

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
1	(a)	The Trip of Le Horla	1	3
	(b)	M. Eyries	1	
	(c)	Because it is a long trip and the basket is too heavy for the balloon.	1	
2.	(a)	moreover	1	5
	(b)	Although	1	
	(c)	whereas	1	
	(d)	will get	1	
	(e)	slept	1	
3.	(a)	How many	1	2
	(b)	what is	1	
4.	(a)	Sleep	1	2
	(b)	wealth - health		
5.	(a)	The price of petrol <u>is</u> going up	1	2
	(b)	Every school and college <u>has</u> a play ground.	1	
6.		Greta asked her father why he was writing all that down. Her father replied that because they belonged to her.	2	2

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
7.		Comprehensiveness of the idea Clarity of presentation Quality of language	2 1 1	4
8.		Organisation of ideas Logical presentation Quality of language	2 1 1	4
9.		Comprehensiveness of the content Proper communication Clarity of ideas	2 1 1	4
10.		Comprehensiveness of the content Relevance of the points Expression of one's own view point Quality of language	1 1 1 1	4
11		Comprehensiveness of the content Logical presentation Quality of language	2 1 1	4
12.		Comprehensiveness of ideas Appropriateness of language Quality of language	2 2 1	5

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
13		Relevance of ideas Logical presentation Quality of language	2 1 2	5
14.		comprehensiveness of the content Organisation of ideas Relevance of points Quality of language	2 1 1 1	5
15.		Comprehensiveness of ideas Relevance of points Quality of language	2 2 1	5
16.		Organisation of the content Relevance of ideas Quality of language	2 2 1	5
17		comprehensiveness of the content Format of the letter Relevance of the points Quality of language	2 1 2 1	6
18.		comprehensiveness of the content Relevance of points Organisation of ideas	2 2 2	6

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
19		Comprehensiveness of the content	2	
		Relevance of ideas	2	
		Expression of one's own view point	1	6
		Quality of language	1	
20		Comprehensiveness of the content	2	
		Organisation of ideas	2	8
		Relevance of points	2	
		Quality of language	2	
21		Comprehensiveness of the content	2	
		Relevance of points	2	
		Logical presentation	2	8
		Quality of language	2	
22		Comprehensiveness of the content	2	
		Organisation of the content	2	8
		Appropriateness of language	2	
		Quality of language	2	

A/A

HSE Exam ~~First Year~~ First Year
Part II Malayalam. # Special School.

Version-~~1.0~~

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Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
1		ശരിയായ ഉത്തരം നൽകുന്നുണ്ടെന്ന്		1
2		ശരിയായ ഉത്തരം നൽകുന്നുണ്ടെന്ന്		1
3		ശരിയായ ഉത്തരം നൽകുന്നുണ്ടെന്ന്.		1
4		ശരിയായ ഉത്തരം നൽകുന്നുണ്ടെന്ന്		1
5		ശരിയായ ഉത്തരം നൽകുന്നുണ്ടെന്ന്		
6		ഗ്രന്ഥന ശരിയായതല്ല എന്ന്		1
7		ഗ്രന്ഥന ശരിയായതല്ല എന്ന്		1
8	}	8-ഗ്രന്ഥന.		1
9		9-ഉത്തരം.		1
10		10-ഗ്രന്ഥന.		1
11		11-ഗ്രന്ഥന.		1
12		12-ഗ്രന്ഥന.		1
13		നൂറ് പാതിയെ 2 നൂറ് പാതി കുറവിന്നു കണക്കാക്കി എന്ന് $(1 \times 4) = 4$		4
14		ശ്രീകൃഷ്ണൻ നായർക്ക് ശ്രീകൃഷ്ണൻ അവിഷ്കാരമുണ്ട്.	2 2	4 2

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
15		സംഗ്രഹിക്കുന്നതിന്	2	2
		ഉപരിമാല കലണ്ടർ നൽകുന്നതിന്	2	4
16.		ദുവിത്വം ഉണ്ടാക്കുന്നതിലേക്ക് കണിടുന്നു	2	2
		അപ്രകൃഷ്ട് അനുഭവങ്ങൾ അനുഭവിക്കുന്നു	2	4
17.		സിനിമയുടെ പ്രഭാവം പ്രതിഫലിപ്പിക്കുന്നു	2	2
		അപ്രകൃഷ്ട് അനുഭവങ്ങൾ അനുഭവിക്കുന്നു	2	4
18		കഥയുടെ പ്രഭാവം പ്രതിഫലിപ്പിക്കുന്നു.	2	2
		വിശകലനാത്മകമായി അനുഭവങ്ങൾ അനുഭവിക്കുന്നു	2	4
19.		ദുവിത്വം അനുഭവിക്കുന്നതിലേക്ക് കണിടുന്നു	2	2
		അടുത്തിടെ ഉന്നിലാക്കിയിട്ടുണ്ട്	2	4
20		കഥയുടെ പ്രഭാവം പ്രതിഫലിപ്പിക്കുന്നു	2	2
		അനുഭവങ്ങൾ വിശകലനാത്മകമായി അനുഭവിക്കുന്നു	2	4

