XII – STD – PUBLIC QUESTIONS UNITWISE AND IMPORTANT QUESTIONS

1. Electrostatics

PART – II

1. Show graphically the variation of electric field E(Y – axis) due to a charged infinite plane sheet with distance r (X – axis) from the plate. (Govt. Model)
2. What is corona discharge? (Mar – 20, May-22)
3. Potential in a given region is given as a function of distance x, $V = 5(x^2 + x)$ volt. Find the electric field when x = 1 cm (Sep- 20)
4. Define "Electrostatic potential" (Aug- 21)
5. Dielectric strength of air is 4×10^6 V m^{-1}. Suppose the radius of a hollow sphere in the Van de Graff generator is R = 0.4 m, calculate the maximum potential difference created by this Van de Graaff generator. (Aug- 21)
6. State Gauss's law. (Aug – 22)
7. Define Electric field (Mar - 23)
8. Define- capacitance of a conductor (June -23)
9. *Define Electric flux. Give its unit.*
10. *What is an electric dipole? Give examples.*
11. *Define electric dipole moment. Give its unit*
12. *Define electric potential at a point.*
13. *What is non-polar molecule? Give any two examples?*
14. *Why is it safer to be inside a car than standing under a tree during lightning?*

PART – III

1. Obtain the expression for the energy stored in a parallel plate capacitor(Govt. Model)
2. Derive the expression for equivalent capacitance, when capacitors are connected in parallel. (Mar - 20)
3. Obtain Gauss law of electrostatics from Coulomb's inverse square law(Sep- 20)
4. Obtain the expression for energy stored in the parallel plate capacitor(Aug- 21,22)
5. Derive the expression for resultant capacitance, when capacitors are connected in series.(May – 22)
6. Derive an expression for electrostatic potential due to a point charge (Mar – 23)
7. *Derive an expression for the torque experienced by a dipole due to a uniform electric field.*
8. *What are the applications of capacitor?*
9. Calculate the electric flux through the rectangle of sides 5 cm and 10 cm kept in the region of a uniform electric field 100 NC^{-1}. The angle θ is 60°. If θ becomes zero, what is the electric flux?(June-23)

PART – IV

1. Obtain the expression for electric field due to uniformly charge spherical shell at a distance 'r' from its centre (Govt. Model)
2. State Gauss's law in electrostatics. Obtain an expression for electric field due to an infinitely long charged wire. (Mar - 20)
3. Explain in detail the effect of a dielectric placed in a parallel plate Capacitor when the capacitor is disconnected from the battery(Sep- 20)
4. Calculate the electric field due to a dipole at a point on its axial line. (Aug- 21)
5. Derive an expression for electrostatic potential due to an electric dipole (May – 22)
6. Explain in detail the construction and working of a Van de Graaff generator (Aug -22, June -23)
7. i) State coulomb's law in electrostatics (Mar – 23)
   ii) What are the differences between Coulomb force and gravitational force?
8. *What is electric dipole? Derive an expression for the electric field at a point due to an electric dipole along the equatorial plane*

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2. Current Electricity

PART – II

1. The resistance of a nichrome wire at 0°C is 10Ω. If the temperature coefficient of resistance is 0.004/°C, find its resistance at boiling point of water. Comment on the result. **(Mar - 20)**
2. If an electric field of magnitude 570NC^{-1} is applied in the copper wire. Find the acceleration experienced by the electron **(Sep- 20)**
3. What is Peltier effect? **(Aug- 21)**
4. Define electrical resistivity **(May -22)**
5. Calculate the equivalent resistance for the circuit which is connected to 12 V battery and also find the potential difference across each resistors in the circuit.**(Aug -22)**
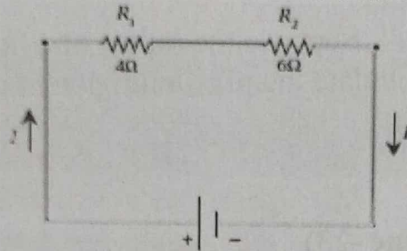
6. If the resistance of coil is 3 Ω at 20 ^{0}C and $\alpha = 0.004/^0$C, find its resistance at 100 ^{0}C.**(Mar -23)**
7. What is Thomson effect
8. Why current is a scalar?
9. Define drift velocity.
10. What is mobility? Give its unit.
11. Distinguish between drift velocity and mobility
12. Which material is used for the meter bridge wire and why?
13. State macroscopic form of Ohm's law.
14. Define current density.
15. Define temperature coefficient of resistivity.
16. What is electric power and electric energy?
17. State Joule's law of heating
18. Determine the number of electrons flowing per second through a conductor, when a current of 32 A flows through it.**(June – 23)**

