SET	A

## INDIAN SCHOOL MUSCAT FINAL EXAMINATION 2023 SUBJECT: PHYSICS (O42)

CLASS:XI Max.Marks: 70

	MARKING SCHEME		
SET	QN.NO	VALUE POINTS	MARKS
Α	1	B	
	2	A	
	3	A	
	4	C	
	5	C	
	6	В	
	7	В	
	8	D	
	9	В	
	10	В	
	11	A	
	12	A	
	13	C	
	14	A, B OR C	
	15	В	
	16	A	
	17	D	
	18	A,B	
	19	DERIVATION of $v^2 = u^2$ -2as	
		GRAPH –	1/2
		Derivation	11/2
		OR	
		(a) Velocity =0	1/2
		Acceleration=9.8m/s <sup>2</sup> (downwards)	1/2
	20	Yes. Uniform circular motion	<sup>1</sup> / <sub>2</sub> +1/2
	20.	Initial K.E. = ½ mu2 = 1000J Final K.E. = 100J	1/2 1/2
		$\frac{1}{2} \text{ mv}^2 = 100$	1/2
		V = 63.34  m/s	1/2
	21.	Formula – $g' = g/(1-h/R)^2$	1/2
		$m g = mg /(1-h/R)^2$	1/2
		$W_h = 63//(1-(h/2)/R)^2$	1/2
		=28  N	1/2

22.		
	Strain hardening Necking	
	Stress, $\sigma$	
	Ultimate strength	
	Fracture Fracture	
	Yield strength	
	Rise	
	Run	
	November of the Rise	
	Young's modulus = Slope Run  Strain, ε	
	2) lood onto a long on the	
	i) load extension graph	
	(ii) labelling -(a) Hooke's law region (b) Elastic limit (c) Proportional limit	4 x ½
	(d) Breaking point	
	OR	
	(i) Increase in length is halved	1
	(ii) Maximum load it can support will remain the same	1
23.	(a) Statement of Wein's displacement law	1
	(b) Water is used as a coolant in automobile radiators, as well as, a heater in hot	
	water bag because high specific capacity of water.	1
24.	(a) (i) Temperature (ii) Internal energy	1/2 1/2
24.	(b) Statement of second law of thermodynamics	1
25		1 1/
25.	Any Four postulates of kinetic theory of gases.	4 x ½
26.	MαV <sup>a</sup>	
	Mαρ <sup>b</sup>	
	Mαg <sup>c</sup>	
	$M \alpha V^a \rho^b g^c$	1
	$M L^0 T^0 = [LT^{-1}]^a$ . $[ML^{-3}]^b [LT^{-2}]^c$	1/2
	a = 6	1/2
	b = 1	1/2
	c = -3	1/2
	Showing M $\alpha$ V <sup>6</sup>	
	(OR)	
	$T \alpha r^a$	
	$T \alpha M^b$	
	$T \alpha G^{c}$ .	
	$T \alpha r^a \cdot M^b \cdot G^c$ .	
	$M^{0}L^{0}T^{1} = [L]^{a}.[M]^{b}[M^{-1}L^{3}T^{-2}]^{c}$	1/2
	a = 3/2	1/2
	b = -1/2	1/2
	c = -1/2	1/2
	Showing $T^2 \alpha r^3$ .	
27.	Obtain an expression for the maximum speed with a vehicle can safely negotiate a	
	curved road banked at an angle $\theta$ .	
	Diagram:	1
	Derivation: V = (If two equations from FBD are correct, give 1 mark)	$\frac{1}{2}$
28.	Elastic collision: A collision between two particles or bodies is said to be perfectly	1/2
	elastic if both the linear momentum and the kinetic energy of the system remains	1 2
	conserved.	
	Derivation for final velocities after 1-dimensional collision	
	Derivation for final velocities after 1-dimensional contision	

