



**ZIAUDDIN UNIVERSITY**  
EXAMINATION BOARD

**RESOURCES FOR  
“HSC-I BUSINESS  
MATHEMATICS”**

**ZUEB EXAMINATIONS 2021**



**PREFACE:**

The ZUEB examination board acknowledges the serious problems encountered by the schools and colleges in smooth execution of the teaching and learning processes due to sudden and prolonged school closures during the covid-19 spread. The board also recognizes the health, psychological and financial issues encountered by students due to the spread of covid-19.

Considering all these problems and issues the ZUEB Board has developed these resources based on the condensed syllabus 2021 to facilitate students in learning the content through quality resource materials.

The schools and students could download these materials from [www.zueb.pk](http://www.zueb.pk) to prepare their students for the high quality and standardized ZUEB examinations 2021.

The materials consist of examination syllabus with specific students learning outcomes per topic, Multiple Choice Questions (MCQs) to assess different thinking levels, Constructed Response Questions (CRQs) with possible answers, Extended Response Questions (ERQs) with possible answers and learning materials.

**ACADEMIC UNIT ZUEB:**

## 2. Constructed Response Questions (CRQs)

## HOW TO ATTEMPT CRQs:

- Write the answer to each Constructed Response Question/ERQs in the space given below it.
- Use black pen/pencil to write the responses. Do not use glue or pin on the paper.

## SECTION B (SHORT ANSWER QUESTIONS)

**1. If  $\log_{10} 2 = 0.3010$ ,  $\log_{10} 3 = 0.4771$ ,  $\log_{10} 5 = 0.6990$  then find the value of  $\log_{10} 30$ ?**

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

S.NO	CRQ	ANSWER	CL	DL
1.	<i>If <math>\log_{10} 2 = 0.3010</math>, <math>\log_{10} 3 = 0.4771</math>, <math>\log_{10} 5 = 0.6990</math> then find the value of <math>\log_{10} 30</math></i>	2.1303	K/A	M
2.	<i>400 persons had a food stock for 6 days .How many persons should leave so that the same food is sufficient for 8 days</i>	1000 men	K/A	E
3.	<i>Evaluate <math>x + y - z</math> when  <math>x = 8l^5 - 3l^3 + 6l^2 - 1</math>  <math>y = 7l^4 - 8l^3 - 6l^5 + 2</math>  <math>z = -3l^5 - 2l^3 + 4l^4 + 8 - 2l^2</math></i>	$5l^5 - 4l^4 - 9l^3 + 2l - 7$	K/A	E
4.	<i>Simplify <math>(x^3 - 64) \div (4x + x^2 + 16)</math></i>	$x - 4$	K/A	M
5.	<i>Find the continued product of <math>(3a - 4b)(9a^2 + 16b^2)(3a + 4b)</math></i>	$81a^4 - 256b^4$	K/A	M

6.	Find the slope of the line segment CD while the coordinates of 'C' and 'D' are (5,1) and(2,6) respectively	$m = -\frac{5}{3}$	K/A	M												
7.	In Arabic 8 students secured 48,16,10,45,12,36,5 and 35 marks , find their median	34	K/A	E												
8.	Factorize (i) $3x^2 -30x-72$ (ii) $25x^4y^4-10x^2y^2+1$	(i) $3(x - 12)(x + 2)$ (ii) $(5x^2y^2 - 1)^2$	K/A	E												
9.	A circle of 6 cm radius. Find the length of a 60° arc of the circle and also the area of the sector of the same angle.	6.3cm (approx), 18.8 sq.cm.	K/A	M												
10.	Convert the following numbers into those of Decimal System: (i) $201_5$ (ii) $10203_5$	i. 58 ii. 678	K/A	M												
11.	Solve: $11101_2 \times 110_2 \times 1010_2 \times 111_2$	$11110100_2$	K/A	M												
12.	Check yourself and find that which of the properties of R do the sets Q, Z, W and N possess?		K/A	E												
13.	Simplify: $\frac{a^9b^7}{a^3b}$	$a$	K/A	E												
14.	Find the anti-logarithms of the following: (i) 1.9445 (ii) $\overline{2}.1476$	(i) 88 (ii) 0.07440	K/A	M												
15.	The measurements (in decimeters) of the sizes of the children of a school are given in the table below. Find the A.M of their sizes. <table border="1"><tr><td>Size (in decimeters)</td><td>Number of Children</td></tr><tr><td>6.1 to 6.5</td><td>100</td></tr><tr><td>6.6 to 7.0</td><td>300</td></tr><tr><td>7.1 to 7.5</td><td>400</td></tr><tr><td>7.6 to 8.0</td><td>500</td></tr><tr><td>8.1 to 8.5</td><td>100</td></tr></table>	Size (in decimeters)	Number of Children	6.1 to 6.5	100	6.6 to 7.0	300	7.1 to 7.5	400	7.6 to 8.0	500	8.1 to 8.5	100	7.4 decimetres	K/A	M
Size (in decimeters)	Number of Children															
6.1 to 6.5	100															
6.6 to 7.0	300															
7.1 to 7.5	400															
7.6 to 8.0	500															
8.1 to 8.5	100															
16.	8 persons work in a general store whose monthly wages (in rupees) are 300,250,275,300,300,250,340. Find the mod of their wages.	300	K/A	M												
17.	The distance between Lahore and Rawalpindi is 290kilometres. A train runs 48 kilometers per hour. What time would it take to cover this distance?	6 hrs, 2 mins, 30 sec	K/A	E												
18.	400 Persons had a food stock for 6 days. How many persons should leave so that the same food is sufficient for 8 days?	1000 men	K/A	E												

