ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

Secondary School Certificate (SSC)

Examination syllabus
PHYSICS
IX

Based on Provincial revised curriculum (Sindh)

You can Approach us:

PREFACE

Ziauddin University Examination Board (ZUEB) was established by the Sindh ACT XLI 2018, with the aim of improving the quality of education. The Board administers examinations for the Secondary School Certificate (SSC) and Higher Secondary School Certificate (HSSC) based on the latest Reviewed National Curriculum by Directorate Curriculum Assessment and Research (DCAR) Sindh. ZUEB has a mandate by Ordinance to offer such examination services to English /Urdu and Sindhi medium candidates for SSC and HSSC from private schools in Sindh. This examination syllabus exemplifies ZUEB's commitment to provincial educational goals

The Examination Board has prepared with the help of subject professors, subject wise syllabus. It is important to make the difference between syllabus and curriculum. The syllabus of a subject is considered as a guide for the subject teacher as well as the students. It helps the students understand the subject in detail. It also helps students to anticipate what is expected from them while preparing for the exams.

This examination syllabus brings together all those cognitive outcomes of the Provincial Curriculum statement which can be reliably and validly assessed. While the focus is on the cognitive domain, particular emphasis is given to the application of knowledge and understanding.

The examination syllabus is uploaded on the ZUEB website. This is done to help affiliated schools in planning their teaching. It is the syllabus, not the prescribed textbook which is the basis of the ZUEB examinations. In addition, the ZUEB examination syllabus is used to develop learning support materials for students and teachers. The examination board stand committed to all students who have embarked upon the SSC, and HSSC courses in facilitating their learning outcomes. Our examination syllabus document ensures all possible support.

On the Ziauddin University Examination Board website a tab e –resource is made available which provides resource material in all subjects both in text form in line with the curriculum and also videos on topics to give students access to learn at their own pace and own time. These 15 to 20 minutes videos are prepared around subject concept / topics. These videos are available to the students for revisiting a lesson taught by their teacher or watch it prior to the lesson and as a reinforcement strategy. The work on videos is in progress and new titles will be uploaded.

Please look out for the videos on the given website

Humbly Yours;
Shahbaz Nasim
Academic Head

RATIONALE FOR THE REVIEWED PROVINCIAL CURRCIULUM

The process of revising the National Curriculum 2006 was initiated in August 2004 when newly elected government of Pakistan decided to introduce education reform in the country. The education reform process included the announcement of new National Education Policy. National Education Census and changing the curricula (Ministry of Education, 2009)

In reality, change in secondary school curriculum was initiated in 2006 and as result, scheme of studies for classes I to XII was reviewed and curriculum of 25 compulsory subjects.

The 18th Amendment to the constitution of Pakistan has reconfigured the federal and provincial relationship by abolishing the "concurrent legislative list". The Act (2010) provides the provinces with strong legislative and financial autonomy in education, health, and other social sectors. Major implication of the 18th Amendment for education is that the curriculum, syllabus, planning, policy, centres of excellence and standards of education will fall under the purview of the provinces. This was a big step forward for education.

In Sindh the Curriculum review team was assigned a task by the School Education Department, Government of Sindh to review the National Curriculum 2006 for all subjects and prepare a revised version that best suits the needs of the students teachers and meets the spirit of the 18th amendment.
Subject wise curriculum review committees were formed. Curriculum review team critically examined the contextual and textual parts and aligned the different sections horizontally and vertically of the Curriculum. The Bureau of Curriculum (BOC) played vital role in organizing the workshops and meetings at Hyderabad for the completion of task. The positive support from a number of educationists, researchers and teachers helped in completing the mammoth task of curriculum revision.
On the DCAR website http://dcar.gos.pk/BoC_Other_Pages/curriculum_dev.html the national curriculum as well as the revised curriculums are all placed for easy reference.

The Ziauddin University Examination Board Examination syllabi for SSC and HSSC are prepared with the Sindh Revised curriculum. Up till now following subject text books have been developed as per the revised curriculum.

AIMS AND OBJECTIVES:

VISION STATEMENT

Promotion of process skills, problem solving abilities and application of concepts, useful in real life situation for making physics learning more relevant, meaningful and stimulating.

