSE06P
17	AC milli-Voltmeter Model : ACM-102 (Make: SES)	SES	UG-SEM4 (H) & SEM6 (H)	PHSACOR10P & PHSADSE06P
18	Expt setup to study V-I characteristics of PN junction diode and Light emitting diode (LED) ( using both current and voltage source). breadboard, Variable DC supply (0-10V), Pot, voltmeter & milliammeter	* Standard	UG-SEM4 (H)	PHSACOR10P
19	Expt setup to study the V-I & power curves of Solar Cells and find maximum power point and efficiency	* Standard	UG-SEM4 (H)	PHSACOR10P
20	Expt setup to study the frequency response of voltage gain of a RC – coupled transistor amplifier. (breadboard, 15V supply, resistances, capacitors, pots, 25 banana jack)	* Standard	UG-SEM4 (H)	PHSACOR10P

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21	Expt setup to design a Phase Shift Oscillator of given specification using Op-Amp. (Kit includes: breadboard, power supply, capacitors, resistances, 5 GND points, 25 banana jack)	* Standard	UG-SEM4 (H)	PHSACOR10P
22	Expt setup to study the Colpitt's Oscillator. (Kit includes: breadboard, power supply, capacitors, inductors, resistances, 5 GND pts, 25 banana jack)	* Standard	UG-SEM4 (H)	PHSACOR10P
23	Expt setup to design a digital to analog converter (DAC) of given specifications. (Kit includes: breadboard, 5V power supply & 0-5V supply, pot, 10 LEDs with banana plug & Jack connectivity, Voltmeter, 25 banana jack with one end open, 5 Ground points)	* Standard	UG-SEM4 (H)	PHSACOR10P
24	Expt setup to study the analog to digital converter (ADC) (dual slop method) (Kit includes: breadboard, 5V power supply, 10- switches (0/5V), 10 LEDs with banana plug & Jack connectivity, Voltmeter, 25 banana jack with one end open, 5 Ground points)	* Standard	UG-SEM4 (H)	PHSACOR10P
25	Experimental setup (Kit) for designing of Transistor amplifier (with two voltmeter, one milliammeter, one micro-ammeter, two dc supply: 0-5V & 0-15V, one breadboard)	* Standard	UG-SEM4 (H)	PHSACOR10P
26	Experimental setup (Kit) for designing of OP-AMP based circuits (inverting & non-inverting amplifier, adder, subtractor, integrator, differentiator etc) with two voltmeter, one DC supply for OP-AMP-741 ( $\pm 15V$ ), two variable input voltage sources from -2V to 2V, one potentiometer for offset null adjustment, one breadboard)	* Standard	UG-SEM4 (H)	PHSACOR10P
27	Dual DC power supply for transistor static characteristics experiment (one dc supply from 0-5V & one dc supply from 0-15V with digital display, maximum supply current 500mA)	* Standard	UG-SEM4 (H)	PHSACOR10P
28	IC-741, OP-AMP dc supply ( $\pm 15V$ ) with multiple dc voltage outputs (at least 10 different values within -2V to 2V)	* Standard	UG-SEM4 (H)	PHSACOR10P
29	Expt. Setup to design and study of Wien-Bridge oscillator. (15V supply, breadboard, wide range of resistances, at least 5 pair of capacitors, one pair of pn diode)	* Standard	UG-SEM4 (H)	PHSACOR10P
30	5V-1A Regulated & Stabilized Power supply with digital display (Fixed)	* Standard	UG-SEM3 (H), SEM4 (H) & SEM6 (H)	PHSACOR07P PHSACOR10P PHSADSE06P
31	IC Regulated Power Supply (PS-12 SES)* 5V, 12V (Fixed & Variable type)	SES	UG-SEM3 (H), SEM4 (H) & SEM6 (H)	PHSACOR07P PHSACOR10P PHSADSE06P
32	Digital dc voltmeter with ranges 0-2V, 0-20V, 0-200V	* Standard	UG-SEM3 (H), SEM4 (H) & SEM6 (H)	PHSACOR07P PHSACOR10P PHSADSE06P
