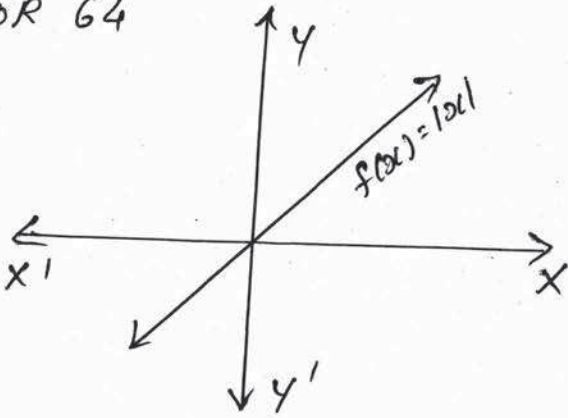


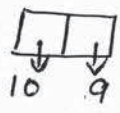
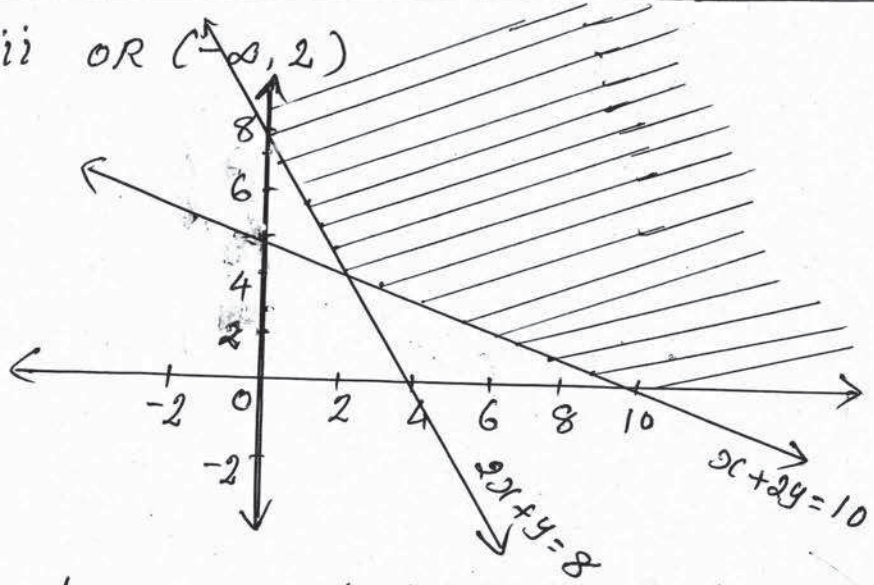
FIRST YEAR HIGHER SECONDARY EXAMINATION, MARCH 2016.
(Finalised Scheme of Valuation)

Subject: Mathematics (Commerce)

Code No: 353

Qn.No	Scoring Indicators	Split Score	Total Score
1 a)	iv OR Φ	1	
b)	$A \cap B = \{1, 2\}$ $A - B = \Phi$ $A - A \cap B = \{1, 2\} - \{1, 2\} = \Phi$ ∴ $A - B = A - A \cap B$.	1 1 1	
		3	
c)	$n(X \cup Y) = n(X) + n(Y) - n(X \cap Y)$ $50 = 28 + 32 - n(X \cap Y)$ $n(X \cap Y) = 10$	1 $\frac{1}{2}$ $\frac{1}{2}$	6
2. a)	ii OR 60°	1	5
b)	$\alpha = \frac{\pi}{3}$	1	
c)	$\cos \alpha = \cos \frac{\pi}{3}$ $\alpha = 2n\pi \pm \gamma$ $\alpha = 2n\pi \pm \frac{\pi}{3}, n \in \mathbb{Z}$	1 1 1	
	Remark: In 2(b) any correct value of α give full score. OR		
a)	i OR $\frac{1}{2}$	1	
b)	L.H.S = $1 \times \frac{1}{2} \times 2 - \sin(\pi - \frac{\pi}{6}) \times 2$ $= 1 - \frac{1}{2} \times 2$ $= 0$	1 1 1	

Qn.No	Scoring Indicators	Split Score	Total Score
	c) L.H.S = $\frac{28 \sin 2x \cdot \cos x}{2 \cos x} = 8 \sin 2x$ Remark: $8 \sin C + 8 \sin D = 28 \sin \frac{C+D}{2} \cos \frac{C-D}{2}$ give $\frac{1}{2}$ score	1	5
3.	a) $5^2 - 5 = 0$, divisible by 4. P(1) is true b) $5^k - 5$ is divisible by 4 c) P(k+1): $5^{k+1} - 5$ $5(5^k - 5) + 25 - 5$ $m(4) + 20$, divisible by 4.	1 1 1 1	4
4.	a) (i) A OR 6 (ii) 2^6 OR 64 b) (i)  (ii) Range = R Remark: For x, y axis, give $\frac{1}{2}$ score	1 1 2 1	5
5.	a) 2V OR 0 b) (i) — (d) (ii) $ z = 5$ (ii) — (e) OR (ii) $\bar{z} = 4 - 3i$ (iii) — (a) (iii) $-z = -4 - 3i$ (iv) — (c) (iv) $z^{-1} = \frac{4}{25} - \frac{3i}{25}$	1 1 1 1 1	5

Qn.No	Scoring Indicators	Split Score	Total Score
6. a)	iii OR $9!$ OR 362880 (b)  Total ways = $10 \times 9 = 90$ Remark: For idea of fundamental principle of counting or $10P_2$ give (2) mark ^{score}	1 1+1	3
7. a)	$\frac{5!}{2!3!}$ $= \frac{4 \times 5}{1 \times 2} = 10$ b) $20C_{11}$ OR 167960	1 1 1	3
8. a)	iii OR $(-2, 2)$ b)  Remark: For each line give $1\frac{1}{2}$ score. X, Y axis give $\frac{1}{2}$ score.	1 4	5
9. a)	iv OR 5 b) Middle Term = 3 rd Term $= nC_2 a^{n-2} b^2$ $= 4C_2 a^2 b^2$	1 1 $\frac{1}{2}$	