AIMS

The aims of the physics course at secondary school level are to enable
student to:

1. Develop interest, motivation and sense of achievement in the study of physics
2. Develop the ability to describe and explain concepts, principles, systems, processes and applications related to physics.
3. Develop the thinking process, imagination, ability to solve problems, data management, investigating and communication skills.
4. Develop an attitude of responsible citizenship, including respect for the environment and commitment to the wise use of resources.
5. Recognize the usefulness and limitations of scientific method and the interaction between science, technology and society
6.

SYLLABUS DESIGN ON FOLLOWING OBJECTIVES

The syllabus is designed to emphasize less on purely factual material, but a much greater emphasis on the understanding and application of physics concepts and principles.
This approach has been adopted in recognition of the need for students to develop Investigation Skills/ Laboratory work that will be of long-term value in an increasingly technological world.
The syllabus framework is based on the standards and benchmarks framed by National Curriculum Council.
It comprises of five main themes/sections with overview of each section.
Each section is further divided into "units" showing their conceptual linkages. In order to specify the syllabus as precisely as possible and also to emphasize the importance of higher order abilities and Investigation Skills/ Laboratory work other than recall, learning outcomes have been used throughout.
Each unit of the syllabus is specified by content section / major concepts followed by detailed learning outcomes. The intended level and scope of treatment of a content is defined by the stated learning outcomes with easily recognizable domain of

1. Recalling
2. Understanding
3. Applying
4. Analyzing
5. Evaluating and creating,

Under the subhead "Investigation Skills/ Laboratory work" measuring, observing, manipulating, recording and interpreting /analyzing, predicting and communicating abilities/ Investigation Skills are expected to be developed through related investigations, activities and practical work.

EXAMINATION SYLLABUS WITH SCHEME OF ASSESSMENT

Section -01 General Physics

Unit - 01 Physical Quantities and Measurements Student Learning Outcomes			TOS		
Contents	Students should be able to:	Cognitive level	MCQS	CRQS	ERQS
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	2	-	-
1.2 Measuring instruments	1.2.1 To choose a proper instrument (meter rule, Vernier calipers, 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 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			TOS		
Contents	**Students should be able to:**	**Cognitive level**	**MCQS**	**CRQS**	**ERQS**
2.1 Rest and motion	2.1.1 Describe using examples how objects can beat rest and in motion simultaneously.	K	1	2	-
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 andvelocity	K U			
2.4 Scalars and vectors	2.4.1 Differentiate with examples between scalarand 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 andspeed-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, thestate of a body (i) at rest (ii)moving with constant speed (iii) moving withvariable speed 2.5.4 Calculate the area under speed-time graph to determine the distance traveled by themoving body.	U, A A U A			
2.6 Equations of motion	2.6.1 Solve problems related to uniformly accelerated motion using appropriateequations 2.6.2 To rearrange the equation according to therequirement of the problem	A A			
2.7 Motion due to gravity	2.7.1 Solve problems related to freely falling bodiesusing 10 m/s^2 as the acceleration due to gravity.	A			

Unit - 3 Dynamics

Student Learning Outcomes — TOS

Contents	Students should be able to:	Cognitive level	MCQS	CRQS	ERQS
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 intime 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	2	2	1
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 themotion 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		TOS		
Student Learning Outcomes				
Contents	Students should be able to:	Cognitive level	MCQS	CRQS ERQS
4.1 Force on bodies	4.1.1 Define like and unlike parallel forces	K	2	1 1
4.2 Addition of forces	4.2.1 State head to tail rule of vector addition offorces/vectors	K		
4.3 Resolution of forces	4.3.1 Describe how a force is resolved into itsperpendicular components 4.3.2 Determine the magnitude and direction of aforce 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 byrelating 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 ametre rod balanced on a wedge	K A		
4.6 Centre of mass	4.6.1 Define the Centre of mass and Centre ofgravity 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 toproduce rotation. 4.7.2 Prove that the couple has the same momentsabout all points 4.7.3 Demonstrate the role of couple in thesteering wheels and bicycle pedals	K A A		
4.8 Equilibrium	4.8.1 Define equilibrium and classify its types byquoting examples from everyday life. 4.8.2 State the two conditions for equilibrium of abody	K K		