19.	A, B and C invested 3000 rupees 3250 rupees and 3500 in a joint business. After a year they gained a profit of 7240 rupees. Find the share of each one if A got 1000 rupees out of profit money for acting as manager.	A: Rs.1920 B: Rs.2080 C: Rs.2240	K/A	M
20.	Annual income of a person from salary is 39145 rupees and the annual income from other sources is 6455 rupees. Find his income tax for the year when he has paid Rs.300 to Zakat fund and Rs.200 to wealth tax.	Rs.60	K/A	M
21.	A factory owner fixed the following rated of commission: 15% commission on goods, the worth of which is upto 15,000 rupees; 20% on goods, the worth of which is more than 15,000 rupees. An agent bought goods Rs.26,500. Find his commission.	Rs.4550	K/A	M
22.	Simplify: (i) $(2x + 3y - 4z) - (3y - 6x + 5z + (x - y - z))$ (ii) $(6a - 3b + 4c + 8d) - (3a + 11b + 3c + 8d)$	(i) $-3x + 5y$ (ii) $3a - 14b + c$	K/A	E
23.	Evaluate $-3P + 2Q - R$ , when $P = -3x^3 + 4x^2 - 1$ $Q = -7x + 2x^3 - 8$ $R = x^3 - x^2 + x - 1$	$12x^3 - 11x^2 - 15x - 12$	K/A	E
24.	Simplify: $(16y^8z^5 - 48y^7z^6 - 141y^3z^4) \div (8y^2z^4)$	$2y^6z = 6y^5z^2 - 18y$	K/A	M
25.	Find the value of $x^4 + \frac{1}{x^4}$ , when $x - \frac{1}{x} = 1$ .	7	K/A	M
26.	Evaluate with the help of a formula: $(3.65)^2 + 2 \times 3.65 \times 2.35 + (2.35)^2$	36	K/A	M
27.	Find the value of $x^3 + y^3$ when $x + y = 5$ and $xy = 6$ .	35	K/A	E
28.	Express in the form of a cube (orally). (i) $x^3 + 3x^2, 4y + 3, x, (4y)^2 + (4y)^3$ .	Orally	K/A	E
29.	Simplify with the help of formulae (orally) (i) $(c + d)(c^2 - cd + d^2)$ (ii) $(x - y)(x^2 + xy + y^2)$	Orally	K/A	M
30.	Evaluate with the help of a formula $\frac{(416)^3 + (84)^3}{(416)^2 - 416 \times 84 + (84)^2}$	500	K/A	M
31.	Which of the following matrices are equal? $A = \begin{bmatrix} 2 & -3 \\ 4 & 5 \end{bmatrix}, B = \begin{bmatrix} 1-1 & 0-3 \\ 4 & 10-5 \end{bmatrix}$ $C = \begin{bmatrix} 1+1 & 3-6 \\ 2+2 & 1+4 \end{bmatrix}, D = \begin{bmatrix} 0 & -3 \\ 4 & 5 \end{bmatrix}$	A, C and E are equal matrices B and D are equal matrices.	K/A	M

	$E = \begin{bmatrix} 4 \div 2 & 6\left(-\frac{1}{2}\right) \\ 3 + 1 & 5 \times 1 \end{bmatrix}$			
32.	If $A = \begin{bmatrix} 5 & -6 \\ 7 & 2 \end{bmatrix}$ , prove that $OA = AO$ , where $O$ is a null matrix.	Prove That	K/A	E
33.	Solve the simultaneously equation. $3x = 5 - 4y$ $5y = 8 - 2x$	$\{(-1, 2)\}$	K/A	E
34.	A rod is folded in such a way that it makes an angle of $45^\circ$ . In order to make it straight what will be the measure of the angle?	$135^\circ$	K/A	M
35.	With reference of figure state the kinds of the following pairs of angles: (i) $\angle 1, \angle 3$ (ii) $\angle 3, \angle 4$ (iii) $\angle 3, \angle 7$ (iv) $\angle 4, \angle 6$ (v) $\angle 1, \angle 7$ .	(i) Vertical angle (ii) Adjacent angle (iii) Corresponding angle (iv) Alternate angle (v) Exterior alternate angles	K/A	M
36.	In the adjoining figure are shown a quadrilateral $ABCD$ and four triangles $PAB, PBC, PCD, PDA$ . Which pair of triangles appears to be congruent? Also name the relevant corresponding in which a pair is congruent.	$\triangle PBC \leftrightarrow \triangle PDA$ $\triangle PBA \leftrightarrow \triangle PCD$ , $\triangle ADC \cong \triangle CBA$ $\triangle BAD \cong \triangle DCB$ .	K/A	M
37.	Prove that a diagonal of a rectangle divides it into two congruent triangles.	Prove that	K/A	E
38.	Elements of which of the following sets can represent the lengths of the sides of the right-angled triangles? $A = \{5, 6, 7\}, B = \{2.5, 6, 6.5\}$ $C = \{1, 10, 3\sqrt{11}\}, D = \{1, 1, \sqrt{2}\}$	$B, C, D$	K/A	E
39.	Find the lengths of $\overline{AC}, \overline{AB}, \overline{BD}$ and $\overline{DC}$ with reference to the following figure.	$AC = 10, AB = 5\sqrt{2}$ , $DC = 5\sqrt{3}, BD = 5$ .	K/A	M
40.	$\overline{AB}$ is parallel to the $x$ -axis. What is its slope?	zero	K/A	M
41.	The radius of a circle is 5cm. A chord is at a distance of 4cm from the centre. Find the length of the chord.	6 cm	K/A	M
42.	Find the area of a $120^\circ$ sector and the length of the corresponding arc of a circle of radius 9m.	84.8sq.m , 18.8m.	K/A	E