	Two equations according to law of conservation of energy and law of	1
	conservation of momentum, give 1 mark)	
	$V_1 = 2m_2u_2 + u_1(m_1-m_2) / (m_1 + m_2)$	1
	$V_1 = 2m_2u_2 + u_1(m_1 + m_2) / (m_1 + m_2)$ $V_2 = 2m_1u_1 + u_2(m_2 - m_1) / (m_1 + m_2)$	1/2
29.	Centre of mass: Centre of mass of a system or a body is a point where whole of	1/2
	mass of the system were supposed to be concentrated.	/2
	Centre of mass of a system of two particles: Derivation	
	Diagram	1/2
		2
	, , , , , , , , , , , , , , , , , , , ,	2
	(If derivation is given upto net force in differential form, give 1 mark)	
	(OR)	
	<b>Angular momentum:</b> Angular momentum of a particle about an axis of rotation is	1
	defined as the product of linear momentum of the particle and the perpendicular	1
	distance of the particle from the axis of rotation.	
	Derivation: Relationship between angular momentum and torque.	2
	$\tau = dL / dt$	2
	(If physical quantities are not written in vector notation, deduct 1 mark)	
30.	(a) List two characteristics of simple harmonic motion.	1/2 ,1/2
	(b) The displacement equation for a particle executing simple harmonic motion	
	y = 10Sin (40t + 0.5). Where y is in centimeter and time in seconds	
	(i) Amplitude = 10cm	1/2
	(ii) Frequency = $6.3$ Hz	1
	(iii) Phase $= 0.5$	1/2
31.	(a) projectile definition:	1
	An object thrown with initial velocity and which is then allowed to move under the	
	action of gravity alone is called projectile.	
	Derivation for a maximum height $H = u^2 \sin^2 \theta / 2g$	2
	(b) Time of flight $T = 2uSin\theta / g = 2 \times 30 \times 0.5 / 9.8 = 3.06 sec$	1/2 1/2
	Horizontal range = $u2Sin2\theta / g = 77.85m$ .	1/2 1/2
	(OR)	
	(a) Derivation for the path followed by a projectile is a parabolic path	
	Diagram	1
	Derivation	11/2
	Justification of parabolic path	1/2
	(b) Actual velocity = 288.6kmph	1
	Vertical component of the velocity = 44.3 Kmph	1
32	(a) Orbital velocity: The velocity required to put a satellite into its orbit around the	1/2
	earth is called orbital velocity.	
	Derivation for the orbital velocity of satellite in terms of g	21/2
	(b) $g_d = g(1 - d/R)$	1/2
	$m.g_d = m.g(1 - d/R)$	1/2
	Wd = W(1-d/R) Substitution and calculation	
	= 125  N	1
	(OR)	
	(a) Escape velocity: The minimum speed required to project a body vertically	
	upward from the surface of earth so that it never returns to the surface of earth is	1
	escape velocity.	
	Derivation for the escape velocity: $Ve = (2gR)^{\frac{1}{2}}$	2
	(b) Percentage decrease in weight of a body = $2h / R \times 100$	1/2
	(b) I creemage decrease in weight of a body – 211/ K x 100	

	= (2x32 / 6400) x100	1/2
	= 1%	1
33.	(a) Statement of Bernoulli's theorem: (Per unit volume / mass is not given, give	1
	zero)	1/2
	Proof for Bernoulli's theorem: Diagram	11/2
	Derivation	
	(b)	
	$A_1 = 8cm^2 = 8 \times 10^{-4} m^2$	1/-
	$V_1 = 1.5 \text{ m/minute}$ = $\frac{1.5}{60} \text{ms}^{-1}$	1/2 1/2
	Area of 40 holes $A_2 = 40\pi (0.5 \times 10^{-3})^2 \text{m}^2$	72
	Area of 40 floles $A_2 = 40\pi (0.3 \times 10^{-4})^{-111^{-4}}$	1/2
	$A_1V_1 = A_2V_2$	72
	$V_2 = \frac{A_1 V_1}{A_2}$	
	2-2	1/2
	$= \frac{8 \times 10^{-4} \times 1.5}{40\pi \times (0.5 \times 10^{-3})^2 \times 60} = 0.636 \mathrm{ms}^{-1}.$	, -
	$40\pi \times (0.5 \times 10^{-3})^2 \times 60$	
	$(\overline{\mathbf{OR}})$	1
	(a) Terminal velocity: When a body is dropped in a viscous fluid, it is first	
	accelerated and then its acceleration becomes zero and it attains a constant velocity	
	called terminal velocity.	
	Derivation of expression for terminal velocity:	2
	$V = 2r^2(\rho - \sigma)g / 9\eta$	
	If three acting forces are given with expression, give 1 mark)	
	(b) $r = 1 \text{mm}, v_1 = 5 \text{m/s}$	2
	R = 2mm,	
	$v_2 = 4 \times v_1 = 4 \times 5 = 20 \text{m/s}$	
34.	$(i) \mu = 0.5$	1
	$(ii)\mu = 0.5773$	1
	(iii) Definition angle of friction.	2
	(OR)	
	laws of limiting friction. (any two)	
35.	(i) Pressure a scalar quantity because it same value in all direction at certain depth	1
	(ii) Height of air column, density of air and value of g (any two)	1/2 1/2
	(iii) passengers are advised to remove the ink from their pens while going up in	
	plane	2
	because of less atmospheric pressure w.r.t high pressure in barrel of ink pen	
	OR	
	It is difficult to stop bleeding from a cut in human body at high altitudes because of	
	less atmospheric pressure w.r.t high BP	
	THE END	
L L		1

