ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

Secondary School Certificate (SSC)

Examination Syllabus
PHYSICS
IX

Based on Provincial Revised Curriculum (Sindh)

You can Approach us:

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PREFACE

The Ziauddin University Examination Board (ZUEB) was established under **Sindh ACT XLI 2018**, with the primary objective of enhancing the quality of education in Sindh. ZUEB is responsible for administering examinations for the **Secondary School Certificate (SSC)** and **Higher Secondary School Certificate (HSSC)** in alignment with the most recent revisions to the **National Curriculum**, as outlined by the **Directorate of Curriculum Assessment and Research (DCAR), Sindh**. Through its ordinance, ZUEB is mandated to provide examination services for both English, Urdu, and Sindhi medium candidates from private schools across Sindh. This examination syllabus reflects ZUEB's dedication to achieving the educational goals set by the provincial authorities.

In collaboration with subject professors, ZUEB has developed a comprehensive syllabus for each subject. It is important to distinguish between the syllabus and the curriculum. The syllabus serves as a guide for both teachers and students, outlining the key areas of focus within the subject. It provides students with a clear understanding of what is expected of them in their studies and helps them prepare effectively for their exams.

This examination syllabus incorporates all cognitive outcomes derived from the **Provincial Curriculum Statement**, ensuring that assessments are both valid and reliable. While the focus is primarily on the cognitive domain, significant emphasis is placed on the application of knowledge and understanding.

The syllabus is made available to all stakeholders via the ZUEB website to assist affiliated schools in planning their teaching. It is crucial to note that the syllabus, rather than the prescribed textbook, forms the foundation of ZUEB examinations. Additionally, this syllabus supports the development of learning materials for both students and teachers. ZUEB remains committed to supporting students undertaking the SSC and HSSC courses by facilitating their learning outcomes through this detailed syllabus document.

To further assist in the learning process, ZUEB provides a dedicated **e-resource tab** on its website, offering both text-based and video content on various subjects. These 15-20 minute instructional videos, created around key subject concepts, allow students to learn at their own pace and convenience. The videos can be used as a reinforcement tool to revisit lessons already taught or as pre-lesson material. This initiative is an ongoing effort, and new videos will continue to be uploaded.

We encourage all students and educators to make the most of these resources for a more enriched and flexible learning experience.

Sincerely,

Shahbaz Nasim
Head – Measurement & Testing
Ziauddin University Examination Board

Reviewed by Sana Anwer Ali
Manager Sciences
Ziauddin University Examination Board
August 2025

Rationale For The Reviewed Provincial Curriculum

The process of revising the National Curriculum 2006 began in August 2004, when the newly elected government of Pakistan initiated education reforms across the country. These reforms included the introduction of a new National Education Policy, a National Education Census, and a revision of curricula (Ministry of Education, 2009).

In practice, the overhaul of the secondary school curriculum began in 2006, leading to a review of the scheme of studies for classes I to XII and the revision of curricula for 25 compulsory subjects.

The 18th Amendment to the Constitution of Pakistan, enacted in 2010, significantly altered the federal-provincial relationship by abolishing the "concurrent legislative list." This amendment granted provinces greater legislative and financial autonomy in sectors such as education and health. The most notable implication of the 18th Amendment for education was the transfer of responsibility for curriculum development, syllabus planning, policy formation, and educational standards to the provinces, marking a significant step forward for education.

In Sindh, the School Education Department tasked a Curriculum Review Team with revising the National Curriculum 2006 for all subjects. The goal was to create a curriculum better suited to the needs of students and teachers while aligning with the principles of the 18th Amendment. Subject-specific curriculum review committees were established to critically examine and align the curriculum's content, both contextually and textually, ensuring coherence across various subjects. The Bureau of Curriculum (BoC) played a crucial role in organizing workshops and meetings in Hyderabad to facilitate the completion of this task. The support of numerous educationists, researchers, and teachers was invaluable in successfully revising the curriculum.

The revised National Curriculum, along with the original version, is available on the DCAR website at https://dcar.gos.pk/Sindh-Curriculum/Physics%20Grades%20IX-X%202018.pdf for easy access.

The Ziauddin University Examination Board (ZUEB) SSC and HSSC syllabi are developed in accordance with the Sindh Revised Curriculum. To date, textbooks for various subjects have been developed based on the revised curriculum.

AIMS AND OBJECTIVES:

AIMS

The physics course at the secondary school level aims to:

1. Cultivate interest, motivation, and a sense of achievement in the study of physics.
2. Foster a deep understanding of concepts, principles, systems, processes, and applications related to physics, enabling students to describe, explain, and apply them in real-life situations.
3. Develop critical thinking, imagination, problem-solving abilities, data management skills, investigative techniques, and effective communication.
4. Instill a sense of responsible citizenship by promoting respect for the environment and encouraging the sustainable use of resources.
5. Highlight the relevance of the scientific method while recognizing its limitations and exploring the dynamic relationship between science, technology, and society.

OBJECTIVES

The objectives of the syllabus are to:

1. Shift the focus from purely factual knowledge to a deeper understanding and application of physics concepts and principles.
2. Prepare students for an increasingly technological world by developing investigation skills and laboratory competencies, including:
    - Measuring, observing, and manipulating tools and equipment.
    - Recording and interpreting data.
    - Analyzing results, making predictions, and effectively communicating findings.
3. Align with the standards and benchmarks set by the National Curriculum Council, incorporating themes and sections that emphasize conceptual linkages and practical relevance.
4. Promote higher-order cognitive skills by defining learning outcomes across six domains:
    - Recalling
    - Understanding
    - Applying
    - Analyzing
    - Evaluating
    - Creating
5. Provide detailed learning outcomes within each unit, emphasizing the development of investigation skills and laboratory work.

ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

DETAILED SYLLABUS

Section-01 General Physics

Unit - 01

Physical Quantities and Measurements

Student Learning Outcomes

Contents	Students should be able to:	Cognitive level
1.1 Introduction to physics	1.1.1 Describe the crucial role of Physics in Science, Technology and Society 1.1.2 List with brief description of various branches of physics	K K
1.2 Measuring instruments	1.2.1 To choose a proper instrument (meter rule, vernier caliper, screw gauge, physical balance, stop watch, measuring cylinder) for the measurement of length, diameter, mass, time and volume in daily life activities	A
1.3 Prefixes	1.3.1 Interconvert the prefixes and their symbols to indicate multiple and sub-multiple for both base and derived units	U
1.4 Standard form / scientific notation	1.4.1 Write the answer in scientific notation in measurements and calculations	A
1.5 Density	1.5.1 Define the term density with SI unit 1.5.2 To determine density of solids and liquids	K A
1.6 Significant figures	1.6.1 Describe the need using significant figures for recording and stating results in the laboratory	U

Section-02 Newtonian Mechanics

Unit - 02 Kinematics Student Learning Outcomes		
Contents	**Students should be able to:**	**Cognitive level**
2.1 Rest and motion	2.1.1 Describe using examples how objects can be at rest and in motion simultaneously.	K
2.2 Types of motion	2.2.1 Identify different types of motion i.e., (translatory, linear, random, and circular); rotatory and vibratory motions and distinguish among them.	U
2.3 Describing motion	2.3.1 Define with examples distance, displacement, speed, velocity and acceleration (with units) 2.3.2 Differentiate with examples between distance and displacement, speed and velocity	K U
2.4 Scalars and vectors	2.4.1 Differentiate with examples between scalar and vector quantities 2.4.2 Represent vector quantities by drawing	U U
2.5 Graphical analysis of motion	2.5.1 Plot and interpret distance-time graph and speed-time graph 2.5.2 Determine and interpret the slope of distance-time and speed-time graph 2.5.3 Determine from the shape of the graph, the state of a body (i) at rest (ii) moving with constant speed (iii) moving with variable speed 2.5.4 Calculate the area under speed-time graph to determine the distance traveled by the moving body.	A A U A
2.6 Equations of motion	2.6.1 Solve problems related to uniformly accelerated motion using appropriate equations 2.6.2 To rearrange the equation according to the requirement of the problem	A A
2.7 Motion due to gravity	2.7.1 Solve problems related to freely falling bodies using 10 m/s^2 as the acceleration due to gravity.	A

Unit - 03 Dynamics

Student Learning Outcomes

Contents	Students should be able to:	Cognitive level
3.1 Momentum	3.1.1 Define momentum with SI unit 3.1.2 Calculating momentum using equation p = mV 3.1.3 Solve problem using the equation Force = change in momentum / change in time 3.1.4 Identify the safety devices (such as packaging of fragile objects, the action of crumple zones and seatbelts) utilized to reduce the effects of changing momentum	K A A U
3.2 Newton's laws of motion	3.2.1 State Newton's laws of motion 3.2.2 Distinguish between mass and weight 3.2.3 Solve problem using F = ma, and w = mg	K U A
3.3 Friction	3.3.1 Define friction 3.3.2 Explain the effect of friction on the motion of a vehicle in the context of tyre surface, road conditions including skidding, braking force 3.3.3 Identify the relationship between load and friction by sliding a trolley carrying different load with the help of a spring balance on different surfaces 3.3.4 Demonstrate that rolling friction is much lesser than sliding friction	K U U U

Unit - 4 Turning effect of forces Student Learning Outcomes		
Contents	**Students should be able to:**	**Cognitive level**
4.1 Force on bodies	4.1.1 Define like and unlike parallel forces	K
4.2 Addition of forces	4.2.1 State head to tail rule of vector addition of forces/vectors	K
4.3 Resolution of forces	4.3.1 Describe how a force is resolved into its perpendicular components 4.3.2 Determine the magnitude and direction of a force from its perpendicular components	U A
4.4 Moment of force	4.4.1 Define moment of force or torque as moment = force x perpendicular distance from pivot to the line of action of force 4.4.2 Explain the turning effect of force by relating it to everyday life 4.4.3 Illustrate by describing a practical application of moment of force in the working of bottle opener, spanner, door/windows handle etc	K U A
4.5 Principle of moments	4.5.1 State the principle of moments 4.5.2 Verify the princi1ple of moments by using a metre rod balanced on a wedge	K A
4.6 Centre of mass	4.6.1 Define the Centre of mass and Centre of gravity of a body 4.6.2 Determine the position of Centre of mass/gravity of regularly and irregularly shaped objects	K A
4.7 Couple	4.7.1 Define couple as a pair of forces tending to produce rotation. 4.7.2 Prove that the couple has the same moments about all points 4.7.3 Demonstrate the role of couple in the steering wheels and bicycle pedals	K A A
4.8 Equilibrium	4.8.1 Define equilibrium and classify its types by quoting examples from everyday life. 4.8.2 State the two conditions for equilibrium of a body 4.8.3 Solve problems on simple balanced systems when bodies are supported by one pivot only 4.8.4 Describe the states of equilibrium and classify them with common examples	K K A U

