

16	A: Q1(16)	Domain B	[SLO: P-11-B-18] Define and calculate moment of inertia of a body and angular momentum. [SLO: P-11-B-19] Derive and apply the relation between torque, moment of inertia and angular acceleration.	U	1
17	A: Q1(17)	Domain B	[SLO: P-11-B-01] Represent a vector in 2-D as two perpendicular components	U	1
18	B: Q2(i)	Domain A Domain B (Vectors)	[SLO: P-11-A-03] Analyse the homogeneity of physical equations [through dimension analysis] OR [SLO: P-11-B-02] Describe the product of two vectors (dot and cross-product) along with their properties	A	3
19	B: Q2(ii)	Domain A (Measurement) Domain F (Particle Physics)	[SLO: P-11-B-22] Distinguish between the structures of crystalline, glassy, amorphous, and polymeric solids. OR [SLO: P-11-F-17] State, W, Z, gluon, and photons as fundamental particles called exchange particles or force carriers	K U	3
20	B: Q2(iii)	Domain B (Vectors) Domain E (Magnetisms)	[SLO: P-11-B-02] Describe the product of two vectors (dot and cross-product) along with their properties OR [SLO: P-09-E-43] Explain how seismometers make use of electromagnetic induction to the earthquake detection [specifically in terms of: (i) any movement or vibration of the rock on which the seismometer rests (buried in a protective case) results in relative motion between the magnet and the coil (suspended by a spring from the frame.) (i) the emf induced in the coil is directly proportional to the displacement associated]	K K	3
21	B: Q2(iv)	Domain B (Work And K.E) Domain B (Fluid Dynamics)	[SLO: P-11-B-31] Differentiate between conservative and non-conservative forces OR [SLO: P-11-B-35] Define and apply the terms: steady (streamline or laminar) flow, incompressible flow and non-viscous flow as applied to the motion of an ideal fluid	U	3
22	B: Q2(v)	Domain E (Electricity) Domain A (Measurement)	[SLO: P-09-E-13] State and use $R=\rho L/A$ OR [SLO: P-11-A-05] Analyze and critique the accuracy and precision of data collected by measuring instruments	U	3
23	B: Q2(vi)	Domain B (Deformation of solid) Domain C (Heat and Thermodynamics)	[SLO: P-11-B-26] Describe and use the terms elastic deformation, plastic deformation and elastic limit OR [SLO: P-11-C-08] Define and use the first law of thermodynamics	U	3
24	B: Q2(vii)	Domain B (Translatory motion) Domain B (Fluid Dynamics)	[SLO: P-11-B-05] Evaluate and analyze projectile motion in the absence of air resistance [SLO: P-11-B-06] Predict qualitatively how air resistance affects projectile motion OR [SLO: P-11-B-40] Explain and apply Bernoulli's equation for horizontal and vertical fluid flow	A U	3

25	B: Q2(viii)	Domain E (Magnetism) Domain D (Waves)	[SLO: P-09-E-38] Define magnetic flux [SLO: P-11-B-02] Describe the product of two vectors (dot and cross-product) along with their properties OR [SLO: P-11-D-10] Illustrate experiments that demonstrate stationary waves [SLO: P-11-D-11] Explain the formation of a stationary wave using graphical representation	U	3
26	B: Q2(ix)	Domain D (Waves) Domain B (Deformation of solid)	[SLO: P-11-D-16] Illustrate examples of how beats are generated in musical instruments OR [SLO: P-11-B-24] Define and use the terms stress, strain and the Young modulus	A	3
27	B: Q2(x)	Domain E (Electricity) Domain B (Rotational and circular motion)	[SLO: P-09-E-14] State that resistance of a light dependent resistor (LDR) decreases as the light intensity increases. OR [SLO: P-11-B-07] Express angles in radians [SLO: P-11-B-08] Define and calculate angular displacement, angular velocity and angular acceleration [This involves use of $S = r\theta$, $v = r\omega$, $\omega = 2\pi/T$, $a = r\omega^2$ and $a = v^2/r$ to solve problems].	U K	3
28	B: Q2(xi)	Domain E (Electricity) Domain B (Fluid Dynamics)	[SLO: P-09-E-11] State and use $V=W/Q$ OR [SLO: P-11-B-35] Define and apply the terms: steady (streamline or laminar) flow, incompressible flow and non-viscous flow as applied to the motion of an ideal fluid	A K	3
29	B: Q2(xii)	Domain B (Rotation and circular motion) Domain E (Magnetism)	[SLO: P-11-B-18] Define and calculate moment of inertia of a body and angular momentum. [SLO: P-11-B-19] Derive and apply the relation between torque, moment of inertia and angular acceleration. OR [SLO: P-09-E-32] Use $F=BqV \sin(\theta)$ to solve problems [SLO: P-09-E-33] Describe the motion of a charged particle moving in a uniform magnetic field perpendicular to the direction of motion of the particle	U	3
30	B: Q2(xiii)	Domain D (Waves) Domain C (Heat and thermodynamics)	[SLO: P-11-D-08] Differentiate between constructive and destructive interference. OR [SLO: P-11-C-08] Define and use the first law of thermodynamics SLO: P-11-C-02] Relate a rise in temperature of an object to an increase in its internal energy	K	3
32	C: Q3	Domain B (Translatory motion) Domain D (Waves)	[SLO: P-11-B-12] Predict and analyze motion for elastic collisions OR [SLO: P-11-C-16] State the working principle of Carnot's engine	U	6

