**Gulistan Academy**

Physics (10th) Max.Marks = 40

Chapter No.10 (Simple Harmonic motion & Waves) Pass Marks = 20

**Time = 1 Hour**

**Question No.1: Give short answers. (2x11 = 22)**

1. *What is simple harmonic motion? What are the necessary conditions for a body to execute simple harmonic motion?*
2. *What is the difference between Damped and Un-Damped oscillations?*
3. *Prove that v* ***= f ƛ .***
4. *Does increasing the frequency of a wave also increase its wavelength?*
5. *What types of waves do not require any material medium for their propagation?*
6. *Find the time period and frequency of a simple pendulum 10 m long at a location where g = 10.0 ms-2.*
7. *Define frequency and time period of a wave.*
8. *Waves are the carriers of energy. Explain.*
9. *Define Reflection and Refraction.*
10. *What happens to the time period of a simple pendulum if its mass has been doubled?*
11. *What type of waves result in Earthquake?*

**Question No.2: (5+3)**

1. *Prove that the motion of a mass attached to a spring is SHM.*
2. *A simple pendulum completes one vibration in two seconds. Calculate its length.*

**Question No.3: (5+3)**

1. *Explain the following properties of waves with reference to ripple tank experiment*

*1-Reflection 2-Refraction 3-Diffraction*

1. *What is the wavelength of the radio waves transmitted by an FM station at 90 MHz? Speed of radio wave is 3 x 108 ms-1.*

***Best of luck***

**Gulistan Academy**

Physics (10th) Max.Marks = 40

Chapter No.11 (Sound) Pass Marks = 20

**Time = 1 Hour**

**Question No.1: Give short answers. (2x12 = 24)**

1. *What are the necessary conditions for the production of sound?*
2. *Sound is a form of wave. List at least three reasons to support the idea.*
3. *On what factors does the loudness of sound depend?*
4. *What is the difference between frequency and pitch?*
5. *What is the audible frequency range for human ear? Does this range vary with age?*
6. *We can recognize persons speaking with the same loudness from their voice. How is this possible?*
7. *Will two separate* ***50 dB*** *sounds together constitute a* ***100 dB*** *sound? Explain.*
8. *A sound wave has a frequency of* ***2 kHz*** *and wavelength* ***35 cm****. How long will it take to travel* ***1.5 km****?*
9. *Define Loudness and Quality of sound.*
10. *Calculate the intensity level of the faintest audible sound.*
11. *What is noise pollution? Shortly explain.*
12. *You can listen to your friend round a corner, but you cannot watch him/her. Why?*

**Question No.2: (5+3 = 8)**

1. *Prove the Longitudinal nature of Sound.*
2. *If at Anarkali bazar Lahore, the sound level is* ***80 dB****, what will be the intensity level of sound there?*

**Question No.3: (5+3 = 8)**

1. *Write any* ***Five*** *uses of Ultrasound.*
2. *A ship sends out ultrasound that returns from the seabed and is detected after* ***3.42 s****. If the speed of ultrasound through seawater is* ***1531 ms-1****, what is the distance of the seabed from the ship?*

***Best of luck***

**Gulistan Academy**

Physics (10th) Max.Marks = 40

Chapter No.12 (Geometrical Optics) Pass Marks = 20

**Time = 1 Hour**

**Question No.1: Give short answers. (2x12 = 24)**

1. *What do you mean by the reflection of light? Shortly explain with diagram.*
2. *Define the following terms used in refraction:*
3. *Angle of incident* ***(b)*** *Angle of refraction*
4. *What is meant by the term total internal reflection?*
5. *What is critical angle? Write the formula that relates the critical angle and the refractive index of a substance.*
6. *What is meant by the principal focus of a* ***(a)*** *convex lens and* ***(b)*** *concave lens?*
7. *Differentiate between Real and Virtual image.*
8. *How does a converging lens act like a simple microscope?*
9. *Define the terms Resolving Power and Magnifying Power.*
10. *Draw the ray diagram of refracting telescope.*
11. *Explain why light waves are refracted at a boundary between two materials.*
12. *Why or why not concave mirrors are suitable for make-up?*
13. *How does the thickness of lens effect its focal length?*

**Question No.2: (5+3 = 8)**

1. *What is Compound Microscope? Derive the formula for its Magnification. Also lists some of its uses.*
2. *Find the focal length of a mirror that forms an image* ***5.66 cm*** *behind a mirror of an object placed at* ***34.4 cm*** *in front of the mirror.*

**Question No.3: (5+3 = 8)**

1. *What is meant by the terms nearsightedness and farsightedness? How can these defects can be corrected?*
2. *The power of a convex lens is* ***5 D****. At what distance the object should be placed from the lens so that its real and 2 times larger image is formed.*