	4.8.3 Solve problems on simple balanced systemswhen bodies are supported by one pivot only	A			
	4.8.4 Describe the states of equilibrium andclassify them with common examples	K			
4.9 Stability	4.9.1 Explain effect of the position of the Centre of mass on the stability of simple objects	U			
	Demonstrate through a balancing toy, racingcar 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			

Unit - 5 Forces and Matter

Contents	Student Learning Outcomes Students should be able to:	TOS Cognitive level	MCQS	CRQS	ERQS
5.1 Forces acting on solids	5.1.1 Using forces to change the shape and size ofthe body	U	1	2	2
5.2 Stretching springs	5.2.1 Carry out experiment to produce extensionagainst load graph	U			
	5.2.2 Interpret extension against load graph	A			
5.3 Hook's law	5.3.1 Define Hook's law	K			
	5.3.2 Calculate extension in spring and springconstant using formula $F = kx$	A			
5.4 Pressure	5.4.1 Define and explain pressure	K			
	5.4.2 To understand the factors that affects thepressure	U			
		A			
	5.4.3 To calculate the pressure using formula $P = F/A$	U			
	5.4.4 To understand hydraulic machines				

Unit - 6 Gravitation

Student Learning Outcomes

Contents	students should be able to:		Cognitive level	MCQS	CRQS	ERQS
6.1 Law of Gravitation	6.1.1	State Newton's law of gravitation	K	1	-	2
	6.1.2	Explain that the gravitational forces areconsistent with Newton's third law.	U			
	6.1.3	Explain gravitational field as an example offield of force.	U			
	6.1.4	Solve problems using Newton's law ofgravitation	A			
6.2 Weight	6.2.1	Define weight (as the force on an object dueto a gravitational field.)	K			
6.3 Measurement of mass of earth	6.3.1	Calculate the mass of earth by using law ofgravitation	A			
6.4 Artificial satellites	6.4.1	Discuss the importance of Newton's law of gravitation in understanding the motion of satellites	U			
	6.4.2	Describe how artificial satellites keep on moving around the earth due to gravitationalforce	U			

TOS (header over the MCQS/CRQS/ERQS columns)

Unit - 7 Energy sources and transfer of energy Student Learning Outcomes		TOS			
Contents	**Students should be able to:**	**Cognitiv elevel**	**MCQS**	**CRQS**	**ERQS**
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 offorce	K A	1	1	1
7.2 Energy forms	7.2.1 Define kinetic energy and potential energy 7.2.2 Use Kinetic Energy $Ek = \frac{1}{2} mv^2$ and potential energy $E_p = mgh$ to solve problems.	K A			
7.3 Conversion ofenergy	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 theformula Power = work done / time taken 7.6.2 Define the unit of power "watt" in SI and itsconversion with horse power	K, A K, A			

Section 03 Energy and thermal Physics

Unit - 8 Properties of Matter			TOS		
Contents	Student Learning Outcomes				
	Students should be able to:	**Cognitive level**	**MCQS**	**CRQS**	**ERQS**
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	1	1	1
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		TOS			
Contents	**Students should be able to:**	Cognitive level	**MCQS**	**CRQS**	**ERQS**
9.1 Heat and temperature	9.1.1 Differentiate b/w heat and temperature	U	1	1	1
9.2 Specific heat capacity	9.2.1 Define the terms heat capacity and specific heat capacity with SI unit 9.2.2 Describe one everyday effect due to relatively large specific heat of water	K 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) 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.	K A			
9.4 Evaporation process	9.4.1 Explain the process of evaporation and the difference between boiling and evaporation. 9.4.2 Explain that evaporation causes cooling 9.4.3 List the factors which influence surface evaporation	U U A			
9.5 Thermal expansion	9.5.1 Define thermal expansion 9.5.2 Describe qualitatively the thermal expansion of solids (linear and volumetric expansion) 9.5.3 List and explain some of the everyday applications and consequences of thermal expansion 9.5.4 Explain the thermal expansion of liquids (real and apparent expansion)	K U A U			

