NEW TRUST SCIENCE ACADEMY

# GUESS PAPER 2025

# Physics – 11th

## فرسٹ ایئر فزکس

- FSC (PRE MEDICAL / PRE ENGINEERING)
- I.C.S

پنجاب کے تمام بورڈز ( لاہور، ملتان، گوجرانوالہ، سرگودھا،ڈیرہ غازی خاں، فیصل آباد ،ساہیوال) کے نوٹس، گیس پیپرز، چیپٹر وائز ٹیسٹ، ہاف بُک ٹیسٹ، فُل بُک ٹیسٹ کے لیے ہماری ویب سائٹ www.ntsacademy.com وزٹ کریں۔

1st year Physic guess paper

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## 1st Year Physics

## GUESS PAPER 2025

### Unit # 1

i. How many years are there in one second/ one light year?
ii. How many seconds/nanoseconds are there in one year?
iii. Name several repetitive phenomena occurring in nature which should serve as reasonable time standards?
iv. Why do we find it useful to have two units for the amount of substance, the kilogram and the mole?
v. Define and explain supplementary units (radian/ steradian)?
vi. The time period of simple pendulum Is measured by stopwatch, what types of errors are possible?
vii. Differentiate b/w precision and accuracy?
viii. Give drawbacks if time period of pendulum Is used as time standard?
ix. Write the dimensions of pressure and density?
x. Find the dimensions and S.I unit for coefficient of viscosity?
xi. Write the units and dimensions of G from the equation $F = G\ \frac{mM}{r^2}$?
xii. Differentiate b/w random error and systematic error?
xiii. Show the equation $E = mc^2$ is dimensionally correct?

### Unit # 2

i. The vector sum of three vectors gives a zero resultant? What can be orientation of vectors?
ii. The vectors have unequal magnitude. Can their sum be zero? Explain?
iii. Can you add zero to a null vector?
iv. Differentiate b/w unit vector & position vector?
v. Can magnitude of a vector have negative value?
vi. Can a body rotate about its centre of gravity under the action of its weight?
vii. Can a vector have component greater than its magnitude?
viii. Is it possible to add a vector quantity to a scalar quantity?
ix. Explain? Name different conditions that make A1 + A2 = 0?

**IMPORTANT LONG QUESTIONS & NUMERICALS**

1. Define rectangular components of a vector. How two vectors can be added by rectangular component method?
2. Define scalar products with examples? Write its four characteristics?
3. Define vector product with example? Write its four characteristics?
4. Example # 2.5
5. Numerical # 2.7,2.14, 2.15

### Unit # 3

1. Can the velocity of an object reverse the direction when acceleration is constant? If so, give an example?
2. Differentiate b/w uniform and variable velocity?
3. An object is thrown vertically upward. Discuss the sign of acceleration due to gravity relative to velocity?
4. Explain the circumstances in which the velocity "v" and acceleration "a" of car are:
   - Parallel
   - Perpendicular to one another
   - Anti parallel

5. Motion with constant velocity is a special case of motion with constant acceleration. Is this statement true? Discuss?
6. State newton second & third law of motion?
7. How second law of motion can be expressed in term of linear momentum?
8. Define impulse and show that it is related to linear momentum?
9. What is the difference b/w elastic and inelastic collision?
10. When rocket re – enters the atmosphere its nose cone becomes very hot? Why?
11. At what point or points in the path does a projectile have its minimum, maximum speed?
12. Show that range of a projectile is maximum when projectile is thrown at an angle of $45^0$ with horizontal?

**IMPORTANT LQs + NUMERICAL**

1. State and explain the law of conservation of momentum?
2. Define elastic collision. Explain elastic collision in one dimension to show the relative velocities before and after collision?
3. Find angle of projection of a projectile for which its maximum height and horizontal range are equal?
4. Example # 3.2, 3.5
5. Numerical # 3.5. 3.8,3.10,3.11

## Unit # 4

1. An object has one joule of potential energy what does it mean? Explain?
2. Calculate the work done in kilojoules in lifting the mass of 10kg through a vertical height of 10m.
3. In which case is more work done? When a 50kg bag of books is lifted through 50cm or when a 50kg crate id pushed through 2m across the floor with a force of 50N?
4. Prove that P = F. v?
5. Define escape velocity write its value?
6. A girl drops a cup from certain height which energy changes are involved?
7. A boy uses a catapult to throw a stone which accidently smashes a green house window. List the possible energy changes?
8. State work- energy principle?
9. What sort of energy is in the following (a) compressed spring (b) A moving car?

**IMPORTANT LQs + NUMERICAL**

1. Define gravitational field & conservative field. Show that work done in gravitational field is independent of path followed?
2. Define absolute potential energy. Derive its mathematical expression?
3. Example # 4.2, 4.3, 4.5
4. Numerical # 4.7, 4.8

## Unit # 5

1. Differentiate b/w tangential velocity & angular velocity?
2. When mud flies off the tyre of the moving bicycle in what direction does it flies?
3. Why does a diver change its body position before and after diving in the pool?
4. Define moment of inertia &write its formula?
5. show that angular momentum $L_0 = mvr$?
6. Explain what is meant by centripetal force why it must be furnished to an object if the object is to follow a circular path?
7. Explain how many minimum numbers of geostationary satellites are required global coverage of T.V transmission?
8. Find the rotational K.E of a disc of its $I = 1/2mr^2$?