SET	В

## INDIAN SCHOOL MUSCAT FINAL EXAMINATION 2023 SUBJECT: PHYSICS (O42)

CLASS:XI Max.Marks: 70

		MARKING SCHEME	
SET	QN.NO	VALUE POINTS	MAR KS SPLIT UP
A	1	A	1
	2	С	1
	3	В	1
	4	A	1
	5	C	1
	6	В	1
	7	В	1
	8	D	1
	9	В	1
	10	В	1
	11	A	1
	12	ABC	1
	13	В	1
	14	D	1
	15	В	1
	16	A	1
	17	D	1
	18	A B	1
	19	DERIVATION of $v^2 - u^2 = 2as$	
		GRAPH –	1/2
		Derivation	11/2
	20.	Initial K.E. = $\frac{1}{2}$ mu2 = 1000J	1/2
		Final K.E. = 100J	1/2
		$\frac{1}{2}$ mv <sup>2</sup> = 100 V = <b>63.34</b> m/s	1/ <sub>2</sub> 1/ <sub>2</sub>
	21.	Formula – $g' = g(1-d/R)$	1/2
		1%  of  g = g(1-d/R)	1/2
		1/100 = 1 - d/R	1/2
		d = 6336km	1/2
		Dage 1 of 4	

22.		
	Stress, $\sigma$ Strain hardening Necking	
	<b>1</b>	
	Ultimate strength Fracture	
	Yield strength	
	Rise	
	Run	
	Young's modulus = Slope Run  Strain, ε	
	(i) load extension graph  (ii) lobelling (c) Health's law region (b) Electic limit (c) Proportional limit	4 1/
	(ii) labelling -(a) Hooke's law region (b) Elastic limit (c) Proportional limit	4 x ½
	(d) Breaking point OR	
		1
	(i) Increase in length is halved	$\frac{1}{1}$
	(ii) Maximum load it can support will remain the same	1
23.	(a) Statement of Wein's displacement law	1
20.	_	
	(b) Water is used as a coolant in automobile radiators, as well as, a heater in hot water	1
	bag because high specific capacity of water.	1
24.	Statement of the first law of thermodynamics and also	1
		1
	Any two limitations.	
	(OR)	
	Any four difference between isothermal and adiabatic processes	4 x ½
25.	Any Four postulates of kinetic theory of gases.	4 x ½
26.	MαV <sup>a</sup>	
	Mαρ <sup>b</sup>	
	Mαg°	
	$M \alpha V^a \rho^b g^c$	
	$M L^0 T^0 = [LT^{-1}]^a$ . $[ML^{-3}]^b [LT^{-2}]^c$	1
	a = 6	1/2
	b=1	1/2
	c = -3	1/2
	Showing M $\alpha$ V <sup>6</sup>	1/2
	(OR)	
	$\begin{array}{cccc} T & \alpha & r^a \\ T & \alpha & M^b \end{array}$	
	$T \alpha G^{c}$ .	
	$T \alpha G$ . $T \alpha r^a$ . $M^b$ . $G^c$ .	
	$M^{0}L^{0}T^{1} = [L]^{a}. [M]^{b} [M^{-1}L^{3}T^{-2}]^{c}$	1
	a = 3/2	1/2
	b = -1/2	1/2
	c = -1/2 $c = -1/2$	1/2
	Showing $T^2 \propto r^3$ .	1/2
27.	Obtain an expression for the maximum speed with a vehicle can safely negotiate a	
<i>41</i> .	curved road banked at an angle $\theta$ .	
	Diagram:	1
	Derivation:(If two equations from FBD are correct, give 1 mark)	$\frac{1}{2}$
	Donnation (in the equations from 1 DD are correct, give 1 mark)	

