ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

RESOURCES FOR

"HSC-II 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 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:

1. **Extended Response Questions (ERQs)**

HOW TO ATTEMPT ERQs:

- 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 C (LONG ANSWER QUESTIONS)

1. **Write notes on transport in a) Hydra b) Planaria and explain the double circuit plan.**

S.#	ERQ	ANSWER	CL	DL
	EXERCISE 1.7			
1.	Find $\lim\limits_{x \to a} f(x), where$ $f(x) = \left(1 + \dfrac{3}{t}\right)^t$	e^3	K/A	M

S#	CRQ	ANSWER	CL	DL
	EXERCISE 2.4			
2.	Prove that if the diagonals of a parallelogram are perpendicular the figures is a rhombus.	PROOF	K/A	M

S#	CRQ	ANSWER	CL	DL
	EXERCISE 3.1			
3.	Find the equation of the two straight line: i. Passing through (2, -1) and making acute angles of 45º / $\dfrac{\pi}{4}$ radian with the line 6x+5y=0 ii. Passing through (3, -2) and inclined at 60º to the line $\sqrt{3}$x+y=1	i. x+11y+9=0 11x-y-23=0 ii. y+2=0 $\sqrt{3x} + y + 2 - \sqrt{3} = 0$	K/A	E

S#	CRQ	ANSWER	CL	DL
	EXERCISE 4.4			
4.	Find the third derivative of the function $f : \mathbb{R}^o \to \mathbb{R}$ where f is given by: $f(x) = \dfrac{2x^2 - 3x + 5}{x^3}$	$72x^{-5} - 300x^{-6} - 12x^{-4}$	K/A	E

S#	CRQ	ANSWER	CL	DL
	EXERCISE 5.3			
6.	Let $f : (a, b) \to \mathbb{R}$ be a function. Find all the extreme values of f in the following cases: $f(x) = \dfrac{x-1}{x+1}$ a= $-\dfrac{1}{2}$, b=5	Since $f(x) = 0, \forall x \in \left(\dfrac{1}{2}, 5\right) so, there\ is\ no\ extreme\ value\ point$	K/A	M

S#	CRQ	ANSWER	CL	DL
	EXERCISE 6.3			
7.	Determine: $\int (sec4x - 1)^2\, dx$	$\dfrac{1}{4} tan4x - \dfrac{1}{2} lntan\left(2x + \dfrac{\pi}{4}\right) + x + C$	K/A	E

S#	CRQ	ANSWER	CL	DL
		EXERCISE 6.9		
8.	Find the following integrals: $$\int \frac{x^2 + 2x + 3}{x^2 - 3x + 2} dx$$	$x - 6 \ln (x - 1) + 11 \ln (x - 2) + C$	K/A	E

S#	CRQ	ANSWER	CL	DL
		EXERCISE 7.1		
9.	Find the equation of the circle concentric with the circle $x^2 + y^2 + 6x - 10y + 33 = 0$ and touching the line y=0	$x^2 + y^2 + 6x - 10y + 9 = 0$	K/A	D

S#	CRQ	ANSWER	CL	DL
		EXERCISE 8.4		
10.	If $y = \sqrt{5}\, x + k$ is a tangent to the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$, what if k?	K=±7	K/A	D