4.9 Stability	4.9.1 Explain effect of the position of the Centre of mass on the stability of simple objects 4.9.2 Demonstrate through a balancing toy, racing car etc. that the stability of an object can be improved by lowering the Centre of mass and increasing the base area of the objects	U U

Unit - 5 Forces and Matter Student Learning Outcomes		
Contents	**Students should be able to:**	**Cognitive level**
5.1 Forces acting on solids	5.1.1 Using forces to change the shape and size of the body	U
5.2 Stretching springs	5.2.1 Carry out experiment to produce extension against load graph 5.2.2 Interpret extension against load graph	U A
5.3 Hook's law	5.3.1 Define Hook's law 5.3.2 Calculate extension in spring and spring constant using formula F = kx	K A
5.4 Pressure	5.4.1 Define and explain pressure 5.4.2 To understand the factors that affects the pressure 5.4.3 To calculate the pressure using formula P =F/A 5.4.4 To understand hydraulic machines	K U A U

Unit - 6 Gravitation Student Learning Outcomes		
Contents	**students should be able to:**	**Cognitive level**
6.1 Law of Gravitation	6.1.1 State Newton's law of gravitation 6.1.2 Explain that the gravitational forces are consistent with Newton's third law. 6.1.3 Explain gravitational field as an example of field of force. 6.1.4 Solve problems using Newton's law of gravitation	K U U A
6.2 Weight	6.2.1 Define weight (as the force on an object due to a gravitational field.)	K
6.3 Measurement of mass of earth	6.3.1 Calculate the mass of earth by using law of gravitation	A
6.4 Artificial satellites	6.4.1 Discuss the importance of Newton's law of gravitation in understanding the motion of satellites 6.4.2 Describe how artificial satellites keep on moving around the earth due to gravitational force	U U

Unit - 7 Energy sources and transfer of energy

Student Learning Outcomes

Contents	Students should be able to:	Cognitive level
7.1 Work	7.1.1 Define work and its SI unit. 7.1.2 Calculate work done using equation Work = force x distance moved in the direction of force	K A
7.2 Energy forms	7.2.1 Define kinetic energy and potential energy 7.2.2 Use Kinetic Energy Ek = ½ mv2 and potential energy E_p= mgh to solve problems	K A
7.3 Conversion of energy	7.3.1 Describe the processes by which energy is converted from one form to another with reference to fossil fuel energy, hydroelectric generation, solar energy, nuclear energy, geothermal energy, wind energy, biomass energy and tidal energy	U
7.4 Renewable and nonrenewable energy sources	7.4.1 Differentiate energy sources as non- renewable and renewable energy sources with examples of each.	U
7.5 Efficiency	7.5.1 Define efficiency of a working system and calculate the efficiency of an energy conversion using the formula efficiency =energy converted into the required form /total energy input 7.5.2 Explain why a system cannot have an efficiency of 100%	K U
7.6 Power	7.6.1 Define power and calculate power from the formula Power = work done / time taken 7.6.2 Define the unit of power “watt” in SI and its conversion with horse power	A A

Section 03 Energy and thermal Physics

Unit - 08 Properties of Matter **Student Learning Outcomes**		
Contents	**Students should be able to:**	**Cognitive level**
8.1 Kinetic molecular model of matter	8.1.1 Describe States of matter 8.1.2 State kinetic molecular model of matter	U K
8.2 Forces and kinetic theory	8.2.1 Explain the kinetic model in terms of forces b/w particles	U
8.3 Gases and the kinetic theory	8.3.1 Explain the behavior of gases 8.3.2 Calculate changes in pressure and volume	U A

Unit - 9 Thermal Properties of Matter Student Learning Outcomes			
Contents	**Students should be able to:**		Cognitive level
9.1 Heat and temperature	9.1.1	Differentiate b/w heat and temperature	U
9.2 Specific heat capacity	9.2.1	Define the terms heat capacity and specific heat capacity with SI unit	K
	9.2.2	Describe one everyday effect due to relatively large specific heat of water	K
9.3 Heat of fusion and heat of vaporization	9.3.1	Describe heat of fusion and heat of vaporization (as energy transfer without a change of temperature for change of state)	K
	9.3.2	Describe experiments to determine heat of fusion and heat of vaporization of ice and water respectively by sketching temperature-time graph on heating ice.	A
9.4 Evaporation process	9.4.1	Explain the process of evaporation and the difference between boiling and evaporation.	U
	9.4.2	Explain that evaporation causes cooling	U
	9.4.3	List the factors which influence surface evaporation	A
9.5 Thermal expansion	9.5.1	Define thermal expansion	K
	9.5.2	Describe qualitatively the thermal expansion of solids (linear and volumetric expansion)	U
	9.5.3	List and explain some of the everyday applications and consequences of thermal expansion	A
	9.5.4	Explain the thermal expansion of liquids (real and apparent expansion)	U

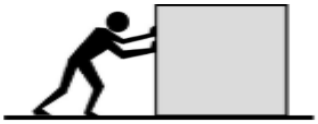
GRADE 9 PHYSICS
PBA Sample Questions

1. If a ball is thrown vertically upward, then the acceleration due to gravity 'g' and the velocity of the ball at its highest point will be,

	Acceleration due to Gravity	Velocity of the Ball
A	zero	zero
B	g	zero
C	½ g	remain constant
D	g	remain constant

Correct answer: B

2. Ahmed pushes a heavy box along the ground. A force acts between Ahmed's hands and the box, and a force acts between his feet and the floor. Determine the direction of these forces on Ahmed.



