

**J.J. College of Arts and Science
(Autonomous)
J.J.Nagar, Sivapuram Post, Pudukkottai
Department of Physics**

Syllabus for Bridge Course

I B.Sc Physics

2022-2023

Unit-I: Fundamentals of Units

Concepts of units and measurements - Fundamental and derived units - Scalar and vectors.

Unit-II: Measurements of Instruments

Screw gauge - Error - Vernier Caliper - Travelling microscope - Spectrometer - Voltmeter - Ammeter.

Unit-III: Electricity

Basics Ideas of Voltage, Current & Resistance - Ohm's law - Kirchhoff's law - Meter Bridge- Potentiometer.

Unit-IV: Light and Sound waves

Electromagnetic waves and characteristics - Propagation of sound waves - Laser.

Unit-V: Electronics

p-n junction diode - Logic gates - NOT, OR, AND, XOR - NAND and NOR gates as universal gates.

Book For Reference:

1. Principles of Electronics - V.K. Mehta , S,Chand publishers
2. Fundamental of Physics - R. Murugesan , Priya publishers

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Class : I B.Sc. Physics (2022 - 2023)

Mark List For Pre Test and Post Test

Sl. No	Reg.No.	Name of the Students	11/8/22	12/8/22	16/8/22	17/8/22	18/8/22	22/8/22	23/8/22	Pre Test	Post Test
1	U22PH1001	K.G. KIRUBANITHI	P	P	P	P	P	P	P	19	24
2	U22PH1002	R. PANDISWARY	P	P	P	P	P	P	P	18	23
3	U22PH2001	M.MAREESWARAN	P	P	P	P	P	P	P	18	24
4	U22PH2002	K.NISHANTH	P	P	P	P	P	P	P	17	23
5	U22PH2003	C. MATHAVAN	P	P	P	P	P	P	P	14	22

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Question paper for Bridge Course- Pre test (2022-2023)

I B.Sc Physics

Multiple Choice Questions (Pre-Test)

1. 1 electron unit of energy is equal to
(a) $3.6 \times 10^6 \text{ J}$ (b) $1.6 \times 10^{-19} \text{ J}$ (c) $3.6 \times 10^{-19} \text{ J}$ (d) $1.6 \times 10^{-18} \text{ J}$
2. What happens to a body when its density is equal to the density of the fluid?
(a) It floats (b) It sinks (c) It remains suspended (d) None of the above
3. Ohm is a unit of measuring
(a) Resistance (b) Voltage (c) Current (d) None of the above
4. Which of the following represents the absolute zero temperature?
(a) 0°C (b) 100°C (c) -273°C (d) 273
5. What is the S.I unit of frequency?
(a) Seconds (b) Watt (c) Hertz (d) joule
6. Young's modulus is the property of
(a) Gas only (b) both solid and liquid (c) liquid only (d) solid only
7. If electrical conductivity increases with the increase of temperature of a substance then it is
(a) Conductor (b) semiconductor (c) insulator (d) carburetor
8. The product of force and velocity is called
(a) Work (b) power (c) energy (d) moment
9. Which law is also called the law of inertia?
(a) Newton's first law (b) Newton's second law (c) Newton's third law (d) all of these
10. The electric motor converts
(a) electrical energy into mechanical energy (b) mechanical energy into electrical energy (c) electrical energy into light energy (d) none of these
11. Two resistors are connected in series gives an equivalent resistance of 10Ω . When connected in parallel gives 2.4Ω . Then the individual resistance are
(a) each of 5Ω (b) 6Ω and 4Ω (c) 7Ω and 4Ω (d) 8Ω and 2Ω
12. Coulomb is the SI unit of charge
(a) charge (b) current (c) potential difference (d) resistance



