NOTE: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

Q1. 12

1. **The SI unit of electric power is:**
   (A) Joule (B) Watt (C) Newton (D) kWh
2. **If we double both voltage and current in a circuit while keeping its resistance constant, the power is:**
   (A) quadruples (B) remains unchanged (C) double (D) half
3. **The presence of magnetic field can be detected by a:**
   (A) magnetic compass (B) small mass
   (C) stationary positive charge (D) stationary negative charge
4. **AND gate can be formed by using two:**
   (A) AND gates (B) NAND gates (C) NOT gates (D) NOR gates
5. **The particles emitted from a hot metal surface are:**
   (A) positive ions (B) negative ions (C) electrons (D) protons
6. **One byte is equal to:**
   (A) 4 bits (B) 6 bits (C) 8 bits (D) 10 bits
7. **One of the isotope of Uranium $^{238}_{92}U$. The number of Neutrons in this isotope is:**
   (A) 92 (B) 146 (C) 238 (D) 330
8. **The relation between v, f and λ of a wave is:**
   (A) $vf = \lambda$ (B) $v = f\lambda$ (C) $v\lambda = f$ (D) $v = \frac{\lambda}{f}$
9. **How does sound travel from its source to your ear:**
   (A) by change in air pressure (B) by vibration in wires
   (C) by electromagnetic waves (D) infra red waves
10. **Which one of the following quantity is not changed during refraction of light?**
    (A) its direction (B) its speed (C) its wavelength (D) its frequency
11. **Index of refraction of water is:**
    (A) 1.31 (B) 1.00 (C) 1.33 (D) 1.52
12. **Two small charged spheres are separated by 2mm. Which of the following would produce the greater attractive force:**
    (A) +1q and + 4q (B) –1q and –4q (C) +2q and +2q (D) +2q and –2q

Sahiwal Board 2019 (First Group)

Roll No.(in Figures): ..... (in Words): .....

Maximum Marks: 48 **SUBJECTIVE TYPE** Time Allowed :1.45 Hours

(PART- I)

Q2. Write short answers to any Five (5) questions. (5×2=10)

(i) Define diffraction of waves and write an example.

(ii) If f = 4Hz and λ = 0.4m, find the value of v.

(iii) Define mechanical waves and electromagnetic waves.

(iv) What is the pitch and quality of sound?

(v) What is the reflection of sound?

(vi) Define electromagnetic induction.

(vii) Define mutual induction.

(viii) What is relay? Write its use.

Q3. Write short answers to any FIVE (5) questions. (5×2=10)

(i) Write any two uses of lens.

(ii) What is the difference between incident ray and reflected ray?

(iii) What is meant by Real focus?

(iv) BSs and MSC stand for what?

(v) What are browsers? Give their two examples.

(vi) Define C.P.U. Why it is called the brain of computer?

(vii) Describe medical treatment of radio isotopes.

(viii) Write a note on cosmic radiations.

Q4. Write short answers to any FIVE (5) questions. (5×2=10)

(i) Define Farad.

(ii) What is meant by volt?

(iii) State Coulomb's Law.

(iv) Define ampere.

(v) What is meant by conventional current?

(vi) State Ohm's Law.

(vii) Define thermionic emission.

(viii) What is meant by analogue to digital converter (ADC)?

(PART - II)

Note: Attempt any TWO questions. (2×9=18)

Q5. (a) If in Anarkali Bazar Lahore, intensity level of sound is 80 dB, what will be the intensity of sound there? 4

(b) State the conditions for total internal reflection. 5

Q6. (a) 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. 4

(b) Determine the equivalent resistance of series combination of resistors. 5

Q7. (a) Ashes from a campfire deep in a cave shows carbon -14 activity of only one-eighth activity of fresh wood. How long ago was that campfire made? 4

