Punjab Education, Curriculum, Training and Assessment Authority

Smart Syllabus / Accelerated Learning Program (ALP)-Deleted Content and Questions for Physics-11 (Annual Examination-2027)

To ensure timely curriculum completion and effective learning for Academic Session 2026-27, selected topics and questions of Physics- 11 have been reduced under the Smart Syllabus / ALP.

This adjustment has been made carefully to prevent any learning loss, content overlap, or conceptual gap for students. The modified scheme retains all core concepts required for progression to higher grades, while maintaining curriculum coherence across science subjects. The detail is as follows:

Chapter No.	Chapter Name	Topics	Page No.	Exercise
1	Measurements	1.1 Physical quantities and their units 1.2 International system of units	2 2-5	MCQs: 1.2, 1.3, 1.4, 1.14, 1.16 Shot answer questions: 1.1, 1.3, 1.4, 1.5 CRQs: 1.1, 1.3, 1.5, 1.6, 1.7, 1.8, 1.9, 1.11 Comprehensive Question: 1.3 (Part-b) Numerical Problems: 1.1, 1.2, 1.8
2	Force and Motion	2.1 Scalars 2.2 Vectors • Only derivation of equations of motion by graphical method 2.10 Elastic collision in two dimensions 2.11 Inelastic collision in two dimensions 2.12 Rocket propulsion • Examples: 2.1, 2.4	20 20-21 25-28 41, 42 42, 43 44 22, 29-30	MCQs: 2.8 Shot answer questions: 2.7 CRQs: 2.3, 2.4 Comprehensive Questions: 2.3, 2.7, 2.8 (only inelastic collision in two dimensions) Numerical Problems: 2.4, 2.10, 2.11, 2.12
3	Circular and Rotational Motion	• Applications of centripetal force • Flywheel • The Gyroscope • Example: 3.2	55, 56 64 64, 65 54	MCQs: 3.6, 3.8, 3.9 Shot answer questions: 3.3, 3.6, 3.8 CRQs: 3.2, 3.5, 3.6, 3.8 Numerical Problems: 3.3, 3.5, 3.10
4	Work, Energy and Power	4.1 Work done by a constant force 4.5 Energy (K.E.) • Examples: 4.3 and 4.5	69, 70 74, 75	MCQs: 4.2, 4.4, 4.8, 4.9 Short answer questions: 4.2, 4.5, 4.8, 4.9 CRQs: 4.2, 4.3, 4.5, 4.7

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			75-76 and 82-83	Comprehensive Questions: 4.1, 4.2 (Part-i) Numerical Problems: 4.2, 4.7, 4.8, 4.10
5	Solids and Fluid Dynamics	5.1 Classification of solids 5.4 Determination of Young's modulus of a wire 5.10 Increase in flow velocity 5.15 Real fluids are viscous fluids 5.16 Superfluids	88, 89 91, 92 101 107, 108 108	MCQs: 5.3, 5.9, 5.12 Short answer questions: 5.5, 5.6, 5.10 CRQs: 5.2, 5.5, 5.6 Comprehensive Questions: 5.1, 5.4 Numerical Problems: 5.3, 5.5, 5.6
6	Heat and Thermodynamics	6.1 Assumptions of the kinetic theory of gasses 6.6 Heat engine • Example: 6.1	113-117 122 115	MCQs: 6.3, 6.4, 6.7, 6.8, 6.10 Short answer questions: 6.1, 6.2, 6.9, 6.10, 6.11 CRQs: 6.4, 6.5 Comprehensive Questions: 6.1, 6.2 Numerical Problems: 6.1, 6.2, 6.7, 6.8
7	Waves and Vibrations	7.1 Waves 7.4 Stationary waves and their formation • Tuning musical instruments • Examples: 7.6, 7.9	132-134 139, 140 153 151 and 156	MCQs: 7.1, 7.3, 7.4, 7.9 Short answer questions: 7.4, 7.5 CRQs: 7.1, 7.3 Numerical Problems: 7.1, 7.2, 7.4, 7.5
8	Physical Optics and Gravitational Waves	8.2 Types of Polarization • Optical activity • Space-time distortion / tidal forces • Examples: 8.5, 8.6	169 173, 174 179 181	MCQs: 8.5, 8.8, 8.9, 8.10 Short answer questions: 8.4, 8.5 CRQs: 8.4, 8.6 Comprehensive Questions: 8.1 (Only classify the polarization of waves), 8.8 Numerical Problems: 8.1, 8.5, 8.9
9	Electrostatics and Current Electricity	• Electric field lines • Applications of Gauss's law 9.7 Motion of charged particles in a uniform electric field 9.8 Path of a charged particle	189-191 194 198, 199 199, 200	MCQs: 9.3, 9.6, 9.10 Short answer questions: 9.3, 9.8, 9.9 CRQs: 9.1, 9.2, 9.3 Numerical Problems: 9.3, 9.4, 9.7, 9.9