Qn.No	Scoring Indicators	Split Score	Total Score
	$= 4 C_2 (2x^2)^2 \left(-\frac{3}{2x}\right)^2$ $= 54 x^2$	1 $\frac{1}{2}$	4
10. a)	iii OR $\frac{4}{3}$	1	
b)	8, $x_1, x_2, x_3, x_4, x_5, 26$ are in A.P. $a_7 = 26 \implies \left. \begin{aligned} 8 + 6d &= 26 \\ d &= 3 \end{aligned} \right\}$	1 $\frac{1}{2}$	
	\therefore Required numbers are 11, 14, 17, 20, 23	$\frac{1}{2}$	
c)	$a_n = n(n+1) = n^2 + n$ $S_n = \sum_1^n (n^2 + n)$ $= \frac{n(n+1)(2n+1)}{6} + \frac{n(n+1)}{2}$	1 $\frac{1}{2}$ $\frac{1}{2}$	5
	OR		
a)	(i) 13 OR $\sqrt{3}$	1	
	ii) $a_6 = ar^5$	1	
	$= \sqrt{7} (\sqrt{3})^5 = 9\sqrt{21}$	1	
b)	$a_1 = S_1 = P + Q$	1	
	$a_1 + a_2 = S_2 = 2P + 4Q$		
	$S_2 - S_1 = a_2 = P + 3Q$	1	
	Remark: Formula for n^{th} term of G.P gives $\frac{1}{2}$ score		5

Qn.No	Scoring Indicators	Split Score	Total Score
11	a) iii OR $(1, -1)$ b) $3, -\frac{1}{3}$ c) $4 - 0 = -\frac{1}{3}(x-1)$ in remark. $x + 3y - 1 = 0$ For Formula give 1 score	1 1+1 2	5
12.	a) Centre = $(-4, 0)$ radius = 5 Remark: Give $\frac{1}{2}$ score for $(x-h)^2 + (y-k)^2 = r^2$ b) $a^2 = 400$ $b^2 = 100$ $a = 20$ (i) Length of major axis = $2a = 2 \times 20 = 40$ (ii) Length of Latusrectum = $\frac{2b^2}{a} = 10$ Remark: Formula for major axis and Latus rectum give $\frac{1}{2}$ each.	1 1 1 1	4
13.	a) i OR $(0, 0, -3)$ (b) $d = \sqrt{(3-0)^2 + (4-0)^2 + (0-0)^2}$ OR Formula $= 5$ units	1 1	3

Qn.No	Scoring Indicators	Split Score	Total Score
14. a)	ii OR 1	1	
b)	$\frac{dy}{dx} = -3 \operatorname{Cosec}^2 x - 5 \operatorname{Cosec} x \operatorname{Cot} x + 0$	1+1+1	
OR			
a)	iii OR $\frac{1}{2\sqrt{x}}$	1	
b)	$\frac{dy}{dx} = \frac{(x+2) \frac{d}{dx} (4x+3) - (4x+3) \frac{d}{dx} (x+2)}{(x+2)^2}$	1	
	$= \frac{(x+2) \cdot 4 - (4x+3) \cdot 1}{(x+2)^2}$	2	
	$= \frac{5}{(x+2)^2}$		
Remark: give (1) ^{score} for Quotient Rule			4
15. a)	It is false that $\sqrt{7}$ is a rational number		
	OR $\sqrt{7}$ is irrational.	1	
b)	Let $\sqrt{7} = \frac{p}{q}$, $q \neq 0$, p & q have no common factor.	1	
	$7q^2 = p^2$		
	$7q^2 = (7k)^2 = 49k^2$	1	
	$q^2 = 7p$		

Qn.No	Scoring Indicators	Split Score	Total Score
	<p>p & q have common factor 7, Hence a contradiction.</p>	1	4
16	<p>a) Mean, $\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$ $= \frac{150}{10} = 15$</p> <p>b) M.D = $\frac{\sum_{i=1}^n x_i - \bar{x} }{n}$ $= \frac{50}{10} = 5$</p> <p>Remark: For finding $x_i - \bar{x}$ give $\frac{1}{2}$ score.</p>	1 1 1 1	4
17	<p>a) C.V for Batsman A = $\frac{51}{\bar{x}_1} \times 100$ $= \frac{10.61}{49.4} \times 100$ $= 21.48$</p> <p>b) C.V for Batsman B = $\frac{8.32}{31.8} \times 100$ $= 26.16$</p> <p>c) Batsman A is more consistent.</p>	1 1 $1\frac{1}{2}$ $\frac{1}{2}$ 1	5

Qn.No	Scoring Indicators	Split Score	Total Score
18	<p>a) (i) $S = \{ HHH, HHT, HTH, THH, TTH, THT, THT, TTH, TTT \}$</p> <p>(ii) $\frac{3}{8}$</p> <p>(iii) $\frac{1}{8}$</p> <p>b) (i) $P(\text{red}) = \frac{26}{52} = \frac{1}{2}$</p> <p>(ii) $P(\text{diamond}) = \frac{13}{52} = \frac{1}{4}$</p> <p>(iii) $P(\text{ace of spade}) = \frac{1}{52}$</p> <p>Remark: For 18(a): Printing mistake the word 'win' instead of 'coin'. So give 3 score for relevant answer.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>6</p>