

PHYSOL-3 EXAMINATION SERIES FOR PLUS ONE

CHAPTERS 8,9,10 & 11
SUNDAY 15-05-2022 @ 7.00pm

P3ES-03

TIME: 1 HOUR

MAXIMUM SCORE:30

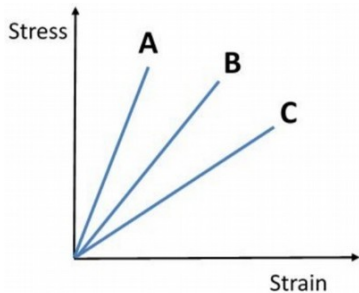
General Instructions to Students

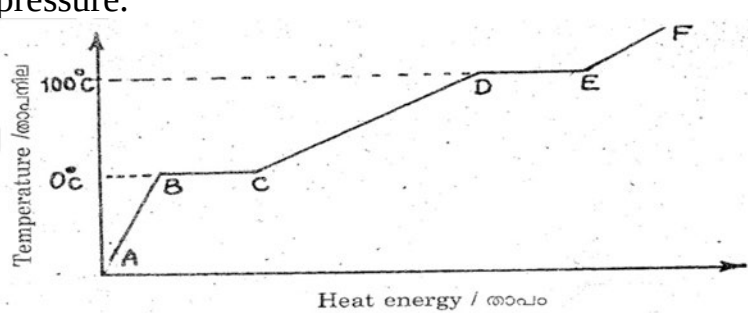
- There is a ‘cool-off time’ of 15 minutes in addition to maximum writing time
- Use cool-off time to get familiarise with questions and their answers
- **Read questions and instructions carefully before answering**
- Calculations, figures, graphs should be shown in the answer sheet itself
- **You can write questions as per instruction in each section to get a maximum score of 30**
- Electronic devices except **non-programmable calculators** are not allowed in the examination

Answer any 3 questions from 1 to 5. Each carries 1 score

1	Acceleration due to gravity is independent of (mass of earth /mass of body)	1
2	The ratio of Tensile stress to Longitudinal strain is called.....	1
3	Pick the odd one out from the following a) Atomiser b) Hydraulic Lift c) Venturimeter d) Aerofoil	1
4	Viscosity of gases.....(increases / decreases)with temperature, whereas viscosity of liquids.....(increases / decreases)with temperature	1
5	Write different modes of heat transfer.	1

Answer any 5 questions from 6 to 13. Each carries 2 score

6	Derive an expression for variation of ‘g’ with height ‘h’ from the surface of earth.	2
7	State Kepler’s third law of planetary motion.	2
8	Which is more elastic, steel or rubber? Why?	2
9	Which is more elastic A, B or C? Justify your answer. 	2
10	Blood pressure in humans is greater at the feet than at the brain. Explain why.	2

11	Surface tension changes with temperature. a) Hot soup is tastier than cold one. Why? b) Washing of cloths is easier in warm water than cold water. Why?	1 1															
12	The below graph represents temperature versus heat for water at 1 atm. pressure.  Match the following using the above graph.	2															
	<table border="1"> <thead> <tr> <th>Graph</th> <th>Process</th> <th>State</th> </tr> </thead> <tbody> <tr> <td>i) BC</td> <td>b) Sublimation</td> <td>p) Water</td> </tr> <tr> <td>ii) DE</td> <td>a) Melting</td> <td>q) Ice</td> </tr> <tr> <td></td> <td>c) Regelation</td> <td>r) Partially Solid and liquid</td> </tr> <tr> <td></td> <td>d) Vaporisation</td> <td>s) Partially liquid and vapour</td> </tr> </tbody> </table>	Graph	Process	State	i) BC	b) Sublimation	p) Water	ii) DE	a) Melting	q) Ice		c) Regelation	r) Partially Solid and liquid		d) Vaporisation	s) Partially liquid and vapour	
Graph	Process	State															
i) BC	b) Sublimation	p) Water															
ii) DE	a) Melting	q) Ice															
	c) Regelation	r) Partially Solid and liquid															
	d) Vaporisation	s) Partially liquid and vapour															
13	Temperature of a normal human body is 98.6°F. What is the corresponding temperature in Celsius scale?	2															

Answer any 3 questions from 14 to 17. Each carries 3 score

14	Find the height at which value of g at that point is equal to value of g at a depth 600km from the surface?	3
15	a) What is an elastomer? Give examples. b) The reciprocal of bulk modulus is called.....	2 1
16	Hydraulic lift is a device used to lift heavy loads. Explain the principle behind the working of this device.	3
17	The coefficient of thermal expansion in solids are mainly i) Coefficient of Linear Expansion α ii) Coefficient of Area Expansion β iii) Coefficient of Volume Expansion γ a) What is the ratio of α , β and γ ? b) Invar is used for making pendulum of clocks. Why?	1 2

Answer any 2 questions from 18 to 20. Each carries 4 score

18	Nowadays we are familiar with satellites. a) Why does satellite need no fuel to go around a planet in its fixed orbit? b) Obtain an equation for the orbital velocity of a satellite revolving around earth. Hence explain why the orbital velocity of a satellite is independent of mass of the satellite but depends on the mass of the planet. c) The moon does not have an atmosphere around it. Give reason.	1 2 1
19	a) State and explain Hooke's law.	1

	<p>b) A wire is fixed at one end is subjected to increasing load at the other end. Draw a curve between Stress and Strain and with the help of the curve, explain the terms</p> <p>i)proportional limit ii)yield point iii) permanent set iv)fracture point</p> <p>c) How does this curve may be used to distinguish between ductile and brittle substances?</p>	<p>2</p> <p>1</p>
20	In case of fluids law of conservation of energy can be explained with Bernoulli's principle. State and prove Bernoulli's principle.	4