FEDERAL REPUBLIC OF SOMALIA

GRADE 12 EXAMS, 2021

MATH

OFFICE OF EXAMINATIONS AND CERTIFICATION

SomExams

Somali Federal Ministry of Education, Culture & Higher Education

Form Four National Standardized Examinations.

MAY / JUNE 2021

MATH EXAMINATION

TIME 2 HOURS

INSTRUCTION: Answer all questions in the **ANSWER BOOKLET**

Part one: Circle the correct letter for the following choices

(2 marks each question, 40 marks Total)

1	The exact value of sin 15° is:			
	(a) $\frac{\sqrt{6}-\sqrt{2}}{4}$	(b) $\frac{\sqrt{6}+\sqrt{2}}{4}$	(c) $\frac{-\sqrt{6}-\sqrt{2}}{4}$	(d) $\frac{\sqrt{6}-\sqrt{2}}{4}$
2	If $\cos 2\theta = \frac{4}{5}$ the value of $\sin\theta$ in quadrant II equals			
	(a) $\frac{\sqrt{10}}{5}$	(b) $\frac{\sqrt{10}}{10}$	(c) $\frac{5}{10}$	(d) $\frac{9}{5}$
3	The imaginary and real parts of the complex number $3 + 9i$ are respectively:			
	(a) 3, 9	(b) 9, 3	(c) 3, $9i$	(d) 3, -9i
4	$(3 + 2i)(4 - 2i) =$:			
	$2 + 16i$	(b) $-16 - 2i$	(c) $6 - 2i$	(d) $16 + 2i$
5	In the national form IV mathematics examination, candidates are asked to solve six out of ten probability questions. How many possible combinations of six questions could you choose?			
	(a) 115200	(b) 151200	(c) 210	(d) 151210
6	Grade 12 mathematics contains seven chapters with their lessons 6, 7, 8, 4, 5, 7 and 3; hence the average of the lessons is			
	(a) 5.71	(b) 280	(c) 7	(d) 40

7	If the marks of 4 students are 25, 54, 54, 67, the range is:			
	(a) 45	(b) 48	(c) 30	(d) 42
8	1. If a coin is tossed, then the sample space is 			
	(a) Two heads	(b) two tails	(c) head and tail	(d) one tail
9	The limit of $f(x) = x^2 + 4x - 1$ at $x = 1$ is:			
	(a) -4	(b) 4	(c) 2	(d) -2
10	$\lim_{x \to 2} 7$ is:			
	(a) -6	(b) -7	(c) 7	(d) 4
11	The derivative of $f(x) = 20$, is :			
	(a) 20	(b) $20x$	(c) 0	(d) $40x$
12	The differentiation of $g(x) = \frac{x+1}{x-4}$ is:			
	(a) $\frac{x}{(x-4)^2}$	(b) $\frac{-5}{(x-4)^2}$	(c) $\frac{-4}{(x-4)^2}$	(d) $\frac{-1}{(x-4)^2}$
13	To derive $y = 2sinx - 3secx$ equals:			
	(a) $4cosx - 6cscx$	(b) $cosx - secxtanx$	(c) $2 - 3cscx$	(d) $2cosx - 3secxtanx$
14	The equation of the tangent line to the graph of $f(x) = x^2 - 4x + 6$ at $x = 1$ is			
	(a) $y = -2x + 5$	(b) $y = -5x - 2$	(c) $y = -x + 5$	(d) $y = -4x + 5$
15	The integrand of $\int dx$ is:			
	(a) $3x + c$	(b) $x + c$	(c) $\frac{3x^2}{2}$	(d) $3+c$

16	The $\int \frac{1}{x} dx$ is:			
	(a) lnx	(b) $lnx + c$	(c) $\ln \frac{1}{x}$	(d) lnx^{-1}
17	The second derivative of $f(x) = (3x + 2)^{10}$:			
	(a) $30(3x + 2)^9$	(a) $810(3x + 2)^8$	(b) $270(3x + 2)^8$	(c) $10(3x + 2)^8$
18	Probability of getting a 5 from throwing a dice is:			
	(b) $\frac{1}{4}$	(d) $\frac{2}{6}$	(e) $\frac{1}{6}$	(f) $\frac{3}{4}$
19	The set of all possible outcomes of an experiment is called:			
	(c) Sample space	(g) event	(h) subsets	(i) element
20	In how many ways can we arrange the three books (mathematics, physics, and chemistry) on a shelf?			
	(d) 12 ways	(j) 14 ways	(k) 6 ways	(l) 3 ways

Part two: Structured Questions (60 Marks)

No	Question	Marks
1	Find $\cos(A+B)$ having $\sin A = \frac{4}{5}$ and $\sin B = \frac{12}{13}$ in the quadrant I	5
2	Using identities to find exact value of $\cos 40° \cos 50° - \sin 40° \sin 50°$.------	6
3	Verify that $\tan x \sin 2x = 2\sin^2 x$.----------	3
4	Solve the equation$x^2 - 4x + 24 = 0$._____	3
5	Find the modulus and argument of $1 - \sqrt{3}i$ _____	4
6	Find the Conjugate of $-10 - 10i$ _____	5
7	Simplify i^{17}_____	4
8	work out : $(1 + 3i) + (6 - 5i)$_____	4
9	A group of 4 adults and 3 childeren are to be formed from 8 adults and 5 childeren. How many possible groups are there._____	5
10	A bag contains 8 black balls and 4 white balls. If two balls are drawn from the bag, one at a time, find the probability of drawing a black ball followed by a white ball without replacement_____	5
11	Given the following set of values relating to grade 12 mathematics chapters, and lessons 6, 7, 8, 4, 5, 7 and 3. Find the mean, variance and standard deviation__	6
12	Find the derivative of $g(x) = (3x - 1)(2x + 4)$._____	5
13	Find the area under the curve $y = x^2 + 2$ between $x = 1$ *and* $x = 3$.___	5

END