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
21.		കുവിതയുടെ ഭേദം പ്രകീർത്തിച്ചത് സവിശേഷതകൾ അവതരിപ്പിക്കുന്നതിന് അവതരണമിടുക	2 2 2	6.
22		സോക്രട്ടീസിന്റെ ഭേദം പ്രകീർത്തിച്ചത് വിശദീകരണം ചെയ്ത് അഭിപ്രായങ്ങൾ അവതരിപ്പിക്കുന്നതിന് അവതരണമിടുക	2 3 1	6.
23.		പ്രാദേശികതയെ ഇക്കീകൃതം പ്രകീർത്തിച്ചത് പ്രാദേശികതയെ ഇക്കീകൃതം അവതരിപ്പിക്കുന്നതിന് അവതരണമിടുക	2 3 1	6.
24.		കുവിതയുടെ ഭേദം പ്രകീർത്തിച്ചത് വിശദീകരണം ചെയ്ത് അവതരിപ്പിക്കുന്നതിന് അവതരണമിടുക	2 3 1	6.

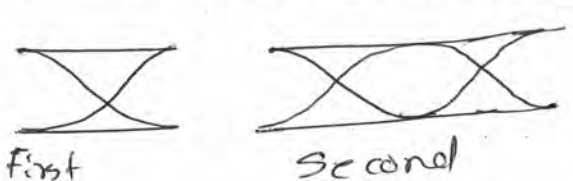
Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
25		കവിതയുടെ ഉതിയുത്തം സൂചിപ്പിക്കുന്നു നവീകരണങ്ങൾ അവതരിപ്പിക്കുന്നു അവയങ്ങൾ ഉദ്ദേശി അവതരിപ്പിക്കുന്നു	2 2 2	6
26		കഥയുടെ ഉതിയുത്തം സൂചിപ്പിച്ചിട്ടുണ്ട് കൃത്യമായ രൂപം വിശദീകരിക്കുന്നു അവതരണമിട്ടുണ്ട്	2 4 2	8
27		ലേഖനത്തിലെ പ്രമേയം അവതരിപ്പിക്കുന്നു പ്രസ്താവ നിരീക്ഷണങ്ങൾ അവതരണമിട്ടുണ്ട്	2 4 2	8
28		കവിതയുടെ ഉതിയുത്തം സൂചിപ്പിച്ചിട്ടുണ്ട് വിശദീകരിക്കുന്നു ചെറിയ അദ്ധ്യായങ്ങൾ അവതരിപ്പിക്കുന്നു അവതരണമിട്ടുണ്ട്	2 4 2	8

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
29.		മലയാളം ഉപയോഗം ന്യൂനതയുള്ളതായി നവീകരണങ്ങൾ അവതരിപ്പിക്കുന്നതിന് താഴെ പറയുന്നവയാണ്	2 4 2	8.

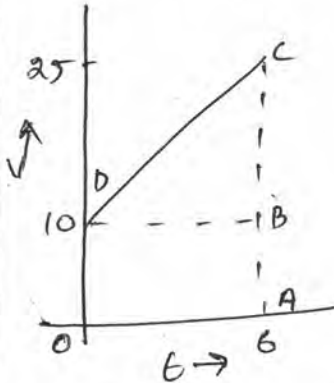
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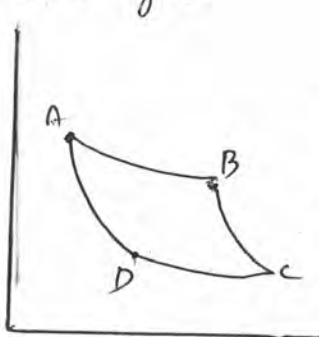
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Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
1.		c. Viscous force		1
2.		Kelvin		1
3.		11.2 km/s		1
4.		c. Rubber		1
5		$ML^{-1}T^{-2}$		
6.		any two rules		2
7.		any two difference OR Definition for scalar & vector		2
8		Correct expression OR Equation only	2 1	2
9.	a.	Definition of KE	1	2
	b.	$KE = \frac{1}{2}mv^2$	1	
10		Definition		2
11		Expression OR Equation only	2 1	2

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
12		Statement		2
13		Statement OR $\Delta Q - \Delta W = \Delta U$		2
14		 First Second		2
15	a.	Definition or and of dimension equation	1	3
	b.	$F \rightarrow MLT^{-2}$	1	
	c.	any one use	1	
16		Definition & function any two advantages	1 2	3
17	a.	Explanation for positive work Explanation for negative work	1 1	3
	b.	Expression any one example	1	
18	a.	Definition	1	3
	b.	Expression OR	2	
		equation only	1	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
19		$r = R + h$ $= 6400 + 36000 = 4.24 \times 10^7 \text{ m}$ $U = -\frac{GM}{r}$ $= -9.44 \times 10^6 \text{ J kg}^{-1}$	1 1 1	3
20		a. yield point explanation of yield point b. explanation of Fracture point c. Elastic limit explanation	1 1 1	3
21	a.	phase change	1	3
	b.	explanation of phase change	2	
22	a.	Definition OR $PV = nRT$	1	3
	b.	Statement	1	
		Explanation OR $V \propto T$ OR	1	
23		$a = 0.005 \text{ m}$ OR 5 mm $k = 80 \text{ m}^{-1}$ $\omega = 35 \text{ s}^{-1}$	1 1 1	3