PART – III

1. Two cells each of 5V are connected in series across a 8 Ω resister and three parallel resisters of 4 Ω, 6 Ω and 12 Ω . Draw the circuit diagram for the above arrangement and find the current through each resister. **(Govt. Model)**
2. State Kirchhoff's current rule and voltage rule. **(Sep- 20, Aug- 21, Mar - 23)**
3. Obtain the relation between current and drift velocity**(May – 22)**
4. What is Seebeck effect? State the applications of Seebeck effect. **(Aug– 22)**
5. Explain the Principle of a potentiometer **(June – 23)**
6. Define temperature coefficient of resistivity and derive the expression for it.
7. State the applications of Seebeck effect.

PART – IV

1. (i) Explain the determination of the internal resistance of a cell using potentiometer.**(Govt. Model)**
   (ii) A cell supplies a current of 0.9 A through a 1 Ω resistor and a current of 0.3 A through a 2 Ω resistor. Calculate the internal resistance of the cell
2. How the emf of two cells are compared using potentiometer? **(Mar-20)**
3. Obtain the condition for bridge balance in Wheatstone's bridge. **(Sep- 20,Aug – 22, June - 23)**
4. (i) Explain the equivalent resistance of a series resistor network**(Aug- 21)**
   (ii) A copper wire of cross-sectional area 0.5 mm^2 carries a current of 0.2 A. If the free electron density of copper is 8.4 × 10^{28} m^{-3} then compute the drift velocity of free electrons.

5. Explain the determination of the internal resistance of a cell using voltmeter (May – 22)
6. Describe the microscopic model of current and obtain microscopic form of Ohm's law(Mar-23)
7. i) Explain the determination of the internal resistance of a cell using a potentiometer
   ii) Why is a potentiometer preferred over a voltmeter for comparison of emf's of cells?
8. Explain the equivalent resistance of a series and parallel resistor network
9. Explain the determination of unknown resistance using meter bridge

3. Magnetism and of electric magnetic effects current
PART – II

1. Two materials X and Y are magnetized whose intensity of magnetization are 500 Am^{-1} and 2000 Am^{-1} respectively. The magnetizing field is 1000 Am^{-1}. What is the ratio between the susceptibilities of the two material? **(Mar – 20)**
2. State Ampere's circuital law(Aug- 21,Mar - 23)
3. How will you increase the current sensitivity of a galvanometer? (May – 22)
4. Define-Ampere in terms of force. (Aug – 22)
5. State Fleming's left hand rule (June - 23)
6. Define – Magnetic flux . Give its unit
7. Define – Magnetic flux density. Give its unit
8. State - Coulomb's inverse square law in magnetism
9. What is figure of merit of a galvanometer ?
10. What is current sensitivity and voltage sensitivity of Galvanometer?
11. State Curie's law
12. State Curie – Weiss law

PART – III

1. An electron moves in a circular orbit with uniform speed v. It produces a magnetic field B at the centre of the circle. Prove the radius of the circle is proportional to $\sqrt{\dfrac{v}{B}}$ (Govt. Model)
2. Explain the conversion of galvanometer into voltmeter. (Mar - 20)
3. Compare the properties of dia, para and ferro magnetic materials(Sep – 20)
4. The repulsive force between two magnetic poles in air is 9×10^{-3} N. If the two poles are equal in strength and are separated by a distance of 10 cm, calculate the pole strength of each pole (Aug- 21)
5. List out salient features of magnetic Lorentz force(May – 22)
6. An electron moving perpendicular to a uniform magnetic field 0.500 T undergoes circular motion of radius 2.50 mm. What is the speed of electron. (Aug – 22)
7. State and explain Biot Savert law
8. Distinguish between coulomb's law and Biot savort's law
9. Deive an expression for magnetic dipole of a current loop.
10. What is magnetic Lorentz force? Explain.
11. Explain how a Galvanometer is converted into an ammeter (Mar -23)
12. A coil of a tangent galvanometer of diameter 0.24 m has 100 turns. If the horizontal component of Earth's magnetic field is 25×10^{-6} T then, calculate the current which gives a deflection of 60°(June -23)