Unit -	Content	Weighting in %age	Periods (Theory)	Periods (Investigation / Practical work)
PART-I				
1.	Physical quantities and measurement	12%	13	7
2.	Kinematics	15%	15	9
3.	Dynamics	8%	8	5
4.	Turning effect of forces	19%	19	10
5.	Forces and Matter	8%	8	5
6.	Gravitation	8%	8	5
7.	Energy Sources and Transfer of Energy	13%	13	7
8.	Properties of Matter	6%	7	5
9.	Thermal properties ofmatter	11%	10	8
		100%	**100**	**60**

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 would 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 could you develop …? - How would you change …? - How would you demonstrate…? - How would you develop … to present ? - How would you explain …? - How would you modify …? - How would you present…? - How would you solve … ? - Identify the results of …	**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 ? - If … happened, what might the ending have been? - 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 …?

- 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 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 ?

BLOOMS 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				

SCIENCE GROUP:

SUBJECT	THEORY	PRACTICAL	TOTAL
ENGLISH	100	-	100
URDU NORMAL / SINDHI NORMAL	75		75
ISLAMIAT/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	PRACTICAL	TOTAL
ENGLISH	100	-	100
URDU NORMAL/SINDHI NORMAL	75	-	75
ISLAMIAT/ETHICS	75	-	75
PHYSICS	60	15	75
CHEMISTRY	60	15	75
COMPUTER STUDIES	60	15	75
MATHEMATICS	75	-	75
TOTAL	505	45	550

GENERAL GROUP:

SUBJECT	THEORY	PRACTICAL	TOTAL
ENGLISH	100	-	100
URDU NORMAL / SINDHI NORMAL	75	-	75
ISLAMIAT/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

Class: IX   **SECONDARY SCHOOL CERTIFICATE EXAMINATION 2024**
Time Allowed: 20 minutes   **SUBJECT: PHYSICS MODEL PAPER**
Q1:   **SECTION "A"**   **Marks: 12**

Note: Attempt all questions from this section. Each question carries **one** mark.

(i) Heat is transfer of:

A. Pressure   B. Weight   C. Energy   D. None of these

(ii) If a machine performs 20J of work in 10 sec then its power is:

A. 200-Watt   B. 2000-Watt   C. 2-Watt   D. 0.2 Watt

(iii) Increase in length due to rise in temperature is called

A. Volumetric thermal expansion   B. Linear thermal expansion

C. Friction   D. None of these

(iv) Mechanics deals with the study of motion of objects,

A. With force   B. Without force   C. Both A and B.   D. None of these

(v) Famous Muslim scientist worked in the field of

A. Medicine   B. Geology   C. Psychology   D. Optics

(vi) All the measurable quantities are known as

A. Units   B. Derived Quantities   C. Base Quantities   D. None of these

(vii) In circular orbit a satellite has a constant tangential speed called

A. Angular Velocity   B. Angular speed   C. Constant acceleration   D. Orbital velocity

(viii) Formula of linear momentum is:

A. W= mg   B. F= ma   C. P= mv   D. P.E = mgh

(ix) The value of "g" in W=mg is

A. $9.8 \ m/s^2$ B. $2 \ m/s^2$ C. $12 \ m/s^2$ D. None of these

(x) In solids the attractive force between the molecules is

A. High   B. Low   C. Negligible   D. None of these
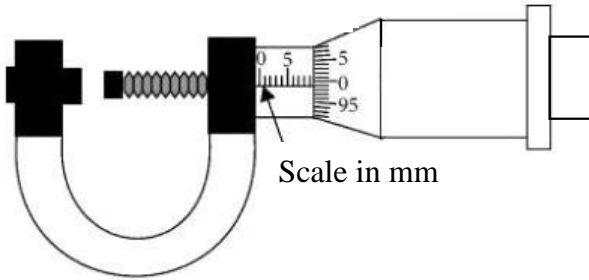
(xi) A fixed temperature at which pure liquid gets boiled
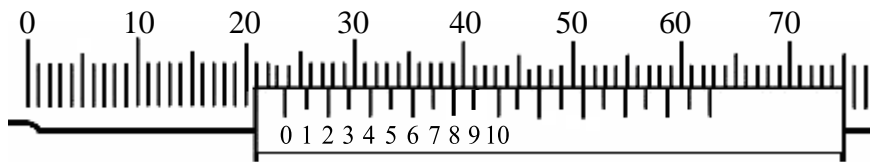
A. M.P   B. F.P   C. Both a and b   D. B.P