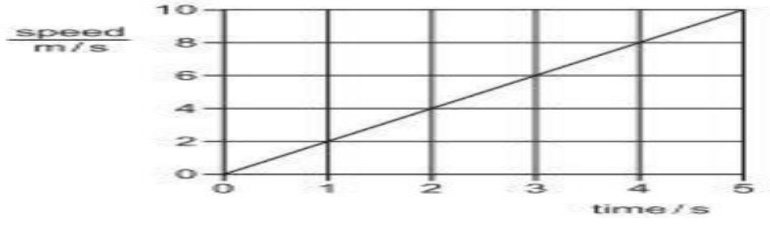
	Force on Ahmed's hands	Force on Ahmed's feet
A	Towards the left	Towards the left
B	Towards the left	Towards the right
C	Towards the right	Towards the left
D	Towards the right	Towards the right

Correct answer: B

3. A student conducts an experiment using a sealed syringe containing gas. As she slowly pulls the plunger outward without changing the temperature, she observes that the volume of the gas increases. Based on her observation, what can she conclude?
A. The temperature of the gas decreased
B. The pressure on the gas increased
C. The pressure on the gas decreased
D. There was no change in the gas conditions

Correct answer: C

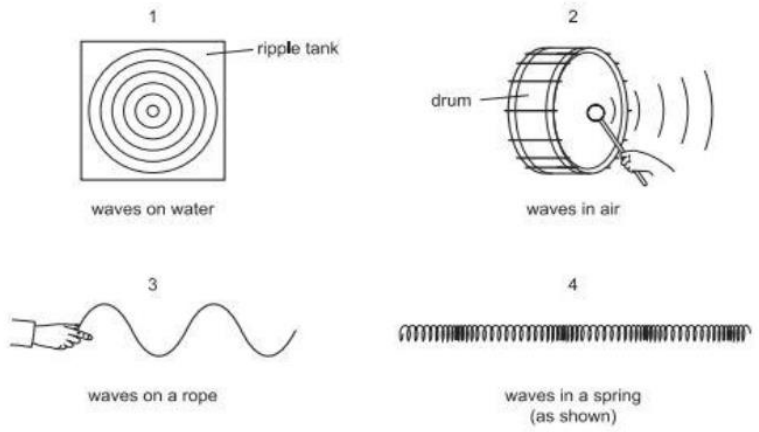
4. The graph represents the movement of a body.



How far has the body moved after 5s?
A. 2m B. 10m C. 25m D. 50m

Correct answer: D

5. The diagram shows examples of wave motions.



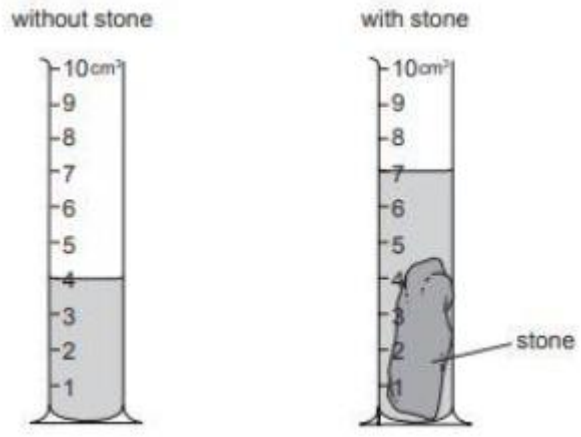
Which are longitudinal waves?
A. 2 and 3
B. 2 and 4
C. 1, 2 and 4
D. 1 only

Correct answer: B

6. A uniform ladder rests against a smooth vertical wall and lies on a rough horizontal floor. As a person climbs up, the ladder is about to slip.
Where is the person likely standing when the ladder just begins to slip?
A. Near the bottom of the ladder
B. At the midpoint of the ladder
C. Near the top of the ladder
D. It doesn't matter where the person is

Correct answer: C

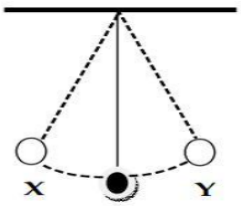
7. The diagrams show an experiment to determine the volume of a stone.



What is the volume of the stone?
A. $3cm^3$ B. $4cm^3$ C. $7cm^3$ D. $11cm^3$

Correct answer: A

8. A pendulum swings from X to Y and back to X again. What would be the most accurate way of measuring time for one oscillation with the help of a Stop Watch?



A. Record time for 10 oscillations and multiply by 10
B. Record time for 10 oscillations and divide by 10
C. Record time for one oscillation
D. Record time from X to Y and double it

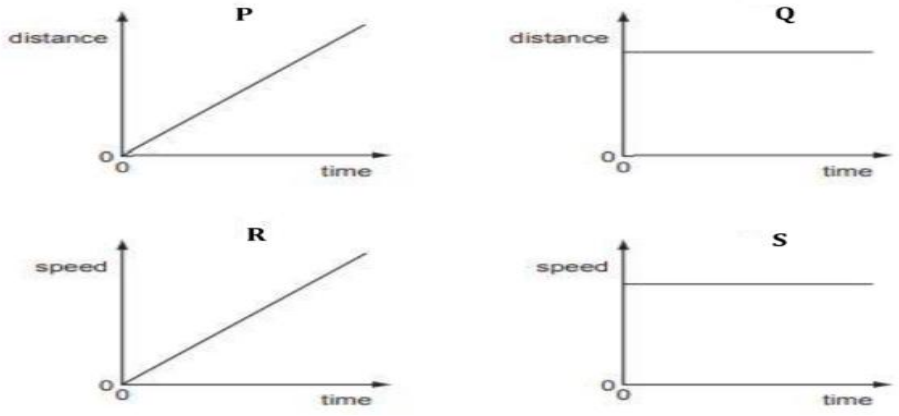
Correct answer: B

9. A small feather and a stone are dropped simultaneously from the same height — once in an air-filled tube and once in a vacuum-sealed tube. Which of the following best explains why both objects hit the ground at the same time in a vacuum, but not in air?