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
24	a.	Expression any relevant expression	2	
	b.	 (optional) Re-drawing and labelling Area under graph = area of $\square$ + Area of Δ $= 6 \times 10 + \frac{1}{2} \times 6 \times 15$ $= 60 + 45 = \underline{\underline{105\text{m}}}$ OR correct calculation without graph	1 1 1 1	5
25	a.	statement & explanation	2	
	b.	Proof OR statement of 3 rd law	3 3 1	5

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
26	a.	Definition	1	5
	b.	any correct reason.	2	
	c.	any two factors	2	
27.	a.	Definition	1	5
	b.	ideal gas	1	
	c.	 AB - isothermal expansi BC - adiabatic expans CD - isothermal compress DA - adiabatic comp. OR Figure with any two name	3	
28	a.	Definition	1	5
	b.	Expression OR equation only	2	
	c.	$V = A\omega \text{ OR } A\sqrt{\frac{k}{m}}$ $= 0.1 \times \sqrt{\frac{500}{5}}$ $= 1 \text{ m/s}$	1	

Chemistry - ~~H~~(H/I)

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Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
1.		44	1	1
2.		6	1	1
3		3	1	1
4		Fluoxetine	1	1
5		Isotherm	1	1
6.		CO ₂	1	1
7.		Freons	1	1
8.		statement / Explanation of law of conservation of Mass.	2	2
9.		$v = \frac{c}{\lambda}$ $= \frac{3 \times 10^8 \text{ m s}^{-1}}{5800 \times 10^{-10} \text{ m}}$ $= 5.172 \times 10^{14} \text{ s}^{-1}$	1 1 OR 1	2

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
10		Definition of octet Rule Any one limitation of it	1 1	2
11		Any 2 postulates of - Kinetic Theory	2	2
12	i ii	Decrease Increase	1 1	2
13		Extensive - Mass, Internal- Energy Intensive - Temperature - Pressure	1 1	2
14		correct explanation Example	1 1	2
15		Definition Example	1 1	2

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
16		Diamond has a three-dimensional network c-c bonds/ correct explanation.	2	2
17		(i) 2-Methylbutane. (ii) propan-2-ol.	1 1	2
18		Any 2 structural Isomers of organic compounds (Name only)	2	2
19		Statement Example of propene	1 1	2
20		Any 2 causes	2	2
21	(i)	correct Definition	1	3
	(ii)	(ii) Mass % of Hydrogen = $\frac{2}{18} \times 100$ = 11.11	1 or 1	
		Mass % of oxygen = $\frac{16}{18} \times 100$ = 88.88	1 or 1	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
22.		Decrease in period Increase in group correct reason	1 1 1	3
23	(i)	Equation Explanation of terms	1 1	3
	(ii)	$Z=1$	1	
24	(i)	Definition one example	1 1	3
	(ii)	Statement of Hess's law	1	
25	(i)	correct explanation	1	
	ii	Lewis acid - BF_3 , AlCl_3 Lewis Base - NH_3 , OH^-	1 1	3
26	(i)	7	1	
	(ii)	Any 2 examples for redox reaction	2	3
27.	(i)	Name of any 2 methods to - remove permanent Hardness	2	
	(ii)	Any one disadvantage	1	3

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
28	(i)	organosilicon polymers/have $(R_2SiO)_n$ as unit or related point (one)	1	3
	(ii)	Forms complex with haemoglobin or correct explanation	1	
	(iii)	correct explanation	1	
29	(i)	Equation / explanation	1	3
	(ii)	Equation / explanation	1	
	(iii)	Equation / explanation	1	
30	(i)	Any 2 postulates of Bohr Model	2	4
	(ii)	2 Demerits of Rutherford Model	2	
31	(i)	i - d, ii - c, iii - a, iv - b	2	4
	(ii)	Definition and explanation	1+1	
32	a(i)	Two use of NaOH	1	4
	(i)(ii)	Two use of plaster of paris	1	
	b.	2 Anomalous properties	2	
33	(i)	Name of any 2 method of purification of organic compounds	2	4
	(ii)	Explanation with example	2	

Maths (H/I)