(xii) A body is in equilibrium when it has:

A. Uniform speed   B. Uniform acceleration   C. Both a and b   D. Zero acceleration

Practical Based Assessment (PBA)

1. The least count of the screw gauge shown in the given diagram is

    Scale in mm

    A. 0.1 mm
    B. 0.01 mm
    C. 0.001 mm
    D. 0.0001 mm

2. The Vernier scale reading in the given diagram is


    0 1 2 3 4 5 6 7 8 9 10

    A. 8
    B. 10
    C. 23
    D. 24

3. 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 |

4. Suppose that at a particular point in planet 'X', the mass of an object is measured as 0.7 kg and its weight is measured as 10.0 N.
    The value of acceleration due to gravity 'g' at that point will be

    A. 7.0 m/s^2
    B. 9.8 m/s^2
    C. 10.0 m/s^2
    D. 14.2 m/s^2

5.   The given picture shows the velocity-time graph for the motion of a body.
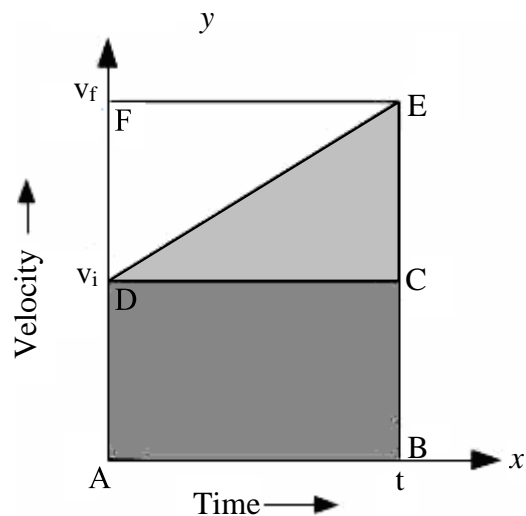
Which of the following options represents the total displacement covered by the body?

    A.   Triangle DCE
    B.   Rectangle ABCD
    C.   Triangle DCE + Triangle DEF
    D.   Rectangle ABCD + Triangle DCE

6.   The given diagram shows that a metre rule is balanced on spring balances I and II, which aresupported by iron stands and have tensions T_1 and T_2 respectively.
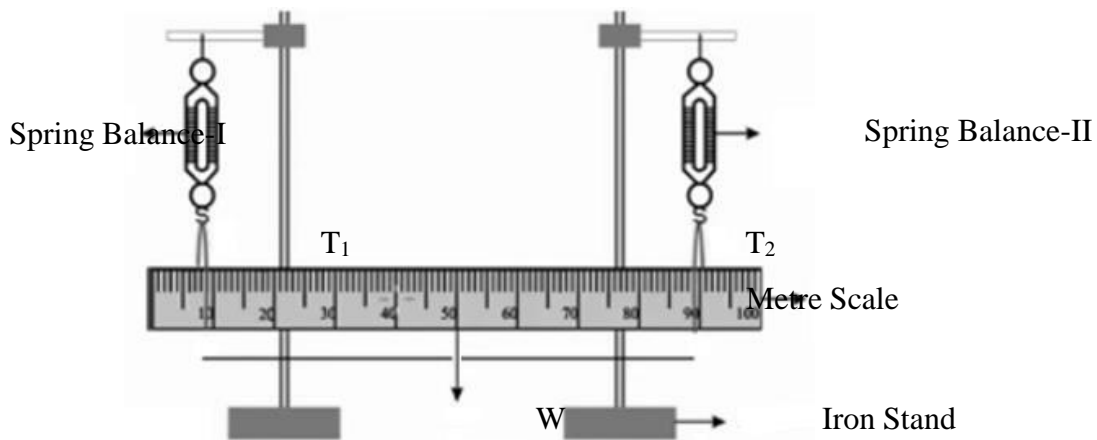
If spring balance-I is shifted on the 30 cm mark while spring balance-II maintains its positionon the metre scale, then which of the following options is CORRECT for the tensions T_1 and T_2?