PART – IV

1. Discuss the theory and working of cyclotron in detail (Govt. Model, Mar -23)
2. Deduce the expression for the force between two long parallel current carrying conductors.
                                                            (Mar – 20, Aug -22)
3. i) State Ampere's Circuital law (Sep- 20, June - 23)
   ii) Find the magnetic induction at a point due to an infinitely long straight conductor carrying current using Ampere's law

4. Using Biot – Savert law, deduce the relation for the magnetic field at a point due to an infinitely long straight conductor carrying current(**Aug- 21,May -22**)

5. *Obtain a relation for the magnetic induction at a point along the axis of a circular coil carrying current using Biot Savert law*

6. *i) Explain the motion of the charged particle in a uniform magnetic field*

   ii) An electron moving perpendicular to a uniform magnetic field 0.5 T undergoes circular motion of radius 2.5 mm .What is the speed of electron?

4. Electromagnetic Induction and Alternating Current
PART – II

1. Calculate the magnetic field inside a solenoid when the number of turns is halved and the length of the solenoid and the area remain the same. (**Govt. Model**)

2. State Lenz's law. (**Govt. Model, Sep- 20,June -23**)

3. An ideal transformer has 460 and 40,000 turns in the primary and secondary coils respectively. Find the voltage developed per turn of the secondary coil if the transformer is connected to a 230 V AC main. (**Mar - 20**)

4. State Fleming's right hand rule (**May – 22**)

5. Mention the ways of producing induced emf? (**Aug- 21,22**)

6. *Define – self inductance*

7. *Define –Unit of self inductance*

8. *Define – Mutual Inductance*

9. *Define –unit of mutual inductance*

10. *Can a transformer be used for stepping up a DC? Support your answer.*

11. *Mention the difference between a step up and step down transformer.*

12. *A capacitor blocks D.C but allows A.C. Why?*

13. *Distinguish between inductive reactance and capacitance reactance.*

14. *How will you define RMS value of an alternating current?*

15. How will you define Q-factor? (**Mar – 23,June -23**)

16. *What is an Eddy current? How it is minimized?*

PART – III

1. Explain the various losses in a transformer(**Govt. Model, Aug- 21,June -23**)

2. What are the advantages and disadvantages of AC over DC? (**Mar - 20**)

3. An 500µH inductor and 628Ω resistor are connected to form a series RLC circuit. Calculate the resonant frequency and Q factor of this circuit at resonance. (**Sep- 20**)

4. Find the impedance of a series RLC circuit if the inductive reactance, capacitive reactance and resistance are 184 Ω, 144 Ω and 30 Ω respectively. Also calculate the phase angle between voltage and current(**May -22**)

5. AC is advantageous than DC. Explain (**Aug – 22**)

6. How will you induce an emf by changing the area enclosed by the coil? (**Mar -23**)

7. *Find out the phase relationship between voltage and current in a AC Circuit containing resistor only*

PART – IV

1. Find the expression for the mutual inductance between a pair of coils and show that $M_{12} = M_{21}$
   (**Govt. Model, Aug - 22**)

2. Obtain the expression for the induced emf by changing relative orientation of the coil with the magnetic field(Graph not necessary). (**Mar - 20**)

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3. Find out the phase relationship between the voltage and current in a pure inductive circuit. **(Mar - 20)**

4. Explain the construction and working of transformer and define its efficiency**(Sep- 20,May - 22)**

5. Derive an expression for phase angle between the applied voltage and current in a series RLC circuit. **(Aug- 21,Mar - 23)**

6. Explain the working of a single-phase AC generator with necessary diagram **(June -23)**

7. *Obtain an expression for the current flowing in the circuit containing capacitance only to which an alternating emf is applied. Find the phase relationship between the current and voltage by graph.*

5. Electromagnetic waves
PART – II

1. Give two uses of IR radiations **(Aug- 21)**

2. What is displacement current? **(May -22)**

3. Give two uses of UV radiations **(Aug – 22)**

4. *What are electromagnetic waves?*

5. What is meant by Fraunhofer lines? **(Govt. Model)**

PART – III

1. What are Fraunhofer lines? How are they useful in the identification of elements present in the Sun?**(Mar -23)**

2. Write down Maxwell equations in integral form.**(June -23)**

3. *Discuss briefly the experiment conducted by Hertz to produce and detect electromagnetic spectrum*