**IMPORTANT LQs + NUMERICAL**

1. What is geostationary satellite? Calculate its orbital velocity and orbital radius?

2. Define rotational kinetic energy also derive formula for rotational K. E of a disc and a hoop coming down an inclined plane?
3. Numerical # 5.2,5.3,5.6,5.9,5.10

## Unit # 6

1. Define viscosity & drag force?
2. Why fog droplets appear to be suspended in air?
3. Two row boats moving parallel in the same direction are pulled towards each other. Explain?
4. Difference b/w laminar flow and turbulent flow?
5. State Bernoulli's equation for liquid in motion?
6. Explain how the swing is produced in a fast moving cricket ball?

**IMPORTANT LQs + NUMERICAL**

1. Define terminal velocity. Show that terminal velocity is directly proportional to the square of the radius?
2. State and explain equation of continuity?
3. Derive Bernoulli's equation for an ideal fluid?
4. Numerical # 6.2, 6.3, 6.5,6.7,6.9

## Unit # 7

1. Name two characteristics of S.H.M?
2. Does the acceleration of simple harmonic oscillator remain constant. Can the acceleration ever be zero?
3. Does frequency depend on amplitude for harmonic oscillator?
4. What is the total distance travelled by an object moving with S.H.M in a time equal to its period of its amplitude is x?
5. What happens to the period of a simple pendulum if its length is doubled?
6. What is phase angle?
7. Can we realize an ideal simple pendulum?
8. Describe two common phenomena in which resonance plays an important role?
9. If mass spring system is hung vertically and set into oscillations, why does the motion eventually stop?
10. Difference b/w free & forced vibration?

**IMPORTANT LQs + NUMERICAL**

1. What is simple pendulum? Show that simple pendulum executes S.H.M. find its time period?What is simple pendulum? Show that if it perform simple harmonic motion. Hence derive formula for its time period?
2. Example # 7.2, 7.3
3. Numerical # 7.1, 7.4, 7.5

## Unit # 8

1. What features do longitudinal waves have in common with transverse waves?
2. Define crest, trough, node & antinode?
3. Why does sound travel faster in solids than in gases?
4. As a result of distant explosion an observer, senses a ground tremor and then hears a explosion. Explain the time difference?
5. Explain why sound travel faster in warm air than in cold air?
6. Explain "principles of superposition"?
7. How are beats useful in tunning a musical instrument?
8. Is it possible for two identical waves travelling in the same direction along a string to give rise to a stationary wave?

**IMPORTANT LQs + NUMERICAL**

What is the effect of temperature on the speed of sound and derive the relation $v_t = v_0 + 0.61t$?

What is doppler's effect? Discuss the cases when the sources move towards and away from a stationary observer?
Example # 8.1, 8.4
Numerical # 8.3, 8.4, 8.5, 8.6

## Unit # 9

1. State Huygens's principle?
2. Under what conditions two or more sources of light behave as coherent sources?
3. Can visible light produce interference fringes?
4. Explain whether the young's experiment is an experiment for studying interference or diffraction effect of light?
5. An oil film spreading over a footpath shows colours. Explain how does it happens?
6. Can you obtain Newton's ring with transmitted light, explain briefly?
7. How would you manage to get more orders of spectra using a diffraction grating?
8. Differentiate b/w unpolarized, polarized light and plane polarized light?
9. Why are polarized sunglasses better than ordinary sunglasses?

**IMORTANT LQs + NUMERICAL**

1. What is Michelson's infer meter? Describe its principle, construction, working and application?
2. Explain young's double slit experiment & determine the relation for linear distance on the screen b/w adjacent bright fringes?
3. Discuss diffraction of X – rays by crystals. Also write down applications of X – rays diffraction?
4. Numerical # 9.3, 9.6,9.7,9.8

## Unit # 10

1. What is linear magnification?
2. Explain difference b/w angular magnification and resolving power of an optical instrument?
3. How is convex lens is used as a magnifier?
4. Why would it be advantageous to use blue light with a compound microscope?
5. If a person was looking through a telescope at the full, how would the appearance of the moon be changed by covering half of the objective lens?
6. What is spectrometer? Write its essential components and uses?
7. How the light is transmitted through the optical fibre?
8. Why loses of power occur in optical fibre?
9. Differentiate b/w angular magnification & resolving power of an optical instrument?

**IMPORTANT LQs + NUMERICAL**

1. Define simple microscope. Calculate magnification of a simple microscope using rays diagram?
2. What is compound microscope? Give its construction, working and the expression for angular expression?
3. What is astronomical telescope? Give its construction, working. Also find its magnifying power?
4. Discuss in detail Michelson's rotational mirror method for the measurement of speed of light?
5. Numerical # 10.6, 10.8, 10.9

## Unit # 11

1. Why is the average velocity of the molecules in a gas is zero, but the average of the square of the velocities is not zero?
2. Why does pressure of gas in a car tyre increase when it is driven through some distance?
3. Derive charle's law from kinetic theory of gases?
4. Write any two postulates of kinetic theory?

5. Can the mechanical energy be converted completely into heat energy?
6. What happens to the temperature of the room when an air conditioner is left running on the table in the middle of the room?
7. Give three examples of adiabatic process?
8. A thermos flask containing milk as a system is shaken rapidly. Does the temperature of milk rises?
9. Why CP> CV? www.ntsacademy.com
10. Is it possible to convert internal energy into mechanical energy. Explain with an example?
11. Is it possible to construct a heat engine that will not expel heat into atmosphere?
12. What is triple point of water?
13. Does entropy of a system increases or decreases due to friction. Explain?
14. State second law of thermodynamics in terms of entropy?
15. Give an example of natural process that involves an increase in entropy?

**IMPORTANT LQs + NUMERICAL**

. Define molar specific heat and prove that Cp – CV= R?
. What is carnot engine. Derive an expression for efficiency of carnot engine?
. What is the average translational kinetic energy of molecule in a gas at room temperature?
. Example # 11.2, 11.4
. Numerical # 11.1,11.8



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