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		9.9 Shielding from external electric field 9.19 Use of a Galvanometer • Examples: 9.9, 9.11	200, 201 214, 215 205, 210-211	
10	Electromagnetism	10.3Magnetic flux linkage 10.5 Velocity selector 10.7 Lenz's law • Examples: 10.2, 10.4, 10.5 and 10.7	227 229, 230 233-235 226, 230, 231, 236	MCQs: 10.2, 10.3, 10.10 Short answer questions: 10.1, 10.4, 10.5, 10.6, 10.7 CRQs: 10.2, 10.3, 10.8 Comprehensive Questions: 10.3 (Only Lenz's law), 10.5 Numerical Problems: 10.7, 10.8, 10.9, 10.11, 10.12
11	Special Theory of Relativity	11.5 Space-time in relativity	249-251	MCQs: 11.1 Shot answer questions: 11.1, 11.4, 11.8 CRQs: 11.1, 11.2 Comprehensive Question: 11.3 Numerical Problems: 11.7, 11.8
12	Nuclear and Particle Physics	12.8 Conservation laws 12.10 Most of the matter in the observable universe is plasma 12.11The theories about the forces between the masses of particles 12.12The standard model	267 267, 268 268, 269 269	MCQs: 12.2, 12.4, 12.5, 12.9, 12.15, 12.16, 12.17 Shot answer questions: 12.2, 12.3, 12.7, 12.11, 12.13, 12.14 CRQs: 12.2, 12.4 Numerical Problems: 12.6

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Pairing Scheme / Instructions for Preparation of Exam Paper of Physics for Class-11

The paper of Physics for Grade-11 will consist of 85 marks.

Objective Type = 17 + Subjective Type = 68 marks.

Timing of the paper will be 3 hours.

(Objective Type = 20 minutes + Subjective Type = 2:40 hours)

The paper will be made as per following details:

Part-I: **Objective:**	**Q-1:** 17 Multiple Choice Questions (MCQs) will be developed from the entire content of the textbook. One MCQ will be asked from chapters; 1, 2, 3, 4, 6, 8 and 11 each. Two MCQs will be asked from chapters; 5, 7, 9, 10 and 12 each.	**(1×17) = 17**
Part-II: **Subjective:**	This section will contain three short answer questions. Each short answer question will be asked from the content of the textbook. The detail is as follows: **Q-2:** 8 short answer questions have to be answered out of 12. The detail is as follows: • Two short answer questions will be asked from chapters; 1 and 2 each. Four short answer questions will be asked from chapters 3 and 4 each.	**(2 × 8) = 16**
	Q-3: 8 short answer questions have to be answered out of 12. The detail is as follows: • Two short answer questions will be asked from chapters; 6 and 8 each. Four short answer questions will be asked from chapters 5 and 7 each.	**(2 × 8) = 16**
	Q-4: 6 short answer questions have to be answered out of 9. The detail is as follows: Three short answer questions will be asked from chapters; 9 and 10 each. One short answer question will be asked from chapter 11 and two short answer questions will be asked from chapter 12.	**(2 × 6) = 12**