33	Digital dc milliammeter with ranges 0-2mA, 0-20mA, 0-200mA	* Standard	UG-SEM3 (H), SEM4 (H) & SEM6 (H)	PHSACOR07P PHSACOR10P PHSADSE06P
34	Digital multimeter (with L & C measure), Model: CHY-21	CHY FIREMATE	UG-SEM3 (H), SEM4 (H) & SEM6 (H)	PHSACOR07P PHSACOR10P PHSADSE06P
35	Expt setup for Half Adder, Full Adder and 4-bit binary Adder (breadboard, 5V supply, 10 switches (0/5V), 5 GND points, 25 banana jack with one end open)	* Standard	UG-SEM3 (H)	PHSACOR07P
36	Expt setup to design an astable multivibrator of given specifications using 555 Timer (breadboard, 5V supply, Resistances, capacitors, 5 GND points, 25 banana jack with one end open)	* Standard	UG-SEM3 (H)	PHSACOR07P
37	Expt setup to design a monostable multivibrator of given specifications using 555 Timer (breadboard, 5V supply, Resistances, capacitors, 5 GND points, 25 banana jack with one end open)	* Standard	UG-SEM3 (H)	PHSACOR07P
38	Expt setup for Half Subtractor, Full Subtractor, Adder-Subtractor using Full Adder I.C. (breadboard, 5V supply, 10 switches (0/5V), 5 GND points, 25 banana jack with one end open)	* Standard	UG-SEM3 (H)	PHSACOR07P
39	Expt setup to build JK Master-slave flip-flop using Flip-Flop Ics (breadboard, 5V supply, 10 switches (0/5V), 5 GND points, 25 banana jack with one end open)	* Standard	UG-SEM3 (H)	PHSACOR07P
40	Expt setup to build a 4-bit Counter using D-type/JK Flip-Flop ICs and study timing diagram. (breadboard, 5V supply, 10 switches (0/5V), 5 GND points, 25 banana jack with one end open)	* Standard	UG-SEM3 (H)	PHSACOR07P



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	Digital lab trainer kit with Breadboard, DC supply, clock generator (upto 2MHz), LEDs (10), 10 switches (0/5V), display, voltmeter (2), 5 GND pts, 25 banana jack	* Standard	UG-SEM3 (H)	PHSACOR07P
42	Expt setup for construction and study of decade and other counters (breadboard, 5V supply, 10 switches (0/5V), 5 GND points, 25 banana jack with one end open)	* Standard	PG-SEM2	PHSPCOR10P
43	Problems on assembly language programming using 8085 microprocessor (Trainer Kit)	Intel-8085	PG-SEM2	PHSPCOR10P
44	Regulated power supply Expt. Kit with Pass transistor and zener diode (Inbuilt bridge rectifier, Varying A.C.)	* Standard	PG-SEM1	PHSPCOR05P
45	Temperature controller setup (with relay, oven & supply, OP-Amp supply, voltmeter, thermistor, thermometer & breadboard)	* Standard	PG-SEM1	PHSPCOR05P
46	Expt. Setup (Kit) to design active low-pass, high-pass and band-pass filters circuit using OP-AMP (breadboard, supply for OP-AMP, 5 capacitors, 20 resistances, 2 10K lin POTs, 5 Gnd points, 25 banana jack)	* Standard	PG-SEM1	PHSPCOR05P
47	Expt. Setup to design and study of multivibrators using transistors (breadboard, 12V supply, 5 Gnd pts, 25 banana jacks, 5 pair of capacitors)	* Standard	PG-SEM1	PHSPCOR05P
48	Power tool kit set with electric drill (Package contents: 1-Piece gsb 550 impact drill, 1-piece case, 5-pieces masonry drill bits, 5-pieces wood drill bits, 8-pieces allen keys, 10-pieces hex bits, 18-pieces sockets, 30-pieces screws, 30-pieces wall plugs, 7-pieces wrenches, 1-piece magnetic bit holder, 1-piece cutter, 1-piece hammer, 1-piece plier, 1-piece long nose plier, 1-piece 1/4-inch adapter and 1-piece socket wrench)	Bosch	for repairing purpose	for repairing purpose
49	Soldering Station, Desoldering with 50W Soldering Iron & Stand	* Standard	for repairing purpose	for repairing purpose