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Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
1	(i)	$n(A \cup B)$	1	3
	(ii)	$n(A \cup B) = n(A) + n(B) - n(A \cap B)$	1	
		$= 17 + 23 - 10$ $= 30$	1	
2	(i)	$\sin(x+y)$	1	3
	(ii)	$\sin 75 = \sin(45 + 30)$	1	
		$= \sin 45 \cos 30 + \cos 45 \sin 30$ $= \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{3}}{2} + \frac{1}{\sqrt{2}} \cdot \frac{1}{2}$ $= \frac{\sqrt{3} + 1}{2\sqrt{2}}$	1	
3		Consider $z = 4 + 3i$	1	3
		$\bar{z} = 4 - 3i$	1	
		$ z ^2 = 4^2 + 3^2$ $= 25$	1	
		Multiplicative inverse, $z^{-1} = \frac{\bar{z}}{ z ^2}$ $= \frac{4 - 3i}{25}$	1	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
4	(i)	18	1	3
	(ii)	${}^5C_2 = \frac{5!}{2!(5-2)!}$ $= \frac{4 \times 5}{1 \times 2}$ $= 10$	1	
			1	
5		$(x+2)^4 = x^4 + 4C_1 x^3 \cdot 2 + 4C_2 x^2 \cdot 2^2$ $+ 4C_3 x \cdot 2^3 + 2^4$ $= x^4 + 8x^3 + 24x^2 + 32x + 16$	1	3
			2	
6	(i)	1	1	3
	(ii)	Equation of $\frac{y-y_1}{y_2-y_1} = \frac{x-x_1}{x_2-x_1}$ $\frac{y-1}{-5} = \frac{x+1}{3}$ $3y-3 = -5x-5$ $5x+3y+2=0$	1	
			1	
7	(i)	5		3
	(ii)	$\cos x$		
	(iii)	4		

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
8	(i)	$A = \{1, 2, 3, 4, 9\}$ $B = \{3, 4, 5, 8\}$	1	4
	(ii)	$A \cup B = \{3, 4, 1, 2, 5, 8, 9\}$	1	
	(iii)	$A \cap B = \{3, 4\}$	1	
	(iv)	$\{1, 2, 9\}$	1	
9	(i)	12	1	4
	(ii)	$A = \{p, m\}$ $B = \{q, r\}$	1	
	(iii)	$x^2 + 2x + 1$	1	
10	(i)	$R = \{(1, 2), (2, 3), (3, 4), (4, 5), (5, 6)\}$	1	4
	(ii)	Domain = $\{1, 2, 3, 4, 5\}$	1	
		Range = $\{2, 3, 4, 5, 6\}$	1	
		Co-domain = $\{1, 2, 3, 4, 5, 6\}$	1	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
11	(a)	$p(1) = \frac{3^1 - 1}{2}$ $= 1$ $p(1)$ is true	1	
	(b)	$p(k) = 1 + 3 + 3^2 + \dots + 3^{k-1} = \frac{3^k - 1}{2}$ $p(k+1) = 1 + 3 + 3^2 + \dots + 3^{k-1} + 3^k$ $= \frac{3^k - 1}{2} + 3^k$ $= \frac{3^k - 1 + 2 \cdot 3^k}{2}$ $= \frac{3 \cdot 3^k - 1}{2}$ $= \frac{3^{k+1} - 1}{2}$ $\therefore p(k+1)$ is true by the p.m.I	1	4
12		Number of ways = ${}^5C_2 \times {}^6C_3$ $= \frac{5!}{2!3!} \times \frac{6!}{3!3!}$ $= \frac{4 \times 5}{1 \times 2} \times \frac{4 \times 5 \times 6}{1 \times 2 \times 3}$ $= 10 \times 20$ $= 200$	1 1 1 1	4

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
13	(i)	11	1	4
	(ii)	$\text{General term, } T_{r+1} = nC_r a^{n-r} b^r$ $= {}^{10}C_r x^{10-r} (3y)^r$ $a = x$ $b = 3y$ $n = 10$	1	
	(iii)	$5^{\text{th}} \text{ term, } T_5 = {}^{10}C_4 x^{10-4} (3y)^4$ $= {}^{10}C_4 x^6 (3y)^4$ $r = 4$	1	
14	(i)	Consider the line $3x + 4y - 10 = 0$ $3x + 4y = 10$ $\frac{3x}{10} + \frac{4y}{10} = 1$ $\therefore \frac{x}{10/3} + \frac{y}{10/4} = 1$ x-intercept $= 10/3$ y-intercept $= 10/4$	1	1
	(ii)	Distance $= \left \frac{C_1 - C_2}{\sqrt{A^2 + B^2}} \right$ $A = 3$ $B = 4$ $C_1 = 7$ $C_2 = 5$	1	

