

ANNUAL EXAMINATION

CLASS IX — PHYSICS

2019-Style Final Examination Paper

Motion • Force • Gravitation • Work & Energy • Sound

Time: 3 Hours

Maximum Marks: 80

Class: IX

General Instructions

1. Read all questions carefully before answering.
2. Show formula, substitution and unit in numerical problems.
3. Draw neat and labelled diagrams wherever required.
4. Use $g = 9.8 \text{ m/s}^2$ unless another value is specified.
5. This is a newly written 2019-style practice paper, not a reproduction of an original paper.

Section A — Very Short Answer

Q1.

Define distance and displacement.

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Q2.

What is meant by uniform motion?

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Q3.

Write the SI unit of acceleration.

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Q4.

State Newton's first law of motion.

Q5.

What is inertia?

Q6.

Define work done by a force.

Q7.

What is kinetic energy?

Q8.

Write the relation between frequency and time period.

Section B — Motion

Q9.

Differentiate between speed and velocity. Give one example of each.

Q10.

A car travels 150 km in 3 hours. Calculate its average speed in km/h and m/s.

Q11.

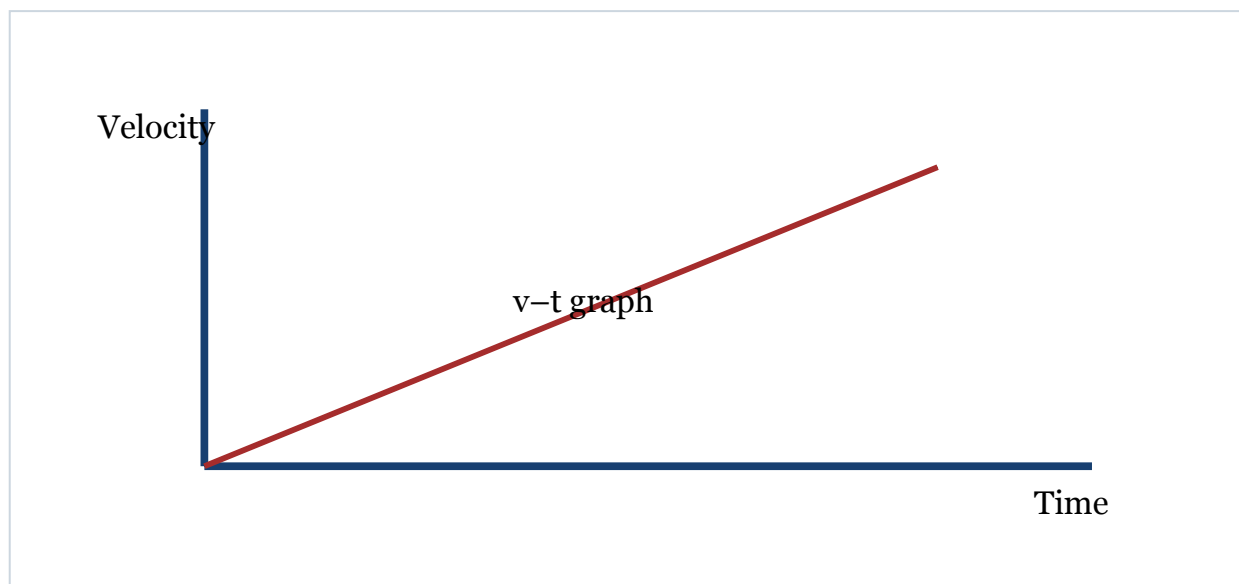
A body starts from rest and reaches a velocity of 20 m/s in 5 seconds. Find its acceleration.

Q12.

Explain the difference between uniform and non-uniform motion with suitable examples.

Q13. Diagram Question

The following velocity-time graph represents the motion of a body. Explain what the rising straight line indicates.



Q14.

Explain Newton's second law of motion and obtain the relation between force, mass and acceleration.

Q15.

Why do passengers move forward when a moving bus suddenly stops? Explain using inertia.