50	Determination of wavelength and velocity of ultrasonic waves in a liquid by studying the diffraction through ultrasonic grating [Spectrometer, RF Oscillator: 3 – 8 MHz, 200V, Aqua Grating fitted with crystal, Sodium Vapor Lamp set] – Make: REL, Model: UL – 19	REL	UG-SEM6 (H)	PHSACOR13P
51	To verify the Fresnel's formula for the reflection of light [Spectrometer, Polaroid with micro-meter screw, Prism (EDF), Sodium Vapor Lamp set]	REL	UG-SEM6 (H)	PHSACOR13P
52	To analyse elliptically polarized light by using a Babinet's compensator- (Sodium Source, Analyzer & Polarizer Set of <del>OSAW</del> , Quarter Wave Plate, Optical Bench of 1 meter)- Make:-OSAW)	OSAW	UG-SEM6 (H)	PHSACOR13P
53	To verify the law of Malus for plane polarised light –(Sodium Source, Analyzer & Polarizer of <del>OSAW</del> , Laser Source with Detector, Optical Bench of 1 meter)	* Standard	UG-SEM6 (H)	PHSACOR13P
54	To study polarization of light by reflection and determine the polarizing angle for air-glass interface (Spectrometer, Sodium Source, Analyzer & Polarizer Set)	* Standard	UG-SEM6 (H)	PHSACOR13P
55	To determine the Boltzmann constant using V-I characteristics of PN junction diode-(PN junction Setup, 0-200 Micro-Ammeter, 0-20 Voltmeter, Regulated Power Source 0-5 Volts)	* Standard	UG-SEM6 (H)	PHSACOR13P
56	To determine the refractive index of (1) Glass and (2) a liquid by Total Internal Reflection using a Gaussian Eyepiece-[Spectrometer, Sodium Source, Analyzer & Polarizer, Prism (Flint & Crown Glass) base 2 cm]	* Standard	UG-SEM6 (H)	PHSACOR13P
57	To determine the refractive index of liquid by Total Internal Reflection using Wollaston's air-film [Spectrometer, Sodium Source, Wollaston's sealed glass slab]	* Standard	UG-SEM6 (H)	PHSACOR13P
58	To study the Reflection, Refraction, Polarization & Double Slit Interference of Microwaves[10.525 GHz, Microwave Generator (Gunn-effect oscillator), Waveguides, Horn Antenna& Receiver units, 30d-60d-90d Triangular Solid Prisms, Goniometer with angular scale & arm movement about central pivot] – Microwave Optics System SN 636 – INDOSAW or MICROTEC or Equivalent	* Standard	UG-SEM6 (H)	PHSACOR13P
59	To study the dependence of radiation on angle for a simple Dipole antenna- [100-1000 MHz, Interval of 50 MHz, Accuracy: 0.01%, Tripod Stand, Dipole Antenna L2, L3, RF Cable, BNC, Software CD, PC based and accessories] – Product Code AE 416 or Equivalent	* Standard	UG-SEM6 (H)	PHSACOR13P
60	Polarimeter Setup – INCO or Equivalent Standard Company.	INCO or Equivalent	UG-SEM6 (H)	PHSACOR13P
61	Function/ Arbitrary waveform Generator (50Mhz)	* Standard	UG-SEM4 (H) & SEM6 (H)	PHSACOR10P & PHSADSE06P



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62	DSO - 70Mhz with 1G/S Sampling Rate, Dual Channel with 2 nos of 10X Probe & software, Make: Scientific, Model: SMO702	Scientific	UG-SEM4 (H) & SEM6 (H)	PHSACOR10P & PHSADSE06P
63	Function Generator (2MHz) with Sine, Square, Triangle Waveform with output Amplitude of 20Vp-p, Output Attenuation of 20dB and 40dB	* Standard	UG-SEM4 (H) & SEM6 (H)	PHSACOR10P & PHSADSE06P
64	0.3 Hz to 3 MHz Function Generator, 15 MHz Frequency Counter, Waveforms Sine, Square, Triangle, DC, Make: Scientific, Model: SM5076-1	Scientific	UG-SEM4 (H) & SEM6 (H)	PHSACOR10P & PHSADSE06P
65	Expt setup to study ASK modulators & demodulator Technical Specification: DC Supply: +12V, -12V, +5V & GND	* Standard	UG-SEM6 (H)	PHSADSE06P