4. *Write down the properties of electromagnetic waves.*

5. *Write short notes on (a) microwave (b) X-ray (c) radio waves*

6. *Explain the Maxwell's modification of Ampere's circuital law.*

PART – IV

1. Write down any six properties of electromagnetic waves. **(Govt. Model)**

2. Write down Maxwell equations in integral form. **(Mar - 20) (Aug- 21)**

3. (i) Write down any six properties of electromagnetic waves. **(Sep- 20)**
   (ii) Compute the speed of the electromagnetic wave in a medium if the amplitude of electric and magnetic fields are $3 \times 10^4 \, N \, C^{-1}$ and $2 \times 10^{-4} \, T$, respectively

4. What is spectrum? Explain the types of emission spectrum.**(May -22)**

5. i) Write down the properties of electromagnetic waves **(Aug -22, Mar -23)**
   ii) The relative magnetic permeability of the medium is 2.5 and the relative electrical permittivity of the medium is 2.25. Compute the refractive index of the medium.

6. What is absorption spectra? Give their types **(June -23)**

6. Ray Optics
PART – II

1. Why do clouds appear white? **(Govt. Model)**

2. What are paraxial rays and marginal rays? **(Sep- 20)**

3. Why does sky appear blue? **(Aug- 21)**

4. The angle of minimum deviation for an equilateral prism is 40°. Find the refractive index of the material of the prism.**(May -22)**

5. Pure water has refractive index 1.33. What is the speed of light through it? **(Aug – 22)**

6. *State the laws of reflection.*

7. *What is Rayleigh's scattering and State Rayleigh's scattering law*

8. *State Snell's law of refraction.*

9. What is the reason of reddish appearance of sun during sunrise and sunset? **(June-23)**

10. *What is power of a lens? Give its unit.*

11. Explain the reason for the glittering of diamond? **(Mar -23)**

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PART – III

1. What are critical angle and total internal reflection? (Aug- 21)
2. Derive the relation between f and R for a spherical mirror (May -22)
3. Light travels from air into a glass slab of thickness 50 cm and refractive index 1.5. What is the speed of light in the glass slab and what is the time taken by the light to travel through the glass slab? (Aug – 22) .
4. What is optical path? Obtain the equation for optical path (Mar-23)
5. Find the ratio of the intensities of light with wavelength 500nm and 400 nm which undergo Rayleigh Scattering (June – 23)
6. Obtain the equation for apparent depth
7. What is total internal reflection? Give the conditions for total internal reflection takes place

PART – IV

1. Derive the mirror equation and the equation for lateral magnification. (Mar - 20)
2. Derive the equation for angle of deviation produced by a prism and thus obtain the equation for refractive index of material of the prism (Sep- 20)
3. Obtain lens – maker's formula and mention its significance.(Govt.Model, Sep- 20,Aug- 21,May -22)
4. Describe the Fizeau's method to determine speed of light.(Aug – 22, Mar-23)
5. What is dispersion? Obtain the equation for dispersive power of a medium (June -23)

7. Wave Optics
PART – II

1. What is double refraction?
2. Distinguish between Fresnel and Fraunhofer types of diffraction. (Mar – 20)
3. Find the polarising angle for glass of refractive index1.5? (Aug- 21)
4. The ratio of intensities of two waves in an interference pattern is 36 : 1. What is the ratio of the amplitudes of the two interfering waves?
5. What is Huygens' principle?
6. What are coherent sources?
7. What are the conditions for obtaining clear and broad interference fringes ?
8. What is angle of polarization
9. Define – optic axis

PART – III

1. Two light sources with amplitudes 5 units and 3 units respectively interfere with each other. Calculate the ratio of maximum and minimum intensities. (Govt. Model)
2. Two light sources of equal amplitudes interfere with each other. Calculate the ratio of maximum and minimum intensities. (Mar – 20)
3. What is total internal reflection? Give the conditions for total internal reflection takes place. (Sep- 20)
4. Mention the differences between interference and diffraction (Aug- 21,22)
5. Give the uses of Polaroids (May – 22)
6. State and prove Brewster's law.(June -23)
7. State and prove Malus's law.
8. Explain pile of plates.
9. Discuss about Nicol prism