Q16.

A force of 10 N acts on a body of mass 2 kg. Calculate its acceleration.

Q17.

State Newton's third law and explain it with two everyday examples.

Q18.

Why is it easier to push an empty cart than a heavily loaded cart?

Section D — Gravitation and Work & Energy**Q19.**

State the universal law of gravitation and explain the meaning of each quantity in the relation.

Q20.

Differentiate between mass and weight.

Q21.

Calculate the weight of a body of mass 50 kg on Earth. Take $g = 9.8 \text{ m/s}^2$.

Q22.

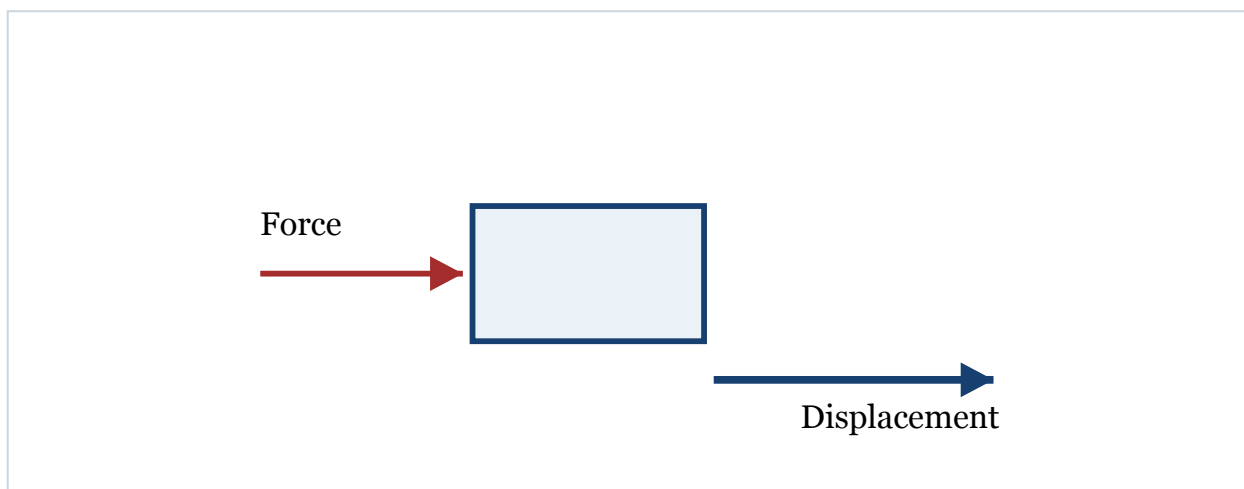
Define work and power. Write their SI units.

Q23.

A force of 20 N moves an object through 5 m in the direction of the force. Calculate the work done.

Q24. Diagram Question

Draw a simple diagram showing a force acting on a block and displacement in the same direction.
Explain when the work done is positive.



Section E — Sound

Q25.

How is sound produced? Explain the role of vibration.

Q26.

Differentiate between amplitude, frequency and time period of a sound wave.

Q27.

Why can sound not travel through a vacuum?

Q28.

A sound wave has a frequency of 500 Hz. Calculate its time period.

Q29.

Explain how the human ear detects sound and sends information to the brain.

Section F — Higher Order / Application Questions

Q30.

A cyclist increases speed from 5 m/s to 15 m/s in 5 seconds. Calculate acceleration and explain what the result means physically.

Q31.

Two objects have different masses but are acted upon by the same force. Explain which object will have greater acceleration and why.

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Q32.

A ball is thrown vertically upward. Describe how its velocity and kinetic energy change as it rises.

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Q33.

Explain why a person wearing shoes with a broad sole exerts less pressure on the ground than a person wearing narrow heels.

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Q34.

A machine does 600 J of work in 20 seconds. Calculate its power and explain what the answer represents.

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Q35.

Explain why sound from a distant source may be heard later than a visual event such as a flash. Use the ideas of wave speed and observation.

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