13. Kirchhoff's voltage law deals with the conservation of
 (a) mass (b) momentum (c) charge (d) energy
14. The tolerance of silver band on resistor is
 (a) 3% (b) 5% (c) 10% (d) 20%
15. A potentiometer is used for the comparison of emf of two cells E1 and E2. For cell E1, the null deflection point is obtained at 20cm and for E2, the null deflection point is obtained at 30cm, the ratio of their emfs will be,
 (a) $\frac{2}{3}$ (b) $\frac{1}{2}$ (c) 1 (d) 2
16. Electromagnetic waves are
 (a) Transverse (b) Longitudinal (c) May be Longitudinal or Transverse (d) None of the above
17. All electromagnetic waves travel through a vacuum at
 (a) the same speed (b) speeds that are proportional to their frequency (c) speeds that are inversely proportional to their frequency (d) None of the above.
18. What frequency are 20 mm microwaves?
 (a) 100 MH (b) 400 MHz (c) 15 GHz (d) 73 GHz
19. Which of the following is a unique property of laser?
 (a) Directional (b) Speed (c) Coherence (d) Wavelength
20. Band of seven colours is called
 (a) VIBGYOR (b) spectrum (c) dispersion (d) reflection\
21. The reverse current in a diode is of the order of
 (a) kA (b) mA (c) μ A (d) A
22. Zener diode has
 (a) one pn junction (b) two pn junctions (c) three pn junctions (d) none of the above
23. The NOR gate output will be high if the two inputs are
 (a) 00 (b) 01 (c) 10 (d) 11
24. A universal logic gate is one which can be used to generate any logic function. Which of the following is a universal logic gate?
 (a) OR (b) AND (c) XOR (d) NAND
25. Which of the following are known as universal gates?
 (a) NAND & NOR (b) AND & OR (c) XOR & OR (d) EX-NOR & XOR

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Question paper for Bridge Course- Post test (2022-2023)

I B.Sc Physics

Multiple Choice Questions (Post-Test)

1. What is the units for measuring the amplitude of a sound?
(a) Decibel (b) Coulomb (c) Hurn (d) Cycles
2. Light year is a measurement of
(a) Speed of aeroplane (b) Speed of light (c) Steller distances (d) Speed of rockers
3. Joule is the unit of
(a) Temperature (b) Pressure (c) Energy (d) Heat
4. The quantity which has the only magnitude is called
(a) A scalar quantity (b) A vector quantity (c) A chemical quantity (d) A magnitude quantity
5. Flying a bird is an example of
(a) Collinear vector (b) Multiplication of vector (c) Addition of vector (d) Composition of vector
6. Vernier caliper helps in measuring
(a) external diameter (b) internal diameter (c) thickness and depth of narrow tubes(d) all
7. What is the degree accuracy of screw gauge?
(a) 0.001cm (b) 0.01cm (c) 0.001mm (d) 0.01mm
8. In a traveling microscope, focal length of objective is
(a) greater than the focal length of eye piece
(b) smaller than the focal length of eye piece
(c) equal to the focal length of eye piece
(d) zero
9. Main component of spectrometer includes
(a) telescope (b) collimator (c) source lamp (d) all



10. The function of shunt in an ammeter is to
(a) by pass the current (b) increase the sensitivity of the ammeter
(c) increase the resistance of ammeter (d) none of the above
11. Two electric bulbs have resistances in the ratio 1:2. If they are joined in series, the energy consumed in them is in the ratio.
(a) 2:1 (b) 1:2 (c) 4:1 (d) 1:1
12. Which of the given is the SI Unit of Electric Current?
(a) Ohm (b) Ampere (c) Volt (d) Faraday
13. The rate of flow of an electric charge is known as :
(a). Electric potential (b) Electric conductance (c) Electric current (d) None of these
14. An example of non-ohmic resistance is
(a) Diode (b) Tungsten wire (c) Carbon resistance (d) Copper wire
15. In a conductor, if 6-coulomb charge flows for 2 seconds. The value of electric current will be
(a) 3 ampere (b) 3 volts (c) 2 amperes (d) 2 volts
16. Electromagnetic waves are produced by
(a) A static charge (b) An accelerated charge (c) A moving charge (d) Charged particles
17. Which of the following can be used to produce a propagating electromagnetic wave?
(a) Chargeless particle (b) Stationary charge (c) An accelerating charge (d) Charge moving at a constant speed
18. Which of the following rays are not electromagnetic waves?
(a) Gamma rays (b) Beta rays (c) Heat rays (d) X rays
19. Which of the following is a unique property of laser?
(a) Directional (b) Speed (c) Coherence (d) Wavelength
20. Which of the following is an example of optical pumping?
(a) Ruby laser (b) Helium-Neon laser (c) Semiconductor laser (d) Dye laser
21. For a P-N diode, the number of minority carriers crossing the junction depends on
(a) Forward bias voltage (b) Potential barrier (c) Rate of thermal generation of electron hole pairs (d) None of the above



22. An electron in the conduction band.
(a) Has higher energy than the electron in the valence band (b) Has lower energy than the electron in the valence band (c) Loses its charge easily (d) Jumps to the top of the crystal
23. The universal gate is
(a) NAND gate (b) OR gate (c) AND gate (d) None of the above
24. The NAND gate is AND gate followed by
(a) NOT gate (b) OR gate (c) AND gate (d) None of the above
25. An OR gate has 4 inputs. One input is high and the other three are low. The output is
(a) Low (b) High (c) Alternatively high and low (d) None of the above

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