Qn no.	Sub Qn.	Answer key / values	Score	Total
		$= \left \frac{7-5}{\sqrt{3^2+(4)^2}} \right $ $= \frac{2}{5}$	1	4
15	(i)	$\sqrt{3}$	1	
	(ii)	$PQ = \sqrt{(1+2)^2 + (2-3)^2 + (3-5)^2}$ $= \sqrt{14}$ $QR = \sqrt{(4-1)^2 + (0-2)^2 + (-1-3)^2}$ $= \sqrt{56}$ $PR = \sqrt{(4+2)^2 + (0-3)^2 + (-1-5)^2}$ $= \sqrt{126}$ $PQ + QR = PR$ $\therefore P, Q, R \text{ are Collinear}$	1	4
16	(i)	p: a and b are integers q: ab is a rational number	1	
	(ii)	Assume that $\sqrt{7}$ is rational Then $\exists$ integers a and b such that $\sqrt{7} = \frac{a}{b}, \text{ } a \text{ and } b \text{ have no common factors.}$	1	

Qn no.	Sub Qn.	answer/key / value/pt	Score	Total
		$a^2 = 7b^2 \Rightarrow 7 \text{ divides } a$	1	
		Then $\exists$ an integer c such that		
		$a = 7c$		4
		$a^2 = 49c^2$ and $a^2 = 7b^2$		
		$\Rightarrow 49c^2 = 7b^2$		
		$\Rightarrow b^2 = 7c^2$		
		$\Rightarrow 7 \text{ divides } b$	1	
		This is a Contradiction.		
		Hence our assumption is wrong		
		$\sqrt{7}$ is irrational.		

17 (i) $S = \{ HHH, HHT, HTH, THH, THT, TTH, HTT, TTT \}$

2

4

(ii)
$$\begin{aligned} P(A \cup B) &= P(A) + P(B) - P(A \cap B) \\ &= 0.42 + 0.48 - 0.16 \\ &= 0.74 \end{aligned}$$

1

1

18 (i) $\pi/4$

1

(ii)
$$\begin{aligned} \text{L.H.S} &= \frac{2 \sin \frac{x+y}{2} \cdot \cos \frac{x-y}{2}}{2 \cos \frac{x+y}{2} \cdot \cos \frac{x-y}{2}} \\ &= \tan \frac{x+y}{2} \end{aligned}$$

1

1

Qn no.	Sub Qn.	Answer/key / value/pt	Score	Total
	(iii) L.H.S = $\left(\frac{1}{2}\right)^2 + \left(\frac{1}{2}\right)^2 - 1^2$		1	6
	$= \frac{1}{4} + \frac{1}{4} - 1$		1	
	$= \frac{-1}{2}$		1	
19	(i) $1-i$		1	
	(ii) Consider $z = 1+i\sqrt{3}$ $= a+ib$			
	$r = \sqrt{a^2+b^2}$	$\theta = \tan^{-1} \frac{b}{a}$		
	$= \sqrt{1^2 + \sqrt{3}^2}$	$= \tan^{-1} \sqrt{3}$	2	
	$= 2$	$= \pi/3$		6
	polar form is $z = r(\cos\theta + i\sin\theta)$ $= 2(\cos\pi/3 + i\sin\pi/3)$		1	
	(iii) Consider $x^2+2=0$		1	
	$x^2 = -2$			
	$x = \pm\sqrt{-2}$		1	
	$= \pm\sqrt{2}i$			
20	(i) Consider $5x-3 < 3x+1$			
	$2x < 4$		1	
	$x < 2$		1	
	Solution is $(-\infty, 2)$			

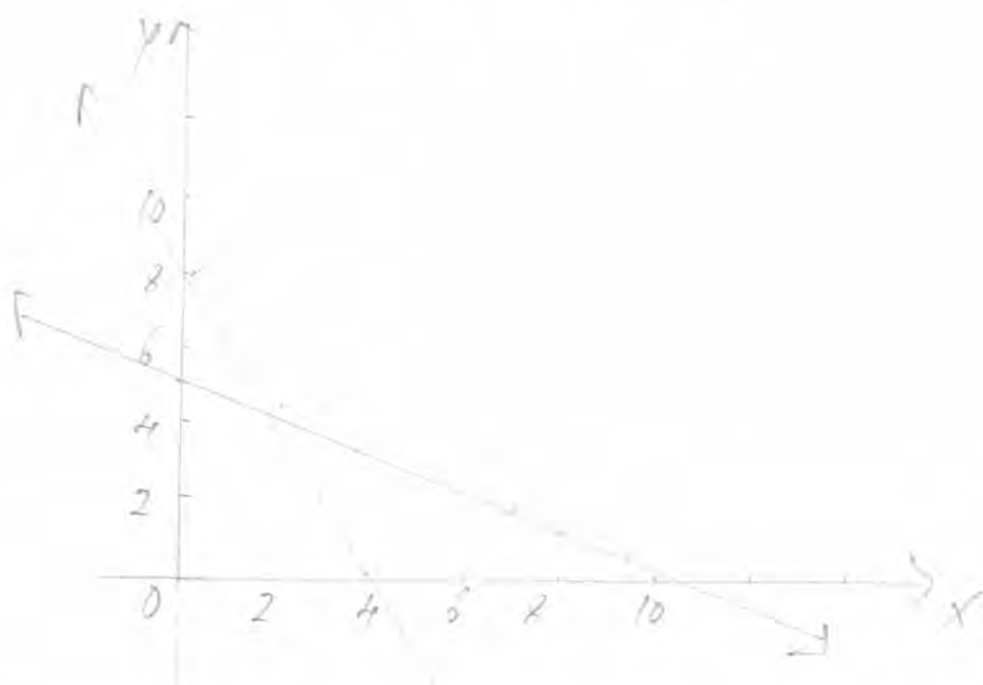
Qn no.	Sub Qn.	answerkey / valuept	Score	Total
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(ii) Consider $2x + y = 8$