***Best of luck***

**Gulistan Academy**

Physics (10th) Max.Marks = 40

Chapter No.13 (Electrostatics) Pass Marks = 20

**Time = 1 Hour**

**Question No.1: Give short answers. (212 = 24)**

1. *What is electrostatic induction?*
2. *How the Electroscope is helpful in identifying the Conductors and Insulators?*
3. *What is electric field intensity? Explain shortly.*
4. *Describe some uses of capacitors.*
5. *How does electrostatic induction differ from charging by friction?*
6. *Is electric intensity is a vector quantity? What will be its direction?*
7. *How would you define the potential difference between two points? Define its units.*
8. *Describe capacitor as an energy storing device.*
9. *In what direction will a positive charged particle move in an electric field?*
10. *Perhaps you have seen a gasoline truck trailing a metal chain beneath it. What purpose does the chain serve?*
11. *The charge of how many negatively charged particles would be equal to* ***100 µC****. Assume charge on one negative particle is* ***1.6 10-19 C****.*
12. *The capacitance of a parallel plate capacitor is* ***100 pF****. If the potential difference between its plates is* ***50 V****, find the quantity of charge that capacitor can store. What will be the charge on each plate?*

**Question No.2: (5+3 = 8)**

1. *Explain Coulomb’s law of electrostatic and derive its mathematical form.*
2. *The force of repulsion between two identical positive charges is* ***0.8 N****, when the charges are* ***0.1 m*** *apart. Find the value of each charge.*

**Question No.3: (5+3 = 8)**

1. *How can we combine capacitors in parallel fashion? Find the equivalent capacitance of this parallel combination.*
2. *Two capacitors of capacitances* ***6 µF*** *and* ***12 µF*** *are connected in series with* ***12 V*** *battery. Find the equivalent capacitance of the combination. Find the charge and the potential difference across each capacitor.*

***Best of luck***

**Gulistan Academy**

Physics (10th) Max.Marks = 40

Chapter No.14 (Current Electricity) Pass Marks = 20

**Time = 1 Hour**

**Question No.1: Give short answers. (212 = 24)**

1. *Define and explain the term Electric Current.*
2. *What do you mean by the term* ***e.m.f.****? Is it really a force? Explain.*
3. *Define resistance and its units.*
4. *Differentiate between D.C and A.C.*
5. *Why is the voltage used for the domestic supply much lower than the voltage at which the power is transmitted?*
6. *What is the difference between a cell and a battery?*
7. *Can current flow in a circuit without potential difference?*
8. *How many watt-hours are there in 1000 joules?*
9. *Does a fuse in a circuit control, the potential difference or the current?*
10. *A current of* ***3 mA*** *is flowing through a wire for* ***1 minute****. What is the charge flowing through the wire?*
11. *Reading on voltmeter connected across a heating element is* ***60 V****. The amount of current passing through the heating element measured by an ammeter is* ***2 A****. What is the resistance of the heating coil of the element?*
12. *Differentiate between conductors and insulators?*

**Question No.2: (5+3 = 8)**

1. *Describe the factors affecting Resistance thoroughly.*
2. *An incandescent light bulb with an operating resistance of* ***95 Ω*** *is labeled “****150 W****”. Is this bulb designed for use in a* ***120 V*** *circuit or a* ***220 V*** *circuit?*

**Question No.3: (5+3 = 8)**

1. *How can we combine Resistances in parallel fashion? Find the equivalent resistance of this parallel combination.*
2. *Two resistances of* ***2 kΩ*** *and* ***8 kΩ*** *are joined in series, if a* ***10 V*** *battery is connected across the ends of this combination, find the following quantities:*
3. *The equivalent resistance of the series combination.*
4. *Current passing through each of the resistances.*
5. *The potential difference across each resistance.*

***Best of luck***

**Gulistan Academy**

Physics (10th) Max.Marks = 40

Chapter No.15 (Electromagnetism) Pass Marks = 20

**Time = 1 Hour**

**Question No.1: Give short answers. (212 = 24)**

1. *State the rule by which the direction of the lines of force of the magnetic field around a current-carrying conductor can be determined?*
2. *State the Flaming’s left hand rule.*
3. *Describe a simple experiment to demonstrate that a changing magnetic field can induce* ***e.m.f.*** *in a circuit.*
4. *What are the factors that affect the magnitude of the* ***e.m.f****. induced in a circuit by a changing magnetic field?*
5. *State and shortly explain the Lenz’s Law.*
6. *What do you understand by the term Mutual Induction? Also define its units.*
7. *What is the difference between a generator and a motor?*
8. *What reverse the direction of electric current in the armature coil of D.C. motor?*
9. *A transformer is needed to convert a mains* ***240 V*** *supply into a* ***12 V*** *supply. If there are* ***2000 turns*** *on the primary coil, then find the number of turns on the secondary coil.*
10. *Lenz’s law is just according to the law of conservation of energy. Explain.*
11. *Define Electro Magnetic Induction.*