Page **2** of **4** 

28.	Elastic collision: A collision between two particles or bodies is said to be perfectly elastic if both the linear momentum and the kinetic energy of the system remains	1/2
	conserved.	
	Derivation for final velocities after 1-dimensional collision	
	Two equations according to law of conservation of energy and law of	1
	conservation of momentum, give 1 mark)	
	$V_1 = 2m_2u_2 + u_1(m_1-m_2) / (m_1 + m_2)$	1
	$V_2 = 2m_1u_1 + u_2(m_2-m_1) / (m_1 + m_2)$	1/2
29.	<b>Centre of mass</b> : Centre of mass of a system or a body is a point where whole of mass of the system were supposed to be concentrated.	1/2
	Centre of mass of a system of two particles: Derivation	
	Diagram	1/2
	$R_{c.m.} = (m_1r_1 + m_2r_2 + + m_nr_n) / (m_1 + m_2 + + m_n)$ 2M	2
	(If derivation is given upto net force in differential form, give 1 mark)	
	(OR)	
	Angular momentum: Angular momentum of a particle about an axis of rotation is	
	defined as the product of linear momentum of the particle and the perpendicular distance of the particle from the axis of rotation.	1
	Derivation: Relationship between angular momentum and torque.	
	$\tau$ =dL / dt	2
	(If physical quantities are not written in vector notation, deduct 1 mark)	
30.	(a) List two characteristics of simple harmonic motion.	1/2 ,1/2
30.	(b) The displacement equation for a particle executing simple harmonic motion	/2,/2
	y = 10Sin (40t + 0.5). Where y is in centimeter and time in seconds	
	(i) Amplitude = 10cm	1/2
	(ii) Frequency = 6.3Hz	1
	(iii) Phase = 0.5	1/2
31.	(a) projectile definition:	1
31.	An object thrown with initial velocity and which is then allowed to move under the	1
	action of gravity alone is called projectile.	
	Derivation for a maximum height $H = u^2 \sin^2 \theta / 2g$	2
	Derivation for a maximum neight 11 – u sin 6 / 2g	2
	(b) Time of flight $T = 2uSin\theta / g = 2 \times 30 \times 0.5 / 9.8 = 3.06 sec$	1/2 1/2
	Horizontal range = $u2Sin2\theta / g = 77.85m$ .	1/2 1/2
	(OR)	/2 /2
	(a) Derivation for the path followed by a projectile is a parabolic path	
	Diagram	1
	Derivation	11/2
	Justification of parabolic path	1/2
	(b) Actual velocity = 288.6kmph	1
	Vertical component of the velocity = 144.3 Kmph	1
32	(a) <b>Orbital velocity</b> : The velocity required to put a satellite into its orbit around the	1/2
32	earth is called orbital velocity.	/2
	Derivation for the orbital velocity of satellite in terms of g	21/2
		1/2
		1/2
	$m.g_d = m.g(1 - d/R)$ $Wd = W(1 - d/R)$ Substitution and calculation	/2
	Wd = W(1-d/R) Substitution and calculation	1
	= 125  N	1
	(OR)	