A. Because the gravitational force is stronger in vacuum than in air
B. Because there is no air resistance in vacuum to oppose motion
C. Because the feather becomes heavier in vacuum
D. Because the stone moves faster due to its larger mass in vacuum

Correct answer: B

10. Two distance/ time graphs and two speed/ time graphs are shown. Which graph represents an object that is at rest?



A. P and Q B. Q and S C. Q only D. R only

Correct answer: C

11. According to the impulse–momentum theorem, how do airbags reduce injury?
A. By reducing the mass of the occupant
B. By increasing the change in momentum
C. By increasing the collision time while Δp remains constant
D. By decreasing the required impulse

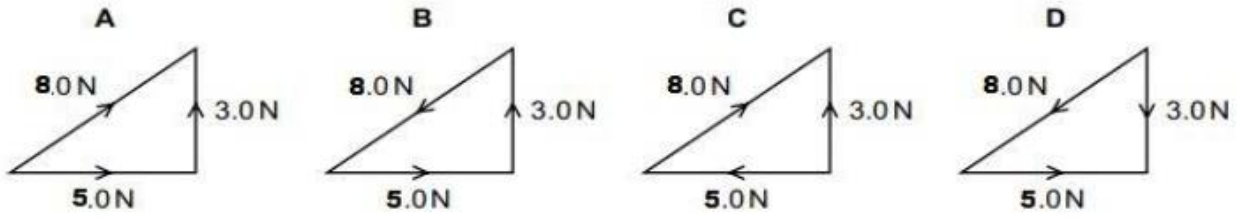
Correct Answer: C

12. A driver finds it harder to stop on a wet road than a dry one. Which physics principle explains this?
1) Newton's First Law of Motion
2) Law of Conservation of Momentum
3) Newton's Third Law of Motion
4) Law of Frictional Force

A. 1 and 2 B. 2 and 3 C. 3 only D. 1 and 4

Correct Answer: D

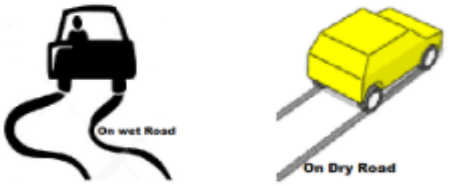
13. A person pushes a box with a 5.0 N force horizontally and lifts it with a 3.0 N force vertically at the same time. Which diagram (A–D) best represents the vector addition of these two forces using the head-to-tail method?



A. Diagram A B. Diagram B C. Diagram C D. Diagram D

Correct answer: A

14. Both the cars, one on wet road and one on dry road brake at the same time. Which one skids, and why?



I. Car on the dry road because more water helps it stop
II. Car on the wet road because less grip, less friction
III. Car on the dry road because tyres can't grip hard surfaces
IV. Car on the wet road because water increases friction

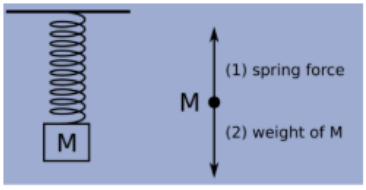
A. II only B. I and III C. IV only D. II and IV

Correct answer: A

15. A student stretches and then releases a rubber band. It returns to its original shape. What concept does this illustrate?
A. Elasticity / Elastic Deformation
B. Plastic deformation
C. Yield limit exceeded
D. Thermal expansion

Correct Answer: A

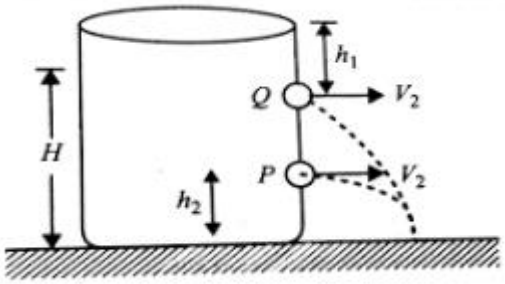
16. A spring stretches by 4 cm when a 2 N force is applied. The same spring is then stretched by an unknown force and the extension is now 10 cm.
Which option correctly explains the force applied?



A. The force is 4 N
B. The force is 5 N
C. The spring constant decreased
D. The spring cannot obey Hooke's Law anymore

Correct Answer: B

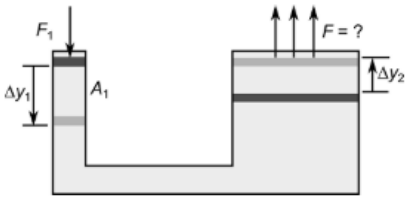
17. A water tank has two holes, "Q" is near the water surface and "P" is near the bottom. Water spurts out faster from the lower hole. Why?



A. Water is heavier at the bottom
B. Pressure increases with depth
C. Water is moving faster at the top
D. Air pushes harder at the bottom

Correct Answer: B

18. In a hydraulic lift, a small piston with area 0.01 m² applies 200 N of force. What is the force on a large piston with area 0.1 m²?



