Lesson Plan

Name of Assistant Professor : Seema

Class : Bsc (Non medical and computer science)

Semester : 3rd

Subject : Physics (Semiconductor Devices)

Lesson Plan : From November 2020 to February 2021

2.1.2020-15.1.2020 : NPN and PNP transistor, Biasing of transistor in active, Differentiator , Integrator, uses of oscillator, P and N type semiconductor, Positive and negative feedback in Amplifier.
Week 1 16.11.2020-23.11.2020 : cut off and saturation mode, Circuit configuration of CB, CE and CC device, Current gains α and β, Relation between α and β, Current gain and power gain, DC Load line and Q- Point.
Week 2 24.11.2020-1.12.2020 : Qualitative idea of differential amplifier, CMRR, Characteristics of an Ideal and Op-Amp (IC 741), Open loop and closed loop gain, Concept of virtual ground, Applications of Op- Amp as Inverting and non-inverting Amplifier,.
Week 3 2.12.2020-9.12.2020 : Voltage divider bias circuit for CE Amplifier, Bias stabilization, Class-A, B and C amplifier, RC coupled amplifier and its frequency response, Feedback in amplifier.
Week 4 10.12.2020-17.12.2020 : Advantage of negative feedback in amplifier, Barkhausen criterion for self sustained oscillations, Class test.
Week 5 18.12.2020-25.12.2020 :, Circuit and working of Hartley oscillator, Circuit and working of Colpit's oscillator, (Assignments)
Week 6 26.12.2020-2.1.2021 : Barrier formation in PN junction diode, Drift and diffusion current, Current flow mechanism in forward and reverse bias P-N junction diode mentioning the role of drift and diffusion current.
Week 7 4.1.2021-11.1.2021 : VI characteristics of PN junction diode, Static and dynamic resistance, Applications PN junction diode as half wave rectifier, Full wave rectifier.
Week 8 12.1.2021-19.1.2021 : Calculation of ripple factor and rectification efficiency, Zener diode, Applications of zener diode as DC voltage regulator, Principal and structure of LED, Photodiode and solar cell, Class test

Lesson Plan

Name of Assistant Professor : Seema

Class : Bsc (Non medical and computer science)

Semester : 3rd

Subject : Physics (Heat and Thermodynamics)

Lesson Plan : From November 2020 to March 2021

Week 9 20.1.2021-27.1.2021 : Extensive and intensive thermodynamic variables, thermodynamics equilibrium, Zeroth law and concept of temperature, Work and heat, state function. First law of thermodynamics, Internal energy, Applications of first law, General relation between C_p and C_v. Work done during isothermal and adiabatics processes.
Week 10 28.1.2021-4.2.2021 : Reversible and irreversible process with example, Conversion of work into heat and heat into work, Heat engines, Carnot cycle, Carnot engine and efficiency, Refrigerator and Coefficient of performance, 2nd Law of thermodynamics: Kelvin-Plancks and Clausius statement and their Equivalence.
Week 11 5.2.2021-12.2.2021 : Carnot Theorem, Concept of entropy, Clausius theorem, Clausius Inequality, 2nd Law of thermodynamics in term of entropy, Entropy of a perfect gas and Universe, Change in reversible and irreversible process, Principle of increase of entropy.
Week 12 13.2.2021-20.2.2021 : 3rd Law of thermodynamics, T-S diagrams, Phase change, Classifications of phase change, Enthalpy, Gibbs, Helmholtz function and their definitions, Properties and applications, Derivation of Maxwell relations, Applications of Maxwell relations, Behavior of real gas, Derivation from ideal gas equation,
Week 13 22.2.2021-27.2.2021 : The virial equation, Critical constant, Continuity of liquid and gaseous state, Vapour and gas, Boyle temperature, Vander walls equation of state forvreal gases, Values of critical constant, law of corresponding states, comparison with experiments curves, P-V diagrams, joule experiments, Free adiabatic expansion of a perfect gas.

Lesson Plan

Name of Assistant Professor : Seema

Class : Bsc (Non medical and computer science)

Semester : 5rd

Subject : Physics (Elements of modern physics and Nuclear Physics)

Lesson Plan : From November 2020 to March 2021

2.11.2020-15.11.2020 : Absorption and emission of radiation, Basic feature of laser, Population inversion, Resonant cavity, Laser pumping, Einstein co-efficient, 3level and 4 level system, Basic principle and working of He-Ne LASER and Ruby laser, Applications of Laser, Threshold condition for laser emission
Week 1 16.11.2020-23.11.2020 : Spectral distribution of blackbody radiation, Kirchhoff Law, Stefan Boltzman Law, Class test
Week 2 24.11.2020-1.12.2020 : wiens distribution and displacement law, Rayleigh Jeans law, ultraviolet catastrophe, plancks quantum postulates
Week 3 2.12.2020-9.12.2020 : Plancks law of blackbody radiation, Photoelectric effect, pair production and annihilation, (Assignment)
Week 4 10.12.2020-17.12.2020 : Bremsstrahlung effect, Frank Hertz and Germer experiment, Compton effect
Week 5 18.12.2020-25.12.2020 : Energy time uncertainty principle, Properties of wave function, Physical interpretation of wave function,
Week 6 26.12.2020-2.1.2021 :, Cherenkov radiation, production of X rays, Drawbacks of Rutherford model, Bohr atomic model.
Week 7 4.1.2021-11.1.2021 : Phase velocity and group velocity and their relations, Estimating minimum energy of a confined particle using uncertainty principle.
Week 8 12.1.2021-19.1.2021 : Momentum and energy operator, Schrodinger states, Particles in 1 dimension infinite potential well.
Week 9 20.1.2021-27.1.2021 : Gas filled counters, Ionization chamber, proportion counter, G.M counter, Basic principle of scintillation counter.

Week 10 28.1.2021-4.2.2021 : Semiconductor detector, General aspects of reactor design, nuclear fission reactor. Class test
Week 11. 5.2.2021-12.2.2021 : Particles Accelerator facilities in India, Linear Accelerator, Cyclotron Synchrotron. Wave particle duality.
Week 12 13.2.2021-20.2.2021 : Calculation of energy level for hydrogen like atoms and their spectra. Effect of nuclear mass on spectra. De Broglie wavelength and matter wave
Week 13 22.2.2021-27.2.2021 : Bohr quantization rule and atomic stability Bohr corresponding principle. Properties of Thermal radiation.

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