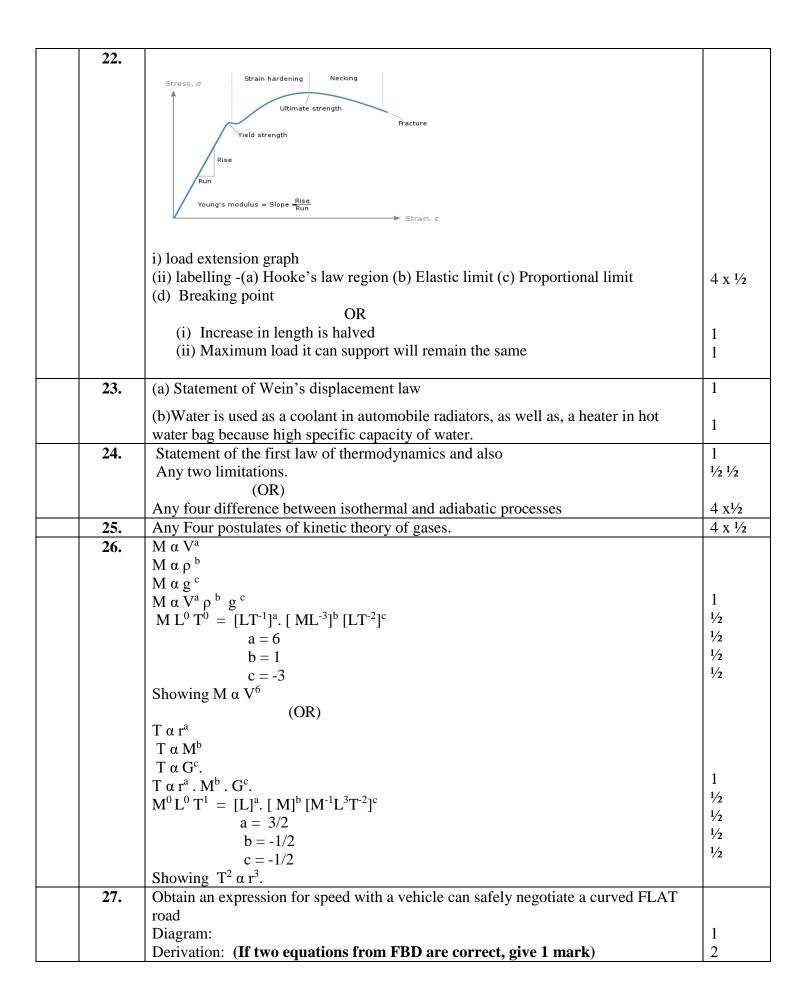
	(a) Escape velocity: The minimum speed required to project a body vertically upward from the surface of earth so that it never returns to the surface of earth is escape	1
	velocity.	
	Derivation for the escape velocity: $Ve = (2gR)^{1/2}$	2
	(b) Percentage decrease in weight of a body = 2h / R x 100	1/2
	= (2x32 / 6400) x100	1/2
	= 1%	1
33	(a) Statement of Bernoulli's theorem: (Per unit volume / mass is not given, give zero)	1
	Proof for Bernoulli's theorem: Diagram	1/2
	Derivation	11/2
	(b)	
	$A_1 = 8 \text{cm}^2 = 8 \times 10^{-4} \text{m}^2$	
	$V_1 = 1.5 \text{ m/minute} = \frac{1.5}{60} \text{ms}^{-1}$	1/2
	Area of 40 holes $A_2 = 40\pi (0.5 \times 10^{-3})^2 \text{m}^2$	1/2
	$\frac{1}{1000} \text{ of } 40 \text{ holes } N_2 = 40 \pi (0.5 \times 10^{-9}) \text{ in}$	/2
	$A_1V_1 = A_2V_2$	1/2
		/2
	$V_2 = \frac{A_1 V_1}{A_2}$	
	2 <b>x</b> Z	
	$8 \times 10^{-4} \times 1.5$	1/2
	$= \frac{8 \times 10^{-4} \times 1.5}{40\pi \times (0.5 \times 10^{-3})^2 \times 60} = 0.636 \mathrm{ms}^{-1}.$	72
	$(\bar{\mathbf{O}}\bar{\mathbf{R}})$	
		1
	(a) Terminal velocity: When a body is dropped in a viscous fluid, it is first	1
	accelerated and then its acceleration becomes zero and it attains a constant velocity	
	called terminal velocity.	
	Derivation of expression for terminal velocity:	
	$V = 2r^2(\rho - \sigma)g / 9\eta$	2
	If three acting forces are given with expression, give 1 mark)	
	(b) $r = 1 \text{mm}, v_1 = 5 \text{m/s}$	
	R = 2mm,	2
		_
24	$v_2 = 4 \times v_1 = 4 \times 5 = 20 \text{m/s}$	1
34	(1)	
	$(ii)\mu = 0.5773$	
	(iii) Definition angle of friction.	2
	(OR)	
	laws of limiting friction. (any two)	
35	<del>-  </del>	1
35	(1) 1 resource in seminif quantity seeming the sum of the unit of the contract	1 1/2 1/2
	(ii) Height of air column, density of air and value of g (any two)	72 72
	(iii) passengers are advised to remove the ink from their pens while going up in plane	2
	because of less atmospheric pressure w.r.t high pressure in barrel of ink pen	2
	OR	
	It is difficult to stop bleeding from a cut in human body at high altitudes because of	
	less atmospheric pressure w.r.t high BP	
	THE END	
L		1