A. 200 N
B. 20 N
C. 2000 N
D. 100 N

Correct Answer: C

19. Which of the following best shows that a force spread over a large area produces low pressure, reducing the impact?
A) A builder hammering a nail into wood
B) A cook using a sharp knife to cut vegetables
C) A nurse pushing a needle into a patient's arm
D) A soldier marching in flat-soled boots

Correct Answer: D

20. Which of the following does NOT explain why the Moon stays in orbit around the Earth?

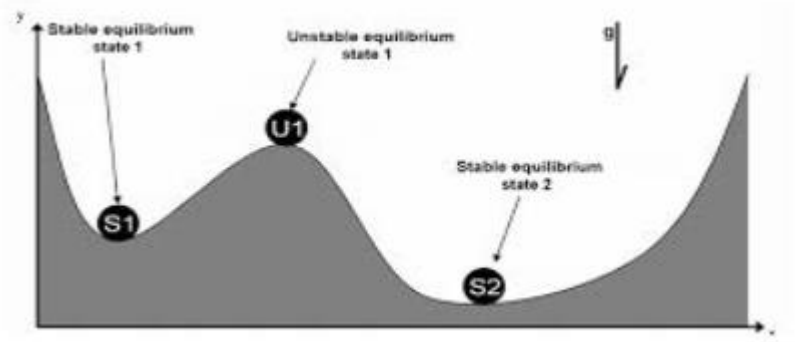
A) Its forward motion due to inertia
B) Gravitational attraction from Earth
C) The continuous inward (centripetal) force
D) A repulsive force pushing the Moon away

Correct Answer: D

21. If the mass of a satellite increases but its distance from Earth stays the same, what happens to the gravitational force between them (based on Newton's Law of Gravitation)?
A. It decreases
B. It increases
C. It remains the same
D. It becomes zero in space

Correct Answer: B

22. At which point is the ball's potential energy the greatest and its kinetic energy the least?



A. At the bottom of the hill
B. At the top of the hill
C. Midway while rolling down
D. Just before hitting the ground

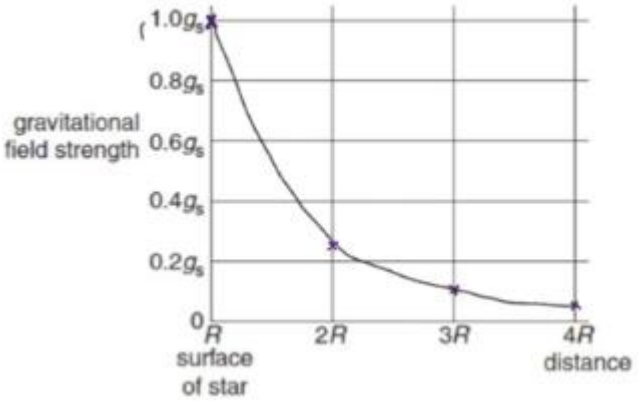
Correct Answer: B

23. A sealed container is filled with gas at constant temperature. If the number of molecular collisions with the container walls suddenly increases, what direct conclusion can be drawn?

A) The pressure inside the container has increased due to more frequent wall impacts
B) The gas temperature has increased, causing faster random motion
C) The gas molecules have expanded in size and volume
D) The distance between the molecules has become infinite

Correct Answer: A

24. This graph best supports which conclusion?



A. Field strength stays constant
B. Gravity increases with distance
C. Gravity is stronger near the source
D. Gravity only exists at Earth's surface

Correct Answer: C

25. Which of the following energy sources involves the same initial energy transformation as fossil fuel power stations?

A. Hydroelectric power
B. Wind turbines
C. Biomass energy
D. Solar panels

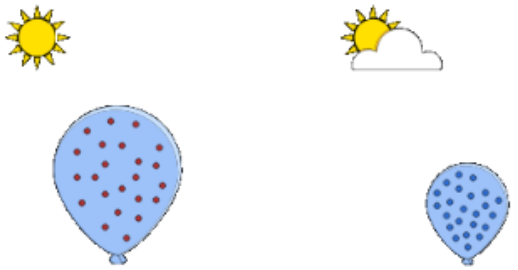
Correct Answer: C

26. Two identical springs stretch 4 cm each under a force of 2 N. If the same springs are arranged in series and a 6 N force is applied, what will be the total extension?

A. 12 cm
B. 6 cm
C. 8 cm
D. 24 cm

Correct Answer: D

27. A student filled a balloon with air and tied it. She placed it first in the freezer, then took it out and placed it in sunlight. After placing the balloon in the freezer, the balloon shrinks. Which one best explains the behavior of the gas particles inside?



A. The gas particles are destroyed by the cold temperature
B. The gas particles stop moving and stick together
C. The gas particles move slower and the attractive forces pull them closer
D. The air escapes due to low pressure

Correct Answer: C

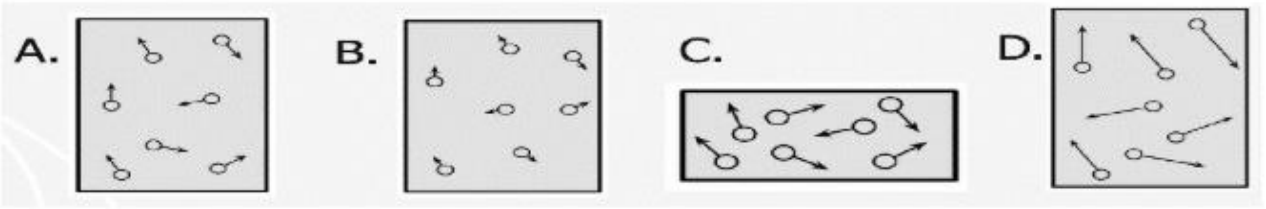
28. Observe the following flowchart showing freezing of water:

[Water at Room Temp]
↓ (Placed in Freezer)
[Thermal Energy Removed]
↓
[Particles Slow Down]
↓
[Stronger Forces Pull Particles Close]
↓
[Solid Ice Forms]

Which statement best describes the particle behavior during this change?
A. Particles move more freely and randomly
B. Particles gain energy and spread far apart
C. Particles lose energy, move less, and get fixed in position
D. Particles begin to evaporate and escape

Correct Answer: C

29. The following diagram represents a sealed, rigid container filled with gas particles. The arrows represent the relative velocity of each particle. Which particle diagram represents a change that would decrease the pressure inside the container?