	T_1	T_2
A	increase	remain constant
B	decrease	increase
C	increase	decrease
D	remain constant	increase

7. A metallic rod is pivoted in an equilibrium position as shown in the

given figure.50 cm 40 cm

M   100 g
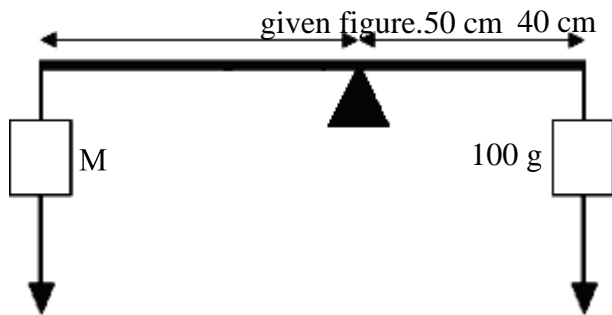
The value of mass M is

A. 80 g
B. 100 g
C. 150 g
D. 220 g

8. If the weight of an object is measured 10 N and 8 N in the air and in water respectively, thenthe density of the object is

(**Note**: Take the density of water as

1000 kg/m^3.)A. 1000 kg/m^3
B. 1250 kg/m^3
C. 2500 kg/m^3
D. 5000 kg/m^3

9. In summers, the temperature of the sand rises more quickly as compared to the seawater atthe beach. This is due to

A. evaporation.
B. specific heat.
C. state of matter.
D. atmospheric pressure.

10. The given options show four different substances of equal masses with their values of specificheat capacity.

If the same amount of heat is given to all, then which substances will show the maximum risein temperature.

	Substance of Equal Mass	Specific Heat Capacity (J/kg.K)
A	Brick	900
B	Carbon	121
C	Alcohol	2500
D	Aluminium	903

Class: IX   **SECONDARY SCHOOL CERTIFICATE EXAMINATION 2024**
Time: 2 hours 40 minutes   **SUBJECT: PHYSICS SECTION "B" AND SECTION "C"**   **Total Marks 48**
                                 SECTION "B" SHORT ANSWER QUESTIONS   **24 Marks**

Note: Attempt any **eight** questions from this section. All the questions carry **three** marks.

2. Define physics and write two applications of physics in daily life.

                        OR

   Write down the name of any three renewable energy sources and any three Non-renewable energy sources.

3. What will be moment of force When 500N force is applied on a 40cm long spanner to tighten a nut?

4. A man is pushing a wheel barrow on a horizontal ground with a force of 300N at an angle of 60° with ground. Find Fx and Fy.

5. What is torque? What are the factors on which torque depends?

6. Why solids increases in size on heating. **OR** Explain different scales used in thermometers to measure the temperature.

7. What is work done? At what angle between force and displacement the work done by a body will be maximum?

8. A ball is dropped from height of 50m. what will be its velocity before touching the ground.

9. A cylinder contains $60cm^3$ of air at a pressure of 140 KPa. What will be its volume be if the pressure on its increased to 420 KPa.

10. State Newton's 2nd law of motion and derive the expression for $F = ma$

11. Write difference between "g" and "G" **OR** mass and weight.

12. Weight of Naveera is 700N on the earth's surface. What will be Naviera's weight at the surface of moon?

13. A spring has constant K = 30N/m. what load is required to produce an extension of 4m?

                        OR

   State Hooke's Law and derive equation $F = kx$

SECTION "C" DETAILED ANSWER QUESTIONS   **24 Marks**

Note: Attempt any **four** questions from this section. Each question carries **six** marks.

14. What is Coefficient of volumetric expansion? Show that $\beta = 3\alpha$

15. Define equilibrium. Also discuss types of equilibrium. State two conditions necessary for an object to be in equilibrium?

16. State Law of Universal Gravitation. Determine the mass of Earth using Law of Gravitation.

17. What is kinematics? Derive an expression $2as = vf^2 - vi^2$

18. What is friction? Write advantage and disadvantage of friction? What methods should be used to reduce friction?

19. What is kinetic energy? Derive its relevant expression.

END OF PAPER