SET	C

## INDIAN SCHOOL MUSCAT FINAL EXAMINATION 2023 SUBJECT: PHYSICS (O42)

CLASS:XI Max.Marks: 70

		MARKING SCHEME	
SET	QN.NO	VALUE POINTS	MARKS
_	1	A	
A	2	A	
		A	
	3	B	
	4	C	
	5	C	
	6	В	
	7	С	
	8	D	
	9	В	
	10	В	
	11	A, B AND C	
	12	A	
	13	C	
	14	A	
	15	В	
	16	A	
	17	D	
	18	A B	
	19	DERIVATION of $v^2 = u^2$ -2as	
		GRAPH –	1/2
		Derivation	11/2
		OR	
		(a) Velocity =0	1/2
		Acceleration=9.8m/s <sup>2</sup> (downwards)	1/2
	•	Yes. Uniform circular motion	1/2+1/2
	20.	Initial K.E. = ½ mu2 = 1000J	1/2
		Final K.E. = 100J	1/2
		$\frac{1}{2}$ mv <sup>2</sup> = 100	1/2
	21	V = 63.34  m/s	1/2
	<b>41.</b>	FOITIUIA – $g = g/(1-II/K)$ $m = m = m = ((1-h/R))^2$	
			1/2
	21.	Formula – $g' = g/(1-h/R)^2$ $m g = mg/(1-h/R)^2$ $W_h = 63//(1-(h/2)/R)^2$ = 28 N	1/2



28.	Elastic collision: A collision between two particles or bodies is said to be perfectly	1/2
	elastic if both the linear momentum and the kinetic energy of the system remains conserved.	
	Derivation for final velocities after 1-dimensional collision	
	Two equations according to law of conservation of energy and law of	1
	conservation of momentum, give 1 mark)	•
	$V_1 = 2m_2u_2 + u_1(m_1-m_2) / (m_1 + m_2)$	1
	$V_2 = 2m_1u1 + u_2(m_2-m_1) / (m_1 + m_2)$	1/2
29.	Centre of mass: Centre of mass of a system or a body is a point where whole of	1/2
	mass of the system were supposed to be concentrated.	
	Centre of mass of a system of two particles: Derivation	
	Diagram	1/2
	$\mathbf{R}_{c.m.} = (\mathbf{m}_1 \mathbf{r}_1 + \mathbf{m}_2 \mathbf{r}_2 + \dots + \mathbf{m}_n \mathbf{r}_n) / (\mathbf{m}_1 + \mathbf{m}_2 + \dots + \mathbf{m}_n) $ 2M	2
	(If derivation is given upto net force in differential form, give 1 mark)	
	(OR)	
	<b>Angular momentum:</b> Angular momentum of a particle about an axis of rotation is	1
	defined as the product of linear momentum of the particle and the perpendicular	
	distance of the particle from the axis of rotation.	
	Derivation: Relationship between angular momentum and torque.	2
	τ=dL / dt  (If physical exertises are not written in vector notation, deduct 1 month)	
30.	(If physical quantities are not written in vector notation, deduct 1 mark)  (a) List two characteristics of simple harmonic motion.	1/2 ,1/2
30.	(b) The displacement equation for a particle executing simple harmonic motion	72,72
	y = 10Sin (40t + 0.5). Where y is in centimeter and time in seconds	
	(i) Amplitude = 10cm	1/2
	(ii) Frequency = 6.3Hz	1
	(iii) Phase = 0.5	1/2
31.	(a) projectile definition:	1
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	action of gravity alone is called projectile.	
	Derivation for a maximum height $H = u^2 \sin^2 \theta / 2g$	2
	(b) Time of flight $T = 2uSin\theta / g = 2 \times 30 \times 0.5 / 9.8 = 3.06 \text{ sec}$	1/2 1/2
	Horizontal range = $u2Sin2\theta / g = 77.85m$ .	1/2 1/2
	(OR)	
	(a) Derivation for the path followed by a projectile is a parabolic path	
	Diagram	1
	Derivation Latin Company of the Comp	1½
	Justification of parabolic path	1/2
	(b) Actual velocity = 288.6kmph	
22	Vertical component of the velocity = 144.3 Kmph	1/
32	(a) Orbital velocity: The velocity required to put a satellite into its orbit around the earth is called orbital velocity.	1/2
	Derivation for the orbital velocity of satellite in terms of g	2½
		1/2
	(b) $g_d = g(1 - d/R)$	1/2
	$m.g_d = m.g(1 - d/R)$ $Wd = W(1 - d/R)$ Substitution and calculation	/2
	Wd = W(1-d/R) Substitution and calculation = 125 N	1
	- 123 IN	1

