**LORAL INT’L SECONDARY SCHOOL**

**IGBESA/FESTAC 1ST TERM EXAMINATION 2015/2016**

**SUBJECT: MATHEMATICS CLASS: S.S.S. 3 TIME: 2HRS**

***OBJECTIVE TEST***

***INSTRUCTION: Answer all the questions***

***Mathematical tables may be used in any question***

***Now, answer the following questions***

1. Correct 0.005854 to 2 significant figures (a) 0.0058 (b) 0.0059 (c) 0.0060 (d) 0.0100. ESTIMATION A& APPROX
2. Simplify: 3½ - 11/3 x 25/8 (a) 0 (b) ½ (c) 1 (d) 2.
3. Find the sum of 3035 and 1045. (a) 4125 (b) 4025 (c) 2445 (d) 1445. NUMBER BASE
4. If 2√5 + √125 - √45 + 4 = a + b√c, evaluate (2a-b). (a) 8 (b) 4 (c) 2 (d) 0. SURD
5. A petrol tank will take a factory 30 week when it uses 150 litres per day. How many weeks will it take the factory if it decides to use 500 litres per day? (a) 30 (b) 25 (c) 15 (d) 100

MEASUREMENT & SOLIDS

1. The nth term of the sequence 5, 8, 11 \_\_\_\_\_\_\_\_\_ is 383. Find n. (a) 125 (b) 126 (c) 127 (d) 194. SEQUENCE
2. A quantity z varies directly as the square root of x and inversely as the cube of s. if z = 8. When x = 4 and s = ½, express z in term of x and s (a) z = 2√x/S3 (b) z = √x/S3 (c) z = 2s3/√x (d) z = √x/2s3. VARIATION
3. If 3x – y = 5 and 2x + y = 15, evaluate x2 + 2y (a) 29 (b) 30 (c) 42 (d) 35. ALGEBRAIC PROCESS.
4. What is gradient of the line joining point [2, 5] and [5, 14]? (a) 5 (b) 4 (c) 3 (d) 2. COORDINATE GEOMETRIC
5. A car covers 180m in [t-1] seconds and 324m in [t + 3] seconds. If it is travelling at a constant speed, calculate the value of *t*. (a) 8 (b) 6 (c) 5 (d) 4. ALGEBRAIC PROCESS

In the diagram PR is a diameter, |PQ| = 15cm and |QR| = 8cm. Use the information to answer question 11 and 12.

P

R

Q

15cm

8cm

CIRCLE GEOMETRY

1. Calculate the area of triangle PQR. (a) 23cm2 (b) 60cm2 (c) 68cm2 (d) 120cm2. GEOMETRY
2. Calculate the perimeter of the semi circle of radius 21cm [Take  = 22/7] (a) 66cm (b) 47cm (c) 60cm d.35cm
3. A bicycle wheel covers 100cm in one revolution. Find in terms of , the radius of the wheel. (a) 50/cm (b) 100/cm (c) 50cm (d) 100cmm. MENSURATION

R

S

T

P

730

Q



CIRCLE GEOMETRY

In the diagram, TP is a tangent to the circle PQRS and <RPT = 730. Find <PQR. (a) 1460 (b) 1340 (c) 1130 (d) 1070.

1. If sin x = 1/3, 00 < x < 900, calculate the value of cos x. (a) 1/8 (b) 2/5 (c) √2/3 (d) 2√2/3. TRIGONOMETRY
2. A ship sails 5km due west and them 77m due south. Find, correct to the nearest degree, its bearing from the original position. (a) 0550 (b) 0560 (c) 2150 (d) 2160. BEARING
3. The semi-interquartile range of a distribution is 20. If the upper quartile is 96, find the lower quartile. (a) 56 (b) 50 (c) 46 (d) 40.STATISTICS
4. The sum of the interior angles of an n-sided polygon is 16200. Find n. (a) 9 (b) 10 (c) 11 (d) 12.MESURATION & GEOMETRY

L

N

M



130o

In the diagram, 0 is the centre of the circle, LM is a tangent and angle MON is 1300. Find the size of angle OLM. (a) 650 (b) 500 (c) 450 (d) 400. CIRCLE GEOMETY