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Part-III: **Subjective:**	This section will contain five (05) detailed questions and students have to attempt any three questions, carrying 8 marks each. Each detailed question will be asked form the content of the textbook. In this section, each question will consist of two parts. Part (a) may be asked form any chapter. Part (b) will be asked from different chapters (not from the same chapter as Part (a). Part (a) will carry 5 marks, while Part (b) will carry 3 marks. The detail is as follows: **Q-5:** • One detailed question will be asked from chapters; 1, 2 and 3. **Q-6:** • One detailed question will be asked from chapters; 4, 5 and 6. **Q-7:** • One detailed question will be asked from chapters; 7 and 8. **Q-8:** • One detailed question will be asked from chapters; 9 and 10. **Q-9:** • One detailed question will be asked from chapters; 11 and 12.	**(8 × 3) = 24**

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MODEL PAPER OF PHYSICS FOR GRADE-11
(For Annual Exam-2027)

OBJECTIVE TYPE

Max. Marks: 17 **Time: 20 mins**

Q.1. Four possible answers A, B, C & D to each question are given. The choice which you think is correct, fill the circle in front of the question (on bubble sheet) with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question. **(1×17=17)**

1. The ratio of the dimensions of force and energy is:

   (A) T (B) T^{-1} (C) L (D) L^{-1}

2. The projectile gains its maximum height at an angle of:

   (A) 0° (B) 45° (C) 60° (D) 90°

3. An object in uniform circular motion makes 10 revolutions in 2 seconds. Which of the following statement is true?

   (A) Its period is 2.0 s (B) Its period is 20 s

   (C) Its frequency is 5 Hz (D) Its frequency is 0.2 Hz

4. If an athlete uses 500 J of energy to lift a load in 2 s, his muscular power is:

   (A) 125 watt (B) 250 watt (C) 500 watt (D) 1000 watt

5. A solid float in water with half of its volume submerged. The density of the solid is:

   (A) equal to the density of water (B) half the density of water
   (C) twice the density of water (D) zero

6. The pressure will be low when speed of a fluid is:

   (A) zero (B) high (C) low (D) constant

7. First law of thermodynamics is based upon law of conservation of:

   (A) mass (B) energy (C) momentum (D) charge

8. The bending of waves around an obstacle is called as:

   (A) refraction (B) reflection

   (C) diffraction (D) interference

9. If the amplitude of the wave is tripled, then the amount of energy is increased by:

   (A) 3 times (B) 6 times (C) 9 times (D) 12 times

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10. The mathematical representation of Malus's law is:

(A) $I = I_\circ cos^2\theta$ (B) $I = I_\circ sin^2\theta$

(C) $I = I_\circ tan^2\theta$ (D) $I = I_\circ cot^2\theta$

11. What is the work done on an electron by potential difference of 100 volts?

(A) 1.6 x 10^{-19} eV (B) 1.6 x 10^{-17} eV (C) 6.25 x 10^{-17} eV (D) 100 eV

12. When a wire of resistance R is cut into two equal parts, its resistance becomes R/2. What happens to resistivity?

(A) It becomes double (B) It remains the same

(C) It becomes half (D) It becomes one fourth

13. The unit $NA^{-1}\ m^{-1}$ is called:

(A) weber (B) tesla (C) coulomb (D) none of these

14. According to Faraday's law, what causes an emf (voltage) to be generated in a coil?

(A) A constant magnetic field (B) A changing magnetic flux linkage
(C) Heat applied to the coil (D) Increasing the wire thickness

15. If the rest mass m_o of a particle increases to m due to its high speed, then its kinetic energy is:

(A) 1/2 mc^2 (B) 1/2 mv^2 (C) $(m - m_\circ)c^2$ (D) 1/2 $(m - m_\circ)c^2$

16. Baryon is formed by combination of:

(A) 2 quarks (B) 3 quarks (C) 4 quarks (D) a quark and an anti-quark

17. Which one of the following forces has negligible effect between the elementary particles?

(A) Strong nuclear force (B) Weak nuclear force

(C) Gravitational force (D) Electromagnetic force

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SUBJECTIVE TYPE (Part-1)

Max. Marks: 68 **Time: 2:40 hours**

Q. 2 Write short answers of any Eight (08) of the following questions: (2 × 8 = 16)

(i) How many significant figures are there in the following measurements?

(a) 37 km (b) 0.002953 m (c) 7.50034 cm (d) 200.0 m

(ii) What is meant by a dimensionless quantity? Give one example.

(iii) Differentiate between an elastic and an inelastic collision.