Correct Answer: B

30. During a science investigation, Sara sealed a balloon and placed it near a heat source. Over time, she noticed the balloon expanded without any gas escaping. From her previous lessons, she recalled that increasing temperature affects the movement and behavior of gas particles. She wondered how the internal gas pressure was behaving as the balloon grew in size.
Based on the kinetic molecular theory and the behavior of gases, what likely happens to the gas pressure inside the balloon as the volume increases during heating?
A. The pressure decreases because the particles are moving slower due to energy loss
B. The pressure remains constant if the increase in volume offsets the increased particle collisions
C. The pressure drops to zero because volume increases infinitely
D. The pressure increases drastically because more gas is entering the balloon

Correct Answer: B

Physics Grade IX
Scheme of Assessment

Maximum marks: 75

Section "A"

Multiple Choice Questions (MCQs) **(12 x 1 = 12)**

Attempt 12 MCQs. Each MCQ carries equal marks.

Practical based assessments (PBAs) **(15 x 1 = 15)**

Attempt 15 MCQs. Each MCQ carries equal marks.

Section "B"

Short Answer Questions **(8 x 3 = 24)**

Attempt any 8 out of 12 questions. Each questions carries equal marks.

Section "C"

Detailed Answer Questions **(4 x 6 = 24)**

Attempt any 4 out of 6 questions. Each question carries equal marks.

Physics Grade IX
Table of Specification (TOS)

S.No	Units	Weightage in evaluation 100%	MCQs 1 mark each	PBAs 1 mark each	Short Answers 3 marks each	Detailed Answers 6 marks each
1	Physical Quantities and Measurement	11	2	3	2	0
2	Kinematics	15	2	3	1	1
3	Dynamics	12	1	2	1	1
4	Turning Effect of Forces	12	1	2	1	1
5	Forces and Matter	9	2	1	2	0
6	Gravitation	11	1	1	1	1
7	Energy Sources and Transfer of Energy	10	1	0	1	1
8	Properties of Matter	5	1	1	1	0
9	Thermal Properties of Matter	15	1	2	2	1
Total # of Questions asked			**12**	**15**	**12**	**6**
Total # of Questions to be attempted			**12**	**15**	**8**	**4**
Maximum marks attainable			**12 marks**	**15 marks**	**24 marks**	**24 marks**

DEFINITIONS OF COGNITIVE LEVELS

Remember

Remembering is the act of retrieving knowledge and can be used to produce things like definitions or lists. The student must be able to recall or recognise information and concepts. The teacher must present information about a subject to the student, ask questions that require the student to recall that information and provide written or verbal assessment that can be answered by remembering the information learnt.

Question Stems

- Can you name all the …?
- Describe what happens when …?
- How is (are) …?
- How would you define …?
- How would you identify …?
- How would you outline …?
- How would you recognise…?
- List the … in order.
- What do you remember about …?
- What does it mean?
- What happened after?
- What is (are) …?
- What is the best one?
- What would you choose …?
- When did …?
- Where is (are) …?
- Which one …?
- Who spoke to …?
- Who was …?
- Why did …?

Understand

The next level in the taxonomic structure is Understanding, which is defined as the construction of meaning and relationships. Here the student must understand the main idea of material heard, viewed, or read and interpret or summarise the ideas in their own words. The teacher must ask questions that the student can answer in their own words by identifying the main idea.

Question Stems

- Can you clarify…?
- Can you illustrate …?
- Condense this paragraph.
- Contrast …
- Does everyone think in the way that … does?
- Elaborate on …
- Explain why …
- Give an example
- How can you describe...?
- How would you clarify the meaning...?
- How would you compare …?
- How would you differentiate between …?
- How would you describe…?
- How would you generalise…?
- How would you identify …?
- Is it valid that …?
- Is this the same as …?
- Outline …
- Select the best definition...
- State in your own words...
- This represents …
- What are they saying?
- What can you infer from …?
- What can you say about …?
- What could have happened next?
- What did you observe?

	• What does this mean? • What expectations are there? • What information can you infer from…? • What is the main idea of …? • What restrictions would you add? • What seems likely? • What seems to be …? • What would happen if …? • What might happen if …? • Which are the facts? • Which statements support …?
Apply The third level in Bloom's taxonomy, Applying, marks a fundamental shift from the pre-Bloom's learning era because it involves remembering what has been learnt, having a good understanding of the knowledge, and applying it to real-world exercises, challenges or situations. Students must apply an abstract idea in a concrete case to solve a problem or relate it to prior experience. The teacher must provide opportunities for students to use theories and problem-solving techniques in new situations and review and check their work. Assessment questions should be provided that allow students to define and solve problems. **Question Stems** • Can you group by characteristics such as …? • Choose the best statements that apply... • Clarify why … • Do you know of another instance where …? • Draw a story map... • Explain why a character acted in the way that he did... • From the information given, can you develop a set of instructions about …? • How would you develop …? • How would you change …? • How would you demonstrate…?	**Analyse** Analysing is the cognitive level where students can take the knowledge they have remembered, understood and applied, then delve into that knowledge to make associations, discernments or comparisons. Students should break down a concept or idea into parts and show relationships between these parts. Teachers must give students time to examine concepts and their requisite elements. Students are required to explain why they chose a solution. **Question Stems** • Can you distinguish between …? • Can you explain what must have happened when …? • Determine the point of view, bias, values, or intent underlying the presented material... • Discuss the pros and cons of … • How can you classify … according to …? • How can you compare the different parts? • How can you sort the different parts…? • How is … connected to …? • How is … similar to …? • How would you categorise…? • How would you explain...?