1. IF ½p + q = 1 and p – ½q = 7, Find (p + q). (a) -8 (b) -4 (c) 4 (d) 8. ALGEBRAIC PROCESS
2. Simplify: 1/x + 5 – 2(x + 2)/x2 – 25 (a) x + 9/x2 – 25 (b) x – 9/x2 – 25 (c) –x + 9/x2 – 25 (d) –x – 9/x2 – 25.
3. The ratio of the area of the base of a cylinder to the curved surface area of the cylinder is 1:4. If the radius of the cylinder is 4cm, find the height of the cylinder. (a) 1cm (b) 2cm (c) 4cm (d) 8cm.
4. Find the common factors of (9r2 – 16s2) and (12r + 16s). (a) 4(3r + 4s) (b) 4(3r - 4s) (c) 3r – 4s) (d) (3r + 4s).
5. The height of a triangular prism is 6cm. if the cross section of the prison is an equilateral triangle of side 8cm, find its volume. (a) 96√3cm3 (b) 64√3cm3 (c) 32√3cm3 (d) 16√3cm3.
6. The interior angles on the same side of a transversal on two parallel lines are (a) equal (b) obtuse (c) complementary (d) supplementary.
7. The average of 5 numbers is 40six. Find the sum of the numbers in base six. (a) 200six (b) 260six (c) 300six (d) 320six.
8. If 5x = n, express 25x-1 in terms of n. (a) 25n2 (b) 5 + n2 (c) 25 + n2 (d) 5n2.
9. Simplify: m2 – n2/n – m (a) m + n (b) –m – n (c) –m + n (d) m – n.
10. Find the dimensions of a rectangle whose perimeter and area are 46cm and 112cm2, respectively. (a) 16cm by 7cm (b) 17cm by 6cm (c) 14cm by 9cm (d) 12cm by 11cm.
11. Given that p = {2, 4, 6, 7} and Q = {1, 2, 4, 8}. If a number is selected at random from pUQ, find the probability that it is only in set p. (a) 2/3 (b) ½ (c) 1/3 (d) 1/6.
12. If {x: 2 ≤ x ≤ 18; x  integer} and 7 + x = 4 (mod 9), find the highest value of x. (a) 2 (b) 5 (c) 15 (d) 18.
13. The sum of 110112, 111112 and 100002. Find the values of m and n. (a) m = 0, n = 0 (b) m = 1, n = 0 (c) m = 0, n = 1 (d) m = 1, n = 1.
14. A trader bought an engine for $15,000.00 outside Nigeria. If the exchange rate is $0.075 to N1.00, how much did the engine cost in naira? (a) N250,000.00 (b) N200,000.00 (c) N150,000.00 (d) N100,000.00.
15. If 27x x 31-x/92x = 1, find the value of x. (a) 1 (b) ½ (c) -½ (d) -1.
16. Find the 7th term of the sequence: 2, 5, 10, 17, 26, \_\_\_\_\_\_\_\_\_ (a) 37 (b) 48 (c) 50 (d) 63.
17. Given that logx 64 = 3, evaluate x log28. (a) 6 (b) 9 (c) 12 (d) 24.
18. If 2n = y, find 2 (2 + n/3) (a) 4y1/3 (b) 4y-3 (c) 2y1/3 (d) 2y-3.
19. Factorize completely : 6ax – 12by – 9ay + 8bx. (a) (2a – 3b)(4x + 3y) (b) (3a + 4b)(2x - 3y) (c) (3a – 4b)(2x + 3y) (d) (2a + 3b)(4x – 3y).
20. Find the equation whose roots are ¾ and -4. (a) 4x2 – 13x + 12 = 0 (b) 4x2 – 13x – 12 = 0 (c) 4x2 + 13x – 12 = 0 (d) 4x2 + 13x + 12 = 0.
21. If m = 4, n = 9 and r = 16, evaluate m/n – 17/9 + n/r. (a) 15/16 (b) 11/16 (c) 5/16 (d) -37/48.
22. Adding 42 to a given positive number gives the same result as squaring the number. Find the number. (a) 14 (b) 13 (c) 7 (d) 6.
23. Ada draws the graphs of y = x2 – x – 2 and y = 2x – 1 on the same axes. Which of these equations is she solving? (a) x2 – x – 3 = 0 (b) x2 – 3x – 1 = 0 (c) x2 – 3x – 3 = 0 (d) x2 + 3x – 1 = 0.
24. The volume of a cone of height 3cm is 38½cm3. Find the radius of its base. [Take  = 22/7] (a) 3.0cm (b) 3.5cm (c) 4.0cm (d) 4.5cm.
25. A sector of a circle with radius 6cm subtends an angle of 600 at the centre. Calculate its perimeter in terms of . (a) 2( + 6)cm (b) 2( + 3)cm (c) 2( + 2)cm (d) ( + 12)cm.
26. The dimensions of rectangular tank are 2m by 7m by 11m. If its volume is equal to that of a cylindrical tank of height 4cm, calculate the base radius of the cylindrical tank. [Take  = 22/7]. (a) 14m (b) 7m (c) 3½m (d) 1¾m.
27. Given that tan x = 2/3, where 00 ≤ x ≤ 900, find the value of 2 sin x. (a) 2√13/13 (b) 3√13/13 (c) 4√13/13 (d) 6√13/13.
28. PQRS is a square. If X is the midpoint of PQ, calculate, correct to the nearest degree, <PXS. (a) 530 (b) 550 (c) 630 (d) 650.
29. The angle of elevation of an aircraft from a point K on the horizontal ground is 300. If the aircraft is 800m above the ground, how far is it from K? (a) 400.00m (b) 692.82m (c) 923.76m (d) 1,600.00m.
30. The population of students in a school is 810. If this is represented on a pie chart, calculate the sectoral angle for a class of 72 students. (a) 300 (b) 450 (c) 600 (d) 750.
31. The scores of twenty students in a test are as follows: 44, 47, 48, 49, 50, 51, 52, 53, 53, 54, 58, 59, 60, 61, 63, 65, 67, 70, 73, 75. Find the third quartile. (a) 62 (b) 63 (c) 64 (d) 65.