(iv) Show that rate of change in momentum is equal to force applied. Also state Newton's second law of motion in terms of momentum.

(v) Mass is a measure of inertia in linear motion. What is its analogue in rotational motion? Describe briefly.

(vi) Prove the relation; 1 rad = 57.3°

(vii) How does an astronaut feel weightlessness while orbiting from the Earth in a spaceship?

(viii) When a moving car turns around a corner to the left, in what direction do the occupants tend to fall? Explain briefly.

(ix) What is a conservative force? Give examples.

(x) Calculate power of a crane in kilowatt which lifts a mass of 1000 kg to a height of

100 m in 20 seconds.

(xi) Why work done against friction is non-conservative in nature? Explain briefly.

(xii) Differentiate between P.E and absolute P.E.

Q. 3 Write short answers of any Eight (08) of the following questions: (2 × 8 = 16)

(i) Explain the working of a carburetor of a motorcar using Bernoulli's principle.

(ii) Differentiate between laminar flow and turbulent flow.

(iii) Why must speed of an object be minimum against drag force?

(iv) Why wings of an aero plane are rounded outward while flattened inward?

(v) Why adiabat is steeper than isotherm? Explain briefly.

(vi) Explain how thermodynamics relates to the concept of energy conservation.

(vii) Analyze the relationship between intensity of a wave, area and amplitude.

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(viii) How should a sound source move with respect to an observer so that the frequency of its sound does not change?

(ix) What conditions must be satisfied is order that two-source interference fringes may be observed?

(x) Can you apply Doppler effect to light waves? Explain briefly.

(xi) Compare Brewster's law and Malus's law.

(xii) How do the properties of a system, such as masses, orbital period, and eccentricity, affect the characteristics of gravitational waves?

Q. 4 Write short answers of any Six (06) of the following questions: (2 × 6 = 12)

(i) Is electron-volt a unit of potential difference or energy? Explain.

(ii) What is conventional current? Explain briefly.

(iii) Why does the terminal potential difference of a battery decrease when the current drawn from it is increased?

(iv) Does the induced emf always act to decrease the magnetic flux through a circuit?

(v) Distinguish between magnetic flux and flux density.

(vi) How does an electric heater work on the principle of electromagnetic induction?

(vii) Why is it impossible for a material particle to move with speed of light? Explain briefly.

(viii) What is the difference between beta particle and an electron?

(ix) Why neutrino must be released in the positron emission?

Part – 2

(3×8 = 24)

Note: Attempt any Three (03) questions. Each question carries eight (08) marks.

Q. No 5 (a) Give the dimensions of velocity. Explain elastic collision in one dimension and derive the final velocities. (5)

(b) A car is moving with a speed of 108 km h^{-1}. If its wheel has a diameter of 60 cm, find its angular speed in rad s^{-1} and rev s^{-1}. (3)

Q. No 6 (a) State and explain the work–energy theorem. How is the mechanical work expressed in terms of pressure and volume for a gas? Derive the equation. (5)

(b) A spring with a spring constant 200 N m^{-1} is stretched by 0.5 m. Find the elastic *P.E.* stored in the spring. (3)

Q. No 7 (a). What are gravitational waves? How they can be predicted and detected? Also, give their four basic types. (5)

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(b) Two trucks P and Q are travelling along a motorway in the same direction. The leading truck 'P' travels at a steady speed of 12 ms^{-1}, the other truck Q, travelling at a steady speed of 20 ms^{-1}, sounds its horn to emit a steady note which P's driver estimate, has a frequency of 830 Hz. What frequency does Q's own driver hear? (Speed of sound = 340 ms^{-1}). (3)

Q. No 8 (a) What are ferrofluids. Give their working, uses and applications in detail. (5)

(b) A particle of charge $+20\ \mu C$ is placed between two parallel plates, 10 cm apart and having a potential difference of 0.5 kV between them. Calculate the electric field between the plates, and the electric force exerted on the charged particle. (3)

Q. No 9 (a) What is meant by radioactivity? Compare the properties and behaviour of three types of radiations. (5)

(b) A bar 1.0 m in length and located along x-axis moves with a speed of 0.75 c with respect to a stationary observer. What is the length of the bar as measured by the stationary observer? (3)

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