**Question No.2: (5+3 = 8)**

1. *What is A.C. generator? Write its working principle. Draw a labelled diagram to illustrate the structure and working of A.C. generator. Also shortly explain its working.*
2. *A step-down transformer has a turns ratio of* ***1: 100****. An ac voltage of amplitude* ***170 V*** *is applied to the primary. If the current in the primary is* ***1.0 mA****, what is the current in the secondary?*

**Question No.3: (5+3 = 8)**

1. *What is an electric motor? Explain the working principle of D.C. motor.*
2. *A power station generates* ***500 MW*** *of electrical power which is fed to a transmission line. What current would flow in the transmission line if the input voltage is* ***250 kV****?*

***Best of luck***

**Gulistan Academy**

Physics (10th) Max.Marks = 40

Chapter No.16 (Basic Electronics) Pass Marks = 20

**Time = 1 Hour**

**Question No.1: Give short answers. (212 = 24)**

1. *What happens when a narrow beam of electrons is passed through a uniform electric field?*
2. *Name some uses of oscilloscope.*
3. *Name the factors which can enhance the thermionic emission.*
4. *What do you understand by digital and analogue quantities?*
5. *Differentiate between analogue and digital electronics.*
6. *In what ways is an oscilloscope a voltmeter?*
7. *NAND gate is the reciprocal of AND gate. Discuss.*
8. *Show that the circuit given blow acts as OR gate:*

*A Y*

*B*

1. *Draw the truth table for NAND gate.*
2. *Shortly explain the house safety alarm.*
3. *How can you compare the logic operation X=A.B with usual operation of multiplication?*
4. *What are logic gates?*

**Question No.2: (5+3 = 8)**

1. *What is Cathode Ray Oscilloscope? Write the working of its different parts.*
2. *How can you make an AND gate using only two NAND gates? Explain.*

**Question No.3: (5+3 = 8)**

1. *Write down any five benefits of using digital electronics over analogue electronics.*
2. *What are the three universal Logic Gates? Give their symbols and truth tables.*

***Best of luck***

**Gulistan Academy**

Physics (10th) Max.Marks = 40

Chapter No.17 (Information & Communication Technology) Pass Marks = 20

**Time = 1 Hour**

**Question No.1: Give short answers. (2x12 = 24)**

1. *What is the difference between data and information?*
2. *Differentiate between the primary and secondary memory.*
3. *Name different information storage devices.*
4. *Explain briefly the transmission of radio waves through space.*
5. *Write the names of some popular web browsers.*
6. *What is the role of computer in everyday life?*
7. *What is the difference between hardware and software?*
8. *What do understand by the term word processing and data managing?*
9. *What is internet? Shortly explain.*
10. *Which is more reliable floppy disk or a hard disk?*
11. *What is the difference between* ***RAM*** *and* ***ROM*** *memories?*
12. *Write some advantages of electronic mail.*

**Question No.2: (5+3 = 8)**

1. *How many components the* ***CBIS*** *has? Explain each component shortly.*
2. *Write a short note on cell phone.*

**Question No.3: (5+3 = 8)**

1. *Describe the transmission of light signals through optical fibers.*
2. *Write a short note on magnetic disks.*

***Best of luck***

**Gulistan Academy**

Physics (10th) Max.Marks = 40

Chapter No.18 (Atomic & Nuclear Physics) Pass Marks = 20

**Time = 1 Hour**

**Question No.1: Give short answers. (2x12 = 24)**

1. *What is the difference between atomic number and mass number?*
2. *What do you mean by the term Radioactivity?*
3. *How can you make radioactive elements artificially?*
4. *Write the alpha decay process for****.***
5. *What do you understand by the half-life of a radioactive element?*
6. *What is meant by background radiations? Enlist some sources of background radiations.*
7. *Describe two uses of radioisotopes in medicine, industry or research.*
8. *A nitrogen nuclide decays to become an oxygen nuclide by emitting an electron. Show this process with an equation.*
9. *What nuclear reaction would release more energy, the fission reaction or the fusion reaction? Explain.*
10. *How long would you likely have to wait to watch any sample of radioactive atoms completely decay?*
11. *How much of a* ***1g*** *sample of pure radioactive mater would be left after four half-lives?*
12. *Which radiation (****α, β, γ****) has the largest penetrating ability? Explain.*

**Question No.2: (5+3 = 8)**

1. *Describe some uses of Radioisotopes.*
2. ***Cobalt-60*** *is a radioactive element with half-life of* ***5.25 years****. What fraction of the original sample will be left after* ***26 years****?*

**Question No.3: (5+3 = 8)**

1. *What is Nuclear Fission Reaction? Explain with example. Also discuss the Fission Chain Reaction.*
2. *Ashes from a campfire deep in a cave show* ***carbon-14*** *activity of only* ***one-eighth*** *the activity of fresh wood. How long ago was that campfire made?*

***Best of luck***