33	C: Q4	Domain B (Rotation and circular motion) Domain E (Electrostatics)	[SLO: P-11-B-20] State and apply the law of conservation of angular momentum. Illustrate the applications of conservation of angular momentum in real life. OR [SLO: P-11-E-02] Define and calculate electric field strength	U	6
34	C: Q5	Domain F (Particle Physics) Domain F (Relativity)	[SLO: P-11-F-12] Describe quarks and antiquarks (as a fundamental [SLO: P-11-F-13] Describe protons and neutrons in terms of their quark composition OR [SLO: P-11-F-05] Explain qualitatively and quantitatively the consequences of special relativity	K	6
35	C: Q6	Domain E (Electricity) Domain B (work and energy)	[SLO: P-09-E-20] Derive, using Kirchhoff's laws, a formula for the combined resistance of two or more resistors in series OR [SLO: P-11-B-29] Derive the formula for kinetic [using the equations of motion]	A	6

*Cognitive Level
 K: Knowledge
 U: Understanding
 A: Application

Table of Specification Model Paper Physics – Grade XI

Domain	Measurements A	Mechanics B						Heat and Thermodyn amics C	Waves D	Electricity and Magnetism E			Modern Physics F			
Assessment Objectives	Measurements (A1-A7)	Vectors (B1-B2)	Translatory motion (B3-B6) (B11-B13)	Rotational and circular motion (B7-B10) (B14-B21)	Work and Kinetic energy (B29-B32)	Fluid Dynamic (B33-B44)	Deformation of solid (B22-B28)	Heat and Thermodynamics (C1-C23)	Waves (D1-D21)	Electrostatics (E1-E9)	Electricity (E10-E27)	Magnetism (E28-E43)	Relativity (F1-F8)	Particle Physics (F9-F28)	Total Marks	Percentage
K Knowledge	Q#1(ix)1	2(iii/f)3	Q#1(iii) 1	Q2(x/s)3		Q2(xi/s)3	Q2(ii/f)3	Q2(xiii/s)3	Q2(xiii/f)3	Q1(xv)1	Q1(viii)1	Q1(xiii)1 Q2(iii/s)3	Q5(s)6 Q1(x)1	Q1(xii)1 Q5(f)6	40	28 %
U Understanding	Q#1(i)1	Q#1(xvii)1	Q3(f)6	Q#1(xvi)1 Q2(xii/f)3 Q4(f)6	Q#1(xiv)1 Q2(iv/f)3	Q#1(xi)1 Q2(iv/s)3 Q2(vii/s)3	Q#1(vi)1 Q2(v/s)3 Q2(vi/f)3	Q#1(ii)1 Q2(vi/s)3 Q3(s)6	Q2(viii/s) 3	Q4(s)6	Q2(x/f)3 Q2(v/f)3	Q1(vii)1 Q2(viii/f)3 Q2(xii/s)3		Q2(ii/s)3	71	50 %
Application A	Q2(i/f)3	Q2(i/s)3	Q#1(iv)1 Q2(vii/f)3		Q6(s)6		Q2(ix/s)3		Q#1(v)1 Q2(ix/f)3	Q2(xi/f)3	Q6(f)6				32	22 %
Total Marks	5	7	11	13	10	10	13	13	10	10	13	11	7	10	143	-
Total Percentages	3%	5%	8%	9%	7%	7%	9%	9%	7%	7%	9%	8%	5%	7%	-	100%

Note:

- 1
- This ToS does not reflect policy, but it is particular to this model question paper.
- 2
- Proportionate / equitable representation of the content areas as per the defined ranges may be ensured.
- 3
- The percentage of cognitive domain is 30%, 50%, and 20% for knowledge, understanding, and application, respectively with ± 5% variation.
- 4
- While selecting alternative questions for Short Response Questions (SRQs) and Extended Response Questions (ERQs), it must be kept in mind that:

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Difficulty levels of both questions should also be same

•

SLOs of both the alternative questions must be different

Key: Question Number (part/ first choice) marks example: Q2 (i / f) 2 , Question Number (part/ second choice) marks Q2 (i / s) 2



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