(b) What is cathode ray oscilloscope? Describe its components. 5

NOTE: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

Q1. 12

1. **Two resistors of 6kΩ and 4kΩ are connected in series. Their equivalent resistance is:**
   (A) 2kΩ (B) 10kΩ (C) 12kΩ (D) 24kΩ
2. **Unit of time period is:**
   (A) second (B) hertz (C) Js^{-1} (D) Cs^{-1}
3. **If the current in a wire which is placed perpendicular to a magnetic field increases, the force on the wire will:**
   (A) remain the same (B) decrease (C) increase (D) be zero
4. **In the thermionic emission, the particles emitted from a hot metal surface are:**
   (A) electrons (B) protons (C) neutrons (D) photons
5. **If X = A.B then X is 1 when:**
   (A) A = 0 , B = 0 (B) A = 1 , B = 0 (C) A = 0 , B = 1 (D) A = 1 , B = 1
6. **From which of the following you can get information almost about every thing?**
   (A) book (B) teacher (C) computer (D) internet
7. **Release of energy by the Sun is due to:**
   (A) nuclear fission (B) nuclear fusion (C) burning of gases (D) chemical reaction
8. **Equation to find the time period of mass attached to a spring is:**
   (A) $T = 2\pi\sqrt{\frac{\ell}{g}}$ (B) $T = 2\pi\sqrt{\frac{g}{\ell}}$ (C) $T = 2\pi\sqrt{\frac{m}{k}}$ (D) $T = 2\pi\sqrt{\frac{k}{m}}$
9. **Intensity of sound of rustling of leaves is:**
   (A) $10^{-10}Wm^{-2}$ (B) $10^{-11}Wm^{-2}$ (C) $10^{-12}Wm^{-2}$ (D) $10^{-18}Wm^{-2}$
10. **Unit for power of lens is:**
    (A) dioptre (B) watt (C) meter (D) centimeter
11. **The instrument used to examine stomach is:**
    (A) periscope (B) gastroscope (C) bronchoscope (D) cystoscope
12. **According to Coulomb's Law, the value of K is:**
    (A) $9 \times 10^9\ Nm^{-2}C^2$ (B) $9 \times 10^9\ Nm^2C^2$ (C) $9 \times 10^9\ N^{-1}m^2C^2$ (D) $9 \times 10^9\ Nm^2C^{-2}$

Sahiwal Board 2019 (Second Group)

Roll No.(in Figures): ..... (in Words): .....

Maximum Marks: 48 **SUBJECTIVE TYPE** Time Allowed :1.45 Hours

(PART- I)

Q2. Write short answers to any Five (5) questions. **(5×2=10)**

(i) What is meant by simple harmonic motion?

(ii) How damping progressively reduces the amplitude of oscillation?

(iii) Derive a relation between velocity, frequency and wavelength of a wave.

(iv) Write two uses of ultrasound in medical field.

(v) Calculate the intensity level of the faintest audible sound of intensity $10^{-12}Wm^{-2}$.

(vi) What is meant by an ideal transformer?

(vii) Lenz's Law is a manifestation of the law of conservation of energy. Why?

(viii) State Faraday's Law of electromagnetic induction.

Q3. Write short answers to any FIVE (5) questions. **(5×2=10)**

(i) Define compound microscope. Write formula to find its magnification.

(ii) State Snell's Law and write its formula.

(iii) Define nearsightedness and how this defect can be corrected?

(iv) Define compact disc. How much data can be stored in it?

(v) What is difference between cell phone and photo phone?

(vi) What is meant by information and communication technology?

(vii) Write two properties of Alpha Particles.

(viii) What is meant by Gamma decay? Write its general equation.

Q4. Write short answers to any FIVE (5) questions. **(5×2=10)**

(i) Define electrostatic induction.

(ii) State Coulomb's Law.

(iii) Write at least four uses of capacitors.

(iv) Differentiate between Ohmic and non-Ohmic conductors.

(v) What is fuse? How it is connected in circuit?

(vi) Write the use of circuit breaker.

(vii) Define thermionic emission.

(viii) Draw the truth table for NAND operation.

(PART - II)

Note: Attempt any TWO questions. **(2×9=18)**

Q5. (a) At one end of the ripple tank 80 cm across a 5Hz vibrator produces waves whose wavelength is 40 mm. Find the time the wave need to cross the tank. **4**

(b) Define refraction of light and write its laws. **5**

Q6. (a) Two capacitors of capacitance 6μF and 12μF are connected is series with 12 V battery. Find the equivalent capacitance of the combination. Find the charge and the potential difference across each capacitor. **4**

(b) Explain the factors which affect on resistance. Also define specific resistance. **5**

Q7. (a) Cobalt-60 is a radioactive element with half life of 5.25 year. What fraction of the original sample will be left after 26 years? **4**

(b) Explain AND operation and write the truth table of AND gate. **5**