PART – IV

1. Explain about Astronomical telescope and obtain the equation for magnification. (Aug- 21)
2. Prove laws of reflection using Huygens' principle.
3. Obtain the equation for bandwidth in Young's double slit experiment(May – 22, June – 23))
4. Explain about compound microscope and obtain the equation for the magnification (Aug- 22)

5. Obtain the equation for resolving power of microscope

6. Discuss diffraction at single slit and obtain the condition for n^{th} minimum. **(Mar-23)**

7. Discuss the diffraction at a grating and obtain the condition for the mth maximum.

8. Dual Nature of Radiation and Matter
PART – II

1. What are the uses of X- rays? **(Mar – 20,Sep- 20)**

2. Why electron is preferred over X-ray in microscope? **(Mar - 20)**

3. Calculate the cut off wavelength and cut off frequency of x-rays from an X – ray tube of accelerating potential 20,000V **(Sep - 20)**

4. What is photovoltaic cell? **(Sep- 20)**

5. How will you define threshold frequency? **(Aug- 21)**

6. Define work function of a metal. Give its unit. **(May – 22, Mar-23)**

7. Define – stopping potential **(Aug – 22)**

8. What is photoelectric effect? **(June – 23)**

9. The radius of the 5th orbit of hydrogen atom is 13.25 Å. Calculate the de broglie wavelength of the electron orbiting in the 5th orbit **(June – 23)**

10. State de Broglie hypothesis.

11. A proton and an electron have same kinetic energy. Which one has greater de Broglie wavelength. Justify.

12. What is Bremsstralung?

PART – III

1. Give the construction and working of photo – emissive cell**(Govt. Model, Aug - 22)**

2. Derive an expression for De-Broglie wavelength of electrons. **(Mar - 20)**

3. What are the characteristics of photons? **(Sep- 20) (Aug- 21)**

4. List out the laws of photoelectric effect.**(May – 22, Mar-23)**

5. What is a photo cell? Mention the different types of photocells.

6. Give the construction and working of photo emissive cell

7. What are the applications of photo electric cells?

PART – IV

1. (i) Derive the expression for de Broglie wavelength of an electron **(Govt. Model)**

   (ii) An electron is accelerated through a potential difference of 81 V. What is the de Broglie wavelength associated with it? To which part of the electromagnetic spectrum does this wavelength correspond

2. Describe Davisson – Germer experiment which demonstrated the wave nature of electrons. **(Mar – 20, Mar-23)**

3. i) Obtain Einstein's photoelectric equation with necessary explanation **(Sep- 20)**

   ii) What will happen to the stopping potential in the following cases, when

      A) work function of the material is increased

      B) Intensity of incident ray is increased

4. (i) Derive an expression for de Broglie wavelength of electrons **(Aug- 21)**

   (ii) Calculate the momentum of an electron with kinetic energy 2eV

5. i) Obtain Einstein's photoelectric equation with necessary explanation**(Aug -22)**

   ii) List out the characteristics of photons

6. i) How do we obtain characteristic x-ray spectra? (May – 22)

  ii) Calculate the cut-off wavelength and cut-off frequency of x-rays from an x –ray tube of accelerating potential 20,000 V.

7. i) List out the characteristics of photons (any two)(June -23)

  ii) Calculate the momentum of an electron with kinetic energy 2eV

8. *Briefly explain the principle and working of electron microscope.*

9. Atomic and Nuclear physics
PART – II

1. Calculate the radius of $^{197}_{97}Au$ (Govt. Model, May - 22)
2. What are the properties of neutrino? (Mar – 20)
3. What are the constituent of Neutron and proton? (Sep- 20)
4. Define atomic mass unit (Aug – 22)
5. *What are cathode rays?.*
6. *Write down the postulates of Bohr atom model.*
7. *Define the ionization energy and ionization potential.*
8. *What is distance of closest approach?*
9. *Define impact parameter*
10. *Calculate the energy equivalent of 1 atomic mass unit.*
11. *What is mean life of nucleus? Give the expression.*
12. *Define curie.*
13. *What is isotope? Give an example*
14. What is meant by activity or decay rate? Give its unit. (Mar-23)

