

**ANSWER KEY**

Code No	FY 451
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FIRST YEAR HIGHER SECONDARY EXAMINATION MARCH 2023

PART-I/II/III

SUBJECT: MATHEMATICS - COMMERCE

60 SCORES

2 HOURS

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
1	(i) (ii)	$A \cap B = \{2, 4\}$ Subsets of P = $\phi, \{a\}, \{\{b\}\}, \{a, \{b\}\}$ Remark: For each subset give $\frac{1}{2}$ score	1 2	3
2	(i) (ii)	$A = \{a, b\}$ , $B = \{x, y\}$ Domain of R = $\{a, b, c\}$	1+1 1	3
3	(i) (ii) (iii)	$2 - i$ $ \sqrt{3} i  = \sqrt{0^2 + (\sqrt{3})^2} = \sqrt{3}$ $i^{21} = i^{20} i^1 = 1 \times i = i$ Remark: (ii) $ z  = \sqrt{a^2 + b^2}$ ( $\frac{1}{2}$ Score) (i) $\bar{z} = a - ib$ ( $\frac{1}{2}$ score) (iii) $i^2 = -1$ ( $\frac{1}{2}$ Score)	1 1 1	3
4		$5x - 3x \leq 2 - 4$ $2x \leq -2$ $x \leq -1$ 	1 1/2 1/2 1	3
5	(i) (ii)	$\frac{8!}{6! 2!} = \frac{7 \times 8}{2} = 28$ $n = 9, A's - 4, L's - 2$ Number of permutations = $\frac{9!}{4! \times 2!}$ $= 7560$ Remark: $\frac{n!}{P_1! P_2! \dots P_r!}$ give $\frac{1}{2}$ score	1/2 + 1/2 1 1	3





Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score																																																		
16		<table border="1"> <thead> <tr> <th><math>x_i</math></th> <th><math>f_i</math></th> <th><math>cf</math></th> <th><math> x - m </math></th> <th><math>f_i x_i - m </math></th> </tr> </thead> <tbody> <tr> <td>3</td> <td>3</td> <td>3</td> <td>10</td> <td>30</td> </tr> <tr> <td>6</td> <td>4</td> <td>7</td> <td>7</td> <td>28</td> </tr> <tr> <td>9</td> <td>5</td> <td>12</td> <td>4</td> <td>20</td> </tr> <tr> <td>12</td> <td>2</td> <td>14</td> <td>1</td> <td>2</td> </tr> <tr> <td>13</td> <td>4</td> <td>18</td> <td>0</td> <td>0</td> </tr> <tr> <td>15</td> <td>5</td> <td>23</td> <td>2</td> <td>10</td> </tr> <tr> <td>21</td> <td>4</td> <td>27</td> <td>8</td> <td>32</td> </tr> <tr> <td>22</td> <td>3</td> <td>30</td> <td>9</td> <td>27</td> </tr> <tr> <td></td> <td>30</td> <td></td> <td></td> <td>149</td> </tr> </tbody> </table> <p>Median = <math>\frac{13+13}{2} = 13</math></p> <p>MD = <math>\frac{1}{30} \times 149 = 4.97</math></p> <p>Remark: Table upto cumulative frequency give 1 score</p>	$x_i$	$f_i$	$cf$	$ x - m $	$f_i x_i - m $	3	3	3	10	30	6	4	7	7	28	9	5	12	4	20	12	2	14	1	2	13	4	18	0	0	15	5	23	2	10	21	4	27	8	32	22	3	30	9	27		30			149	<p><math>2\frac{1}{2}</math></p> <p>1</p> <p><math>\frac{1}{2}</math></p>	4
$x_i$	$f_i$	$cf$	$ x - m $	$f_i x_i - m $																																																		
3	3	3	10	30																																																		
6	4	7	7	28																																																		
9	5	12	4	20																																																		
12	2	14	1	2																																																		
13	4	18	0	0																																																		
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21	4	27	8	32																																																		
22	3	30	9	27																																																		
	30			149																																																		
17	<p>(i)</p> <p>(ii)</p> <p>(iii)</p>	<p><math>a_5 = 2^5 + 1 = 33</math></p> <p><math>a_8 = a r^{8-1} = 1 \times 3^7 = 3^7 = 2187</math></p> <p><math>S_n = 8 + 88 + 888 + \dots + n \text{ terms}</math>  <math>= 8(1 + 11 + 111 + \dots + n \text{ terms})</math>  <math>= \frac{8}{9}(9 + 99 + 999 + \dots + n \text{ terms})</math>  <math>= \frac{8}{9}(10 + 100 + 1000 + \dots - n)</math>  <math>= \frac{8}{9}\left(\frac{10(10^n - 1)}{9} - n\right)</math></p> <p>Remark</p> <p>(ii) <math>a_n = ar^{n-1}</math> give <math>\frac{1}{2}</math> score</p> <p>(iii) <math>S_n = \frac{a(r^n - 1)}{r - 1}</math> 1 score</p>	<p>1</p> <p>2</p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p>1</p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p>	6																																																		



6/6

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
20	(i)	$P(A \text{ or } B) = P(A \cup B)$ $= P(A) + P(B) - P(A \cap B)$ $= \frac{1}{3} + \frac{1}{2} - \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$	$\frac{1}{2}$ 1 $\frac{1}{2}$	6
	(ii)	$P(\text{not } A) = P(A') = 1 - P(A) = \frac{2}{3}$	$\frac{1}{2} + \frac{1}{2}$	
	(iii)	$P(\text{not } A \text{ and not } B) = P(A' \cap B') = P(A \cup B)'$ $= 1 - P(A \cup B) = 1 - \frac{2}{3} = \frac{1}{3}$	$\frac{1}{2}$ $\frac{1}{2}$	
	(iv)	$P(A \text{ and not } B) = P(A \cap B') = P(A) - P(A \cap B)$ $= \frac{1}{3} - \frac{1}{6} = \frac{1}{6}$	$\frac{1}{2}$ $\frac{1}{2}$	
		<ol style="list-style-type: none"> <li>Subhash. K.K (209441) - 9496418185 <i>Sudhan</i></li> <li>Raveendran M.P (412995) - 9847559383 <i>Raveendran</i></li> <li>Prakash. K (412432) - 9447381485 <i>K. Prakash</i></li> <li>Manojkumar P (412611) - 9447236288 <i>Manojkumar</i></li> <li>Elizabeth Mathew (195216) - 9447809799 <i>Elizabeth</i></li> </ol>		