	(OR)	1
	(a) Escape velocity: The minimum speed required to project a body vertically	
	upward from the surface of earth so that it never returns to the surface of earth is	2
	escape velocity.	1/2
	Derivation for the escape velocity: $Ve = (2gR)^{\frac{1}{2}}$	1/2
	(b) Percentage decrease in weight of a body = $2h / R \times 100$	1
	= (2x32 / 6400) x100	
33.	= 1%	1
33.	(a) Statement of Bernoulli's theorem: (Per unit volume / mass is not given, give	1 1/2
	zero) Proof for Bernoulli's theorem: Diagram	11/2
	Derivation	
	(b)	
	$A_1 = 8cm^2 = 8 \times 10^{-4} m^2$	
	$V_1 = 1.5 \text{ m/minute} = \frac{1.5}{60} \text{ms}^{-1}$	1/2
		1/2
	Area of 40 holes $A_2 = 40\pi (0.5 \times 10^{-3})^2 \text{m}^2$	1/
	$A_1V_1 = A_2V_2$	1/2
	$V_2 = \frac{A_1 V_1}{A_2}$	
		1/2
	$=\frac{8\times10^{-4}\times1.5}{1000000000000000000000000000000000000$	-
	$= \frac{8 \times 10^{-4} \times 1.5}{40\pi \times (0.5 \times 10^{-3})^2 \times 60} = 0.636 \mathrm{ms}^{-1}.$	
	$(\overline{\mathbf{O}}\overline{\mathbf{R}})$	1
	(a)Terminal velocity: When a body is dropped in a viscous fluid, it is first	
	accelerated and then its acceleration becomes zero and it attains a constant velocity	
	called terminal velocity.	_
	Derivation of expression for terminal velocity:	2
	$V = 2r^2(\rho - \sigma)g / 9\eta$	
	If three acting forces are given with expression, give 1 mark)	
	(b) $r = 1 \text{mm}, v_1 = 5 \text{m/s}$ R = 2 mm,	2
	$v_2 = 4 \times v_1 = 4 \times 5 = 20 \text{m/s}$	
	$V_2 - \tau \Lambda V_1 - \tau \Lambda J - 20 \Pi J S$	
34.	(i) $\mu = 0.5$	1
	$(ii)\mu = 0.5773$	1
	(iii) Definition angle of friction.	2
	(OR)	
	laws of limiting friction. (any two)	
35.	(i) Pressure a scalar quantity because it same value in all direction at certain depth	1
	(ii) Height of air column, density of air and value of g (any two)	1/2 1/2
	(iii) passengers are advised to remove the ink from their pens while going up in	
	plane	2
	because of less atmospheric pressure w.r.t high pressure in barrel of ink pen	
	OR	
	It is difficult to stop bleeding from a cut in human body at high altitudes because of	
	less atmospheric pressure w.r.t high BP	
	THE END	