x	0	4
y	8	0

$$x + 2y = 10$$

x	0	10
y	5	0



Shaded portion is the solution region.

21 (i) $a_n = 4n + 3$
 $a_1 = 4 + 3$
 $= 7$

Qn. no.	Sub Qn.	Answerkey / valupt	State	Total
		$a_2 = 4 \times 2 + 3$ $= 11$	1	
(ii)		$d = a_2 - a_1$ $= 11 - 7$ $= 4$	1	6
(iii)		$S_n = \frac{n}{2} [2a + (n-1)d]$	1	
		$S_{10} = \frac{10}{2} [2 \times 7 + (10-1)4]$ $= 5 [14 + 9 \times 4]$ $= 250$	1 1	

$$n = 10$$

$$d = 4$$

$$a = 7$$

22 (i) Equation of the circle is

$$(x-h)^2 + (y-k)^2 = r^2$$

$$(x-0)^2 + (y-2)^2 = 2^2$$

$$x^2 + y^2 - 4y + 4 = 4$$

$$x^2 + y^2 - 4y = 0$$

(ii) $a = 5, b = 3$ $c = \sqrt{a^2 - b^2}$
 $= \sqrt{25 - 9}$
 $= 4$

Vertices - $(\pm a, 0)$
 $= (\pm 5, 0)$

Foci - $(\pm c, 0)$
 $= (\pm 4, 0)$

Qn no.	Sub Qn.	answer key / value pt	Score	Total
		eccentricity, $e = \frac{c}{a}$ $= \frac{4}{5}$	1	6

length of the latus rectum $= \frac{2b^2}{a}$
 $= \frac{2 \times 9}{5}$
 $= \frac{18}{5}$

23 (i) na^{n-1}

(ii) $\frac{d}{dx} (5 \sin x - 6 \cos x + 7)$
 $= 5 \cos x + 6 \sin x$

(iii) $\lim_{x \rightarrow 0} \frac{\sin 4x}{\sin 2x} = \lim_{x \rightarrow 0} \frac{\sin 4x}{4x} \cdot 4x$
 $\frac{\lim_{x \rightarrow 0} \sin 4x \cdot 4x}{\lim_{x \rightarrow 0} \sin 2x \cdot 2x}$
 $= \frac{1 \cdot 4x}{1 \cdot 2x}$
 $= 2$

Qn. no.	Sub Qn.	Answerkey / value pt	Score	Total.
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24 (i)

x_i	f_i	$f_i x_i$	$(x_i - \bar{x})$	$f_i (x_i - \bar{x})^2$
5	7	35	9	567
10	4	40	4	64
15	6	90	1	6
20	3	60	6	108
25	5	125	11	605

$$N = 25 \quad \sum f_i x_i = 350$$

$$\sum f_i (x_i - \bar{x})^2 = 1350$$

$$\begin{aligned} \text{Mean} &= \frac{\sum f_i x_i}{N} \\ &= \frac{350}{25} \\ &= 14 \end{aligned}$$

$$\begin{aligned} \text{(ii) Variance} &= \frac{\sum f_i (x_i - \bar{x})^2}{N} \\ &= \frac{1350}{25} \\ &= 54 \end{aligned}$$

Computer Science (H/I)

Imp-19

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total										
1		b) Base		1										
2		b) 8		1										
3		c) RAM		1										
4		b) 		1										
5		c) %		1										
6		b) #include	A A	1										
7		c) ar[5][5]		1										
8		a) main()		1										
9		c) Facebook		1										
10		b). Windows		1										
11		<table border="1"><thead><tr><th>Generation</th><th>Technology</th></tr></thead><tbody><tr><td>First</td><td>Vacuum Tube</td></tr><tr><td>Second</td><td>Transistor</td></tr><tr><td>Third</td><td>Microprocessor</td></tr><tr><td>Fourth</td><td>Integrated Circuit</td></tr></tbody></table> Any Two is correct give 2 Marks	Generation	Technology	First	Vacuum Tube	Second	Transistor	Third	Microprocessor	Fourth	Integrated Circuit	1/2 x 4	2
Generation	Technology													
First	Vacuum Tube													
Second	Transistor													
Third	Microprocessor													
Fourth	Integrated Circuit													
12.		Correct Logic Circuit Any gate is present give 1 mark		2										
13.		Any output device	1/2 x 4	2										