1

√3+2

1. Simplify in the form a + b√3. (a) 2-√3 (b) -2-√3 (c) 2+√3 (d) -2+√3.
2. Simplify √147 - √75 + √12 (a) 14√3 (b) 2√3 (c) 4√3 (d) 28√3.
3. Evaluate √243 – 3/√3 (a) 9√3 (b) 4√3 (c) 2√3 (d) 8√3.

-x

4x

2

1

3

4

3x-5

4

1. If = find the value of x. (a) 5 (b) 2 (c) -2 (d) -5.
2. If = where is the value of r? (a) -3/8 (b) 3/8 (c) 5/8 (d) ¼.

-2

2

1

3

p

r

q

-s

-1

0

0

1

1

3

-1

0

4

0

-1

5

1

1. If P = then /p/ is (a) 4 (b) 8 (c) -8 (d) 0.

1

3

1

y

x

1

x

1

1. Solve for x and y = (a) x = 3, y = 8 (b) x = 8, y = 3 (c) x = 3, y = -8 (d) x = 8, y = -3.

log108

log104

2

10

1. Simplify: (a) log (b) 3/2 (c) 2 (d) log1032.

6

2

1. Evaluate: log2 96 – 2log (a) 3 – log2 3 (b) log8-log3 (c) log5 (d) log24.
2. Solve for x: Log (x + 1) + log (x – 2) = 1 (a) 3 or -4 (b) 6 or 2 (c) 4 or -3 (d) 2 or 01.
3. Change log3 x = P to individual form (a) P3 = X (b) X = 3P (c) 3 = PX (d) 3 = xp.
4. A women borrowed N500000 from a lender and pays interest at 12% per annum. If she repaid N100000 at the end of each year. What amount does she owe at the end of the year? (a) N300,000 (b) N415,200 (c) N20,000 (d) N320,000.
5. Find the simple interest on N60000 for 4 years at 9% per annum. (a) N20,600 (b) N21,600 (c) N2160 (d) N2610.
6. How many years will it take for N240,000 to amount to N288000 at 8% compound interest per annum? (a) between 3 and 4yrs (b) between 2 and 3yrs (c) 2yrs (d) 3yrs.
7. A refrigerator costs N55000. What is its cost at the end of 3yrs if the rate of inflation is 20% (a) N33,000 (b) N88,000 (c) N95,0404 (d) N30,000.
8. Solve: 9x2 - 12x + 4 = 0; x = (a) 2 or 3 (b) 3/2 twice (c) -2 and 3 (d) 2/3 twice.
9. If a number is increased by 30, it is less than its square by 12. Find the number (a) 8 (b) 7 (c) 6 (d) 0.
10. A street trader spend N550 on x articles each costing N(2x-28). Find x? (a) 11 (b) 28 (c) 25 (d) 275.

-b+√b2-4ac

2a

1. If ax2 + bx + c = 0, then x = (a) b2 – 4ac (b)

-b+√b-4ac

2