PART – III

1. Discuss the alpha – decay process with example. (Govt. Model, June – 23)
2. What are the important inferences from the average binding energy curve? (Mar - 20)
3. Half lives of two radioactive elements A and B are 20 minutes and 40 minutes respectively. Initially, the samples have equal number of nuclei. Calculate the ratio of decayed numbers of A and B nuclei after 80 minutes. (Sep- 20)
4. $^{235}_{92}U$ nucleus emits 2α particles , 3β particles and 2γ particles. What is the resulting atomic number and mass number. (Aug- 21)
5. Find the (i) angular momentum (ii) velocity of the electron revolving in the 5th orbit of hydrogen atom.($h = 6.6 \times 10^{-34}$ Js, $m = 9.1 \times 10^{-31}$ kg) (May -22)
6. What are the properties of cathode rays. (Aug – 22)
7. Calculate the amount of energy released when 1 kg of $^{235}_{92}U$ undergoes fission reaction (June - 23)
8. *Derive the energy expression for hydrogen atom using Bohr atom model.*
9. *Explain in detail the nuclear force.*
10. *Explain the discovery of neutrons.*
11. *Explain the variation of average binding energy with the mass number by graph and discuss its Features*
12. *Discuss the process of nuclear fission and its properties*

PART – IV

1. Derive the expression for the radius of the orbit of the electron and its velocity using Bohr atom model. (Govt. Model, Sep – 20, Mar-23)

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2. i) Derive an expression for the orbital energy of an electron in hydrogen atom using Bohr theory. (Mar - 20)

 (ii) An electron in Bohr's hydrogen atom has an energy of -3.4 eV. What is the angular momentum of the electron?

3. Obtain the law of radioactivity. (Aug- 21, June -23)

4. Discuss the spectral series of hydrogen atom.(May -22)

5. i) What is half –life and mean life of a radio active nucleus? (Aug -22)

 ii) Calculate the number of nuclei of carbon – 14 undecayed after 22,920 years if the initial number of carbon – 14 atoms is 10,000. The half – life of carbon -14 is 5730 years.

6. *Explain the J.J. Thomson experiment to determine the specific charge of electron*

7. *What is a nuclear reactor? Describe the essential components of nuclear reactor*

8. *What is a nuclear reactor ? Explain the function of i) Moderator ii) Control rods and iii) Cooling system. Mention the uses of nuclear reactor(Diagram not necessary)*

10. Electronics and Communication
PART – II

1. What is the need for feedback circuit in transistor oscillator (Govt. Model)
2. Give any two applications of internet(Govt. Model)
3. What do you mean by doping? (Mar – 20, May -22)
4. What is skip area ? (Mar - 20)
5. What is skip distance? (Sep – 20)
6. What is rectification? (Aug – 22)
7. Distinguish between intrinsic and extrinsic semiconductors. (June – 23)
8. Draw the circuit diagram of a full wave rectifier (Mar-23)

9. *A diode is called as a unidirectional device. Explain.*

10. *Distinguish between avalanche breakdown and Zener breakdown*

11. *Give the Barkhausen conditions for sustained oscillations.*

12. *Why are NOR and NAND gates called universal gates?*

13. *List the applications of light emitting diode.*

14. *What is modulation ?*

15. *Define – current gain of the transistor of a common emitter transistor*

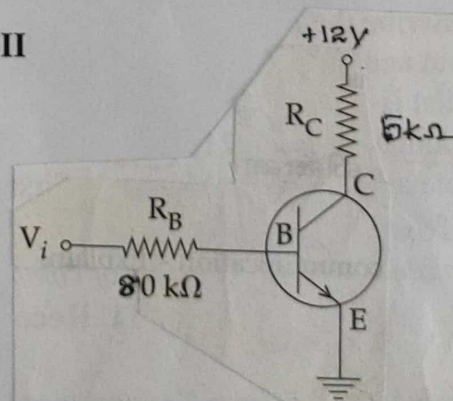16. *Draw the circuit diagram of a transistor in Common collector mode*

PART – III

1. In the circuit shown in the figure.
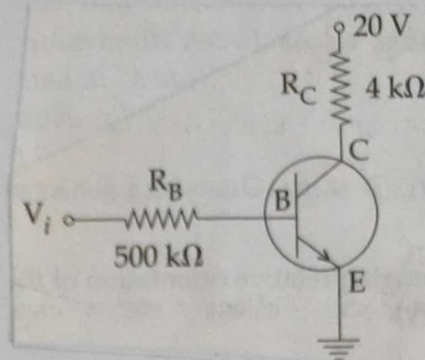 The input voltage $V_i = +5V$,
 $V_{BE} = + 0.8V$ and
 $V_{CE} = + 0.12$ V.
 Find the values of I_B, I_c and β (Govt. Model)