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total								
14		i) Better Communication ii) Effective Analysis iii) Effective Synthesis iv) Efficient coding If any Two is correct give 2 Marks	$\frac{1}{2} \times 4$	2								
15		<table border="1"><thead><tr><th>Keyword</th><th>Identifiers</th><th>Literals</th><th>Operators</th></tr></thead><tbody><tr><td>cnt</td><td>digit</td><td>25.7</td><td>%</td></tr></tbody></table> If any two is correct give 2 Marks	Keyword	Identifiers	Literals	Operators	cnt	digit	25.7	%	$\frac{1}{2} \times 4$	2
Keyword	Identifiers	Literals	Operators									
cnt	digit	25.7	%									
16		a) 5 b) 5	1 1	2								
17		Definition/Array declaration		2								
18		getchar(), getch(), getche() If any one and explanation/example give 2 mark	-	2								
19		abs(), sqrt(), pow(), sinc(), If any two and explanation/example give 2 mark	$\frac{1}{2} \times 4$	2								
20		Twisted Pair, Coaxial cable or Any medium with explanation give 2 mark	1+1	2								
21		a) Abacus, b) Napier's bones, c) Pascaline d) Leibniz's calculator, e) Jacquard's loom f) Difference Engine If any 3 with example give 3 marks	$\frac{1}{2} \times 6$	3								

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
22		Definition Explanation Name only give 2 Mark	1 2	3
23		Correct Proof If any truth table give 2 Mark		3
24		Structure of flowchart Correctness If structure is correct give 2 Mark	1 2	3
25		Any three comparison Examples of loop give 2 Mark	1x3	3
26		Any three with example any one with ex any four name give 2 mark	1x3	3
27		Structure of algorithm Correctness	1 2	3
28		Structure of c++ program Correctness any program give 2 mark	1 2	3
29		Uniform Resource Locator any example	1 2	3

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
30		Definition 2 Example only 3 example give 3 mark	1 2	3
31		Name and explanation only name give 1/2 mark each	1x5	5
32		loops name example/explanation	3 2	5
33		Structure of C++ program Definition of variable Input/output statement	2 2 1	5

First year Higher Secondary Examination (H.I)

HISTORY

Imp-19

1/4

Qn. No	Sub. Qn	Answer Key	Score	Total
1.		Umayyad — Damascus Elements — Euclid Temujin — Genghis Khan Shahnama — Firdausi	1 1 1 1	4
2.	a. b. c. d.	Homo Habilis Inanna Augustus Constantinople	1 1 1 1	4
3.	i ii iii iv	Germany Mexico James Hargreaves Edmund Cartwright	1 1 1 1	4
4.		• Arrival of Commodore Perry (1853) • Meiji Restoration (1868) • Peoples Republic of China established (1949) • Death of Chiang Kai-shek (1975) (Consider ascending or descending order)	1 1 1 1	4
5.	a. b. c. d.	Sahara Desert Mediterranean Sea Red Sea Persian Gulf	1 1 1 1	4
6		Small brain — Quadrupeds	2	2
7.		• Wrote on tablets of clay • A scribe would wet clay and pat into a size • Carefully smoothen its surface (any two points)	1 1	2

8.		Code of law of Genghis Khan — Administrative regulations	2	2
9.		Traces of gold were found in the USA — California — Europeans hurried to America	1 1	2
10		Christian Muslim Relations — harshed attitude of the Muslim State towards its christian Subjects — Influence of Italian Mercantile Communities	1 2	3
11.		Arrival Commodore Perry — Japanese emperor re-emerged as an important figure — 1868 Shoguns were removed — Emperor to Edo	2 1	3
12.		• Nationalism • Democracy • Socialism	1 1 1	3
13.		• Dawaa Movement in 1750 • Umayyads were replaced • Original Islam of the Prophet • Leaders of the Abbasid army Abu Muslim, who defeated the last umayyad Caliph, Marwan — battle of Zab	1 1 1 1	4

14.	• Sympathetical devoted study of Mankind • Discussion and debate • Writers like Dante, Giotto etc • Renaissance man	2		
15.	• Largest indigenous Civilization in South America • First Inca Manco Capac, Capital Cuzco • Magnificent builders • Agriculture, Weaving and Pottery	2		
16.	• planets including the earth rotates around the sun • Christians believed that earth was a Sinful place • Copernicus questioned it • De revolutionibus (The rotation)	2		
17.	• England, France, Belgium benefited - formed joint stock Companies • Established Colonies • Native Peoples were destroyed • Enslavement of the population	2		
18.	• Unified under a Common Monarchy • Single Currency • Agricultural Revolution • Common Laws	1	1	1
				4