66	Expt setup to study PSK modulators & Demodulator Technical Specification: DC Supply: +12V, -12V, +5V & GND, On Board 8bit Variable Data Generator, Optional: Cathode Ray Oscilloscope	* Standard	UG-SEM6 (H)	PHSADSE06P
67	Expt setup to study FSK Modulators & Demodulator Technical Specification: DC Supply: +12V, -12V, +5V & GND, On Board 8bit Variable Data Generator	* Standard	UG-SEM6 (H)	PHSADSE06P
68	Expt setup to study and use of field effect transistor (FET), Two variable DC supplies (0-5 Volt & 0-15 Volt), One FET: BFW10, Two digital voltmeters & digital Milliammeter, breadboard for circuit construction	* Standard	UG-SEM4 (H)	PHSACOR10P
69	Bridge rectifier Expt. Board with power supply (includes: variable ac source, pot, breadboard, four p-n diodes (2 watt), ac voltmeter	* Standard	UG-SEM3 (H & G)	PHSSSEC01M
70	30V-5A Regulated & Stabilized Power supply (with voltmeter and Ammeter)	* Standard	UG-SEM4 (H) & SEM6 (H)	PHSACOR10P & PHSADSE06P
71	IC-7400, 7002, 7004, 7008, 7410, 7411, 7432, 7473, 7474, 7476, 7483, 7486, 74121, 74151A, 74153, 74157, 74193, 74198, 7805, 7905, 7815, 7915, 741, 555, 8038, 4046, 4016, 398, MC-1496, 565, DAC800, ADC804, LM-317	* Standard	UG-SEM3 (H), SEM4 (H), SEM6 (H), PG-SEM1 & PG-SEM2	PHSACOR07P PHSACOR10P PHSADSE06P PHSPCOR05P PHSPCOR10P
72	Electrolytic capacitor (63V): 2200 $\mu$ F, 1000 $\mu$ F, 470 $\mu$ F, 100 $\mu$ F, 47 $\mu$ F, 33 $\mu$ F, 10 $\mu$ F, 1 $\mu$ F Polyester capacitor: 0.33 $\mu$ F, 0.22 $\mu$ F, 0.1 $\mu$ F, 0.02 $\mu$ F, 0.01 $\mu$ F, 0.0047 $\mu$ F, 0.0033 $\mu$ F, 0.0022 $\mu$ F, 0.001 $\mu$ F Ceramic Capacitor: 470pF, 330pF, 220pF, 100pF, 10pF	* Standard	UG-SEM3 (H), SEM4 (H), SEM6 (H), PG-SEM1 & PG-SEM2	PHSACOR07P PHSACOR10P PHSADSE06P PHSPCOR05P PHSPCOR10P
73	Resistance (1/2 watt): 1M, 560K, 330K, 220K, 100K, 82K, 47K, 33K, 22K, 15K, 10K, 8.2K, 4.7K, 3.3K, 2.2K, 1K, 820 $\Omega$ , 470 $\Omega$ , 330 $\Omega$ , 220 $\Omega$ , 100 $\Omega$ , 82 $\Omega$ , 47 $\Omega$ , 33 $\Omega$ , 22 $\Omega$ , 10 $\Omega$	* Standard	UG-SEM3 (H), SEM4 (H), SEM6 (H), PG-SEM1 & PG-SEM2	PHSACOR07P PHSACOR10P PHSADSE06P PHSPCOR05P PHSPCOR10P
74	p-n diode: IN4007, Zener diode: 5.6V, 6.3V, 8.2V	* Standard	UG-SEM3 (H), SEM4 (H), SEM6 (H), PG-SEM1 & PG-SEM2	PHSACOR07P PHSACOR10P PHSADSE06P PHSPCOR05P PHSPCOR10P
75	Inductance (single box set): 10mH, 20mH, 30mH, 40mH, 50mH -Placed inside a plastic/wooden box with end terminals	* Standard	UG-SEM3 (H), SEM4 (H), SEM6 (H), PG-SEM1 & PG-SEM2	PHSACOR07P PHSACOR10P PHSADSE06P PHSPCOR05P PHSPCOR10P
76	Transistor: CL-100, CK-100, SL-100, BC-187, BC-188, BC-107, 2N-5777	* Standard	UG-SEM3 (H), SEM4 (H), SEM6 (H), PG-SEM1 & PG-SEM2	PHSACOR07P PHSACOR10P PHSADSE06P PHSPCOR05P PHSPCOR10P
77	breadboard (for construction of electronics circuit with IC)	* Standard	UG-SEM3 (H), SEM4 (H), SEM6 (H), PG-SEM1 & PG-SEM2	PHSACOR07P PHSACOR10P PHSADSE06P PHSPCOR05P PHSPCOR10P
78	Three terminal Pot: 1K, 10K, 100K, 1M (all should be linear variation)	* Standard	UG-SEM3 (H), SEM4 (H), SEM6 (H), PG-SEM1 & PG-SEM2	PHSACOR07P PHSACOR10P PHSADSE06P PHSPCOR05P PHSPCOR10P
79	Thermistor ( $\approx$ 100 $\Omega$ )	* Standard	PG-SEM1	PHSPCOR05P
80	Transformer: 6-0-6 (1Amp), 15-0-15 (1Amp)	* Standard	PG-SEM1	PHSPCOR05P

\* Standard means: CERTIFICATION / ACCREDITATION: ISO 9001 2008 or ISO 9001 2015