• How would you develop? • How would you explain …? • How would you modify …? • How would you present…? • How would you solve … ? • Identify the results of … • Illustrate the … • Judge the effects of … What would result …? • Predict what would happen if … • Tell how much change there would be if … • Tell what would happen if … • What actions would you take to perform …? • What do you think could have happened next? • What examples can you find that ? • What other way would you choose to …? • What questions would you ask of …? • What was the main idea …? • What would the result be if …? • Which factors would you change if …? • Who do you think…? • Why does this work? • Write a brief outline … • Write in your own words …	• What could the ending have been if ... had taken place? • State the point of view of … • What are some of the problems of …? • What assumptions …? • What can you infer about…? • What can you point out about ? • What conclusions …? • What do you see as other possible outcomes? • What does the author assume? • What explanation do you have for …? • What ideas justify the conclusion? • What ideas validate…? • What is the analysis of …? • What is the function of …? • What is the problem with …? • What motive is there? • What persuasive technique is used? • What statement is relevant? • What was the turning point? • What were some of the motives behind …? • What's fact? Opinion? • What's the main idea? • What's the relationship between? • Which events could not have happened? • Why did … changes occur? • Why do you think ?

BLOOM'S TAXONOMY WITH EXAMPLES

Conclusion

If you are a teacher looking for ways to engage your students in learning, this LIST of questions might be interesting for your classroom practice. Bloom's Taxonomy question stems can help elicit higher-order thinking skills and promote critical thinking among learners at different taxonomy levels. These question stems can also encourage students to think about their knowledge through reflection before answering questions.

ACTION WORDS FOR COGNITIVE LEVELS

Knowledge	Understand	Apply	Analyze	Evaluate	Create
					
define	explain	solve	analyze	reframe	design
identify	describe	apply	appraise	criticize	compose
describe	interpret	illustrate	judge	evaluate	create
label	paraphrase	modify	support	order	plan
list	summarize	use	compare	compare	combine
name	classify	calculate	decide	classify	formulate
state	compare	change	discriminate	contrast	invent
match	differentiate	choose	recommend	distinguish	hypothesize
recognize	discuss	demonstrate	summarize	infer	substitute
select	distinguish	discover	assess	separate	write
examine	extend	experiment	choose	explain	compile
locate	predict	relate	convince	select	construct
memorize	associate	show	defend	categorize	develop
quote	contrast	sketch	estimate	connect	generalize
recall	convert	complete	grade	differentiate	integrate
reproduce	demonstrate	construct	measure	divide	modify
tabulate	estimate	dramatize	predict	order	organize
tell	express	interpret	rank	prioritize	prepare
Copy	identify	manipulate	score	survey	produce

discover	indicate	paint	select	calculate	rearrange
duplicate	infer	prepare	test	conclude	rewrite
enumerate	relate	teach	argue	correlate	adapt
listen	restate	act	conclude	deduce	anticipate
observe	select	collect	consider	devise	arrange
omit	translate	compute	critique	diagram	assemble
read	ask	explain	debate	dissect	choose
recite	cite	list	distinguish	estimate	collaborate
record	discover	operate	editorialize	evaluate	facilitate
repeat	generalize	practice	justify	experiment	imagine
retell	group	simulate	persuade	focus	intervene
visualize	illustrate	transfer	rate	illustrate	make
	judge	write	weigh	organize	manage
	observe			outline	originate
	order			plan	propose
	report			question	simulate
	represent			test	solve
	research				support
	review				test
	rewrite				validate
	show				

SSC PART I EXAMINATION
MARKS BREAKUP GRID FOR EXAMINATION 2025

SCIENCE GROUP:

SUBJECT	THEORY	PBA	TOTAL
ENGLISH	100	-	100
URDU NORMAL / SINDHI NORMAL	75	-	75
ISLAMIYAT/ETHICS	75	-	75
PHYSICS	60	15	75
CHEMISTRY	60	15	75
BIOLOGY	60	15	75
MATHEMATICS	75	-	75
TOTAL	505	45	550

COMPUTER SCIENCE GROUP:

SUBJECT	THEORY	PBA	TOTAL
ENGLISH	100	-	100
URDU NORMAL/SINDHI NORMAL	75	-	75
ISLAMIYAT/ETHICS	75	-	75
PHYSICS	60	15	75
CHEMISTRY	60	15	75
COMPUTER SCIENCE	60	15	75
MATHEMATICS	75	-	75
TOTAL	505	45	550

GENERAL GROUP:

SUBJECT	THEORY	PBA	TOTAL
ENGLISH	100	-	100
URDU NORMAL / SINDHI NORMAL	75	-	75
ISLAMIYAT/ETHICS	75	-	75
GENERAL SCIENCE	75	-	75
GENERAL MATH	75	-	75
EDUCATION	75	-	75
ECONOMICS	75	-	75
CIVICS	75	-	75
ISLAMIC STUDIES	75	-	75
TOTAL	550	-	550