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2. In the circuit shown in the figure, the input voltage V_i is 20 V, $V_{BE} = 0$ V and $V_{CE} = 0$ V, what are the values of I_B, I_c and β? (Mar – 20)

3. Modulation helps to reduce the antenna in wireless communication - Explain (Mar - 20)

4. Draw the circuit diagram of a full wave rectifier and draw its input and output waveforms (Aug- 21)

5. Draw the circuit diagram of NPN transistor in Common Emitter configuration (May – 22)

6. What is Zener diode? Mention any two uses of Zener diode. (Aug – 22)

7. Fiber optic communication is gaining popularity among the various transmission media – Justify (Sep- 20)

8. The given circuit has two ideal diodes connected as shown in figure below. Calculate the current flowing through the resistance R_1 (Mar – 23)
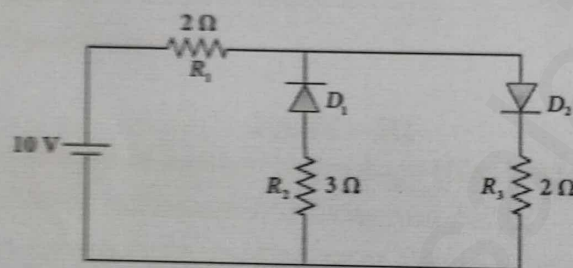
9. Write the output (Y) Boolean expression for the following circuits with inputs A,B and C (Sep- 20)
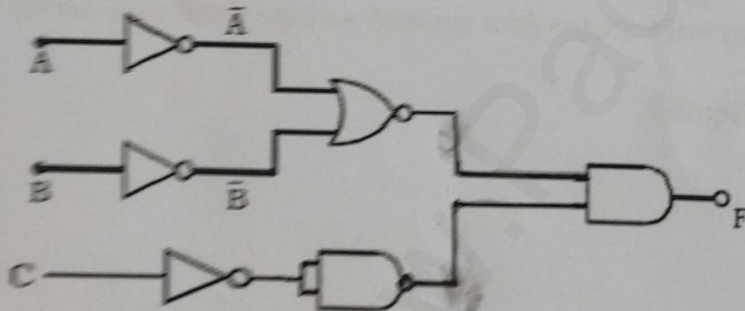
10. List out the advantages and disadvantages of frequency modulation (June- 23)

11. Draw the circuit diagram of a half wave rectifier and explain its working

12. List out the advantages and disadvantages of amplitude modulation

13. Transistor functions as a switch. Explain.

14. Give applications of RADAR

15. Explain how the zener diode act as a voltage regulator?

16. What is meant by satellite communication? Give its applications

PART – IV

1. What is modulation? Explain the types of modulation with necessary diagram. (Govt. Model)

2. Explain the construction and working of full - wave rectifier. (Govt. Model, May -22)

3. Explain the working of the transistor as an oscillator (Mar - 20)

4. Describe the function of a transistor as an amplifier with the neat circuit diagram. Sketch the input and output wave form (Sep – 20, Mar-23)
5. What is frequency modulation? List out the advantages and disadvantages of frequency modulation(Aug- 21)
6. State and prove De Morgan's First and Second theorems (Aug – 22, June - 23)
7. Sketch the static characteristics of a common emitter transistor and bring out the essential
8. Explain the basic elements of communication system with the necessary block diagram

11. Recent Developments in Physics
PART - II

1. Distinguish between Nanoscience and Nanotechnology.
2. What is the difference between Nano materials and Bulk materials?
3. Give any two examples for "Nano" in nature
4. Mention any two advantages and disadvantages of Robotics.
5. Why steel is preferred in making Robots? (Govt. Model)
6. What are black holes?
7. What are sub atomic particles?

PART – III

1. Explain the three advantages in medical technology (Govt. Model)
2. Discuss the applications of Nanomaterials in various fields.
3. What are the possible harmful effects of usage of Nanoparticles? Why?
4. Discuss the functions of key components in Robots?
5. Elaborate any two types of Robots with relevant examples.
6. Comment on the recent advancement in medical diagnosis and therapy
7. Can we completely replace humans with robots. Give any three reasons

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