19.	• Born in 1162 near onon river • Unified the Mongols • Brought Mongols Prosperity • Freed Mongols from tribal wars	1 2 2	5
20.	• Religious scholars and Sufism • Adab • Literary Contributions • Geography and History • Architecture	2 2 1	5
21.	• people live in bands • long journeys in search of meat • Formal alliances and friendships • Believed Time moved in cycles • Skilled craftspeople	1 2 2	5
22.	• Economic Expansion • Literacy • Culture • Social Hierarchies	2 2 2 2	8
23.	• The clergy • The Nobility • The peasants • Conclusion	2 2 2 2	8
24.	• changed lives and workers • Women, Children and Industrialists • Protest Movements • Conclusion	2 2 2 2	8

Economics (H/I)

Imp-19

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
1		a. Census Survey	1	
2		c. Commercialisation of agriculture	1	
3		c. Index Numbers	1	5
4		d. 1995	1	
5		a. 1850	1	
6		NCERT - c. School education	1	
7		SHG - d. Micro credit	1	
8		Brundtland Commission - e. Sustainable Devt	1	5
9		Official Census in India - a. 1881	1	
10		Social infrastructure - b. Health	1	
11		a. Mean Deviation (M.D.) b. Standard Deviation (S.D.)	1 1	2
12		a. False b. True	1 1	2
13		a. Simple Price Index - $i i \frac{\sum P_1}{\sum P_0} \times 100$ b. Laspeyres's Index - $i i i \frac{\sum P_1 q_0}{\sum P_0 q_0} \times 100$ c. Paasche's Index - $i. \frac{\sum P_1 q_1}{\sum P_0 q_1} \times 100$	1 1 1	3
14		Education, Health, Training, Migration, Information (Any 2)	1x2	2

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
15		a. White Revolution b. Golden Revolution	1x2	2
16		→ To understand an economic problem → Condensation of data → finding relationships b/w diff. factors → Formulation of plans & policies	1/2x4	2
17		i) Choice of target group Collection of data Organisation and Presentation of data Analysis and Interpretation of data Conclusion Bibliography (day 2 steps)	1x	2
18		Exploitative land settlement low level of technology, fertilizers Lack of irrigation Commercialisation of agriculture	1/2x4	2
19.		a) Quota - i) b) HYV seeds - ii) c) Karez Committee - i)	1x3	3
20.		a) Selfemployed - Cement shopowner b) Casual wage labourer - construction worker c) Regular salaried - Police constable	1x3	3
21.		→ to know the drawback of the questions → Assesses the suitability of questions → Assesses the ^{time} and cost of the actual survey	1x3	3

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
22		<u>India</u> <u>China</u> <u>Pakistan</u> High density of population Commune system High fertility rate Reforms in 1991 GLF Improved water source	$\frac{1}{2} \times 6$	3
23		raises labour productivity stimulates innovations creates new technologies raises the std of living of people (Any 3)	1×3	3
24		Inclusive or Exclusive class. → Drawing table with X, Tally mark, Frequency and Total	4	4
25		a) Growth of IT → High skill → English Proficiency (Any 3) → job opportunity b) <u>Areas</u> : Call centres, Music, R/ds recording, Teaching, Animation etc. (Any 2)	$1 \times 3 = 3$ $\frac{1}{2} \times 2 = 1$	4
26		Equation $= R = 1 - \frac{6 \sum O^2}{n^3 - n}$ Given = Ans = 0.8	1 2 1	4
27		Equation $R = \frac{L-S}{L+S}$ Coefficient $R = \frac{L-S}{L+S}$ Ans: $L-S = 50$, Co-efficient of $R = 0.71$	1×2 1 2	4

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
28		1) Land degradation 2) Bio diversity loss 3) Air Pollution 4) Water Pollution 5) Solid waste management	1x5	5
29		Equation Process Ans: 20.27	1 3 1	5
30		<u>Census Survey</u> → every unit of population <u>Merits</u>: Detailed data accurate data <u>Demerits</u>: Expensive time consuming <u>Sample Survey</u> → a part of population <u>Merits</u>: Accurate data low cost less time intensive enquiry (Any 5 points)	1x5	5
31		Drawing correct diagram and shading	5	5
32		a) <u>Causes of Poverty</u> (Any 4) b) <u>Alleviation Programmes</u> : I. Growth Oriented II. Food for work a. Self employment b. Wage employment (Any) III. Provision of basic amenities a. Food ppgm b. Social security	$\frac{1}{2} \times 4 = 2$ 1 2x2 2x2	8

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
33		<u>Mean</u>: Equation = $\frac{\sum fm}{N}$ Process & Ans = <u>39.6</u> <u>Median</u>: Equation: $L + \frac{\frac{N}{2} - cf}{f} \times h$ Process & Ans := <u>36.66</u> <u>Mode</u>: Equation = $L + \frac{D_1 \times h}{D_1 + D_2}$ Process & Ans := <u>28.57</u>	1 2 1 2 1 1	8
34		a) Use of Non-conventional energy b) Use of LPG in rural areas c) Use of CNG in urban " d) Mini hydel project e) Traditional knowledge and practices f) Bio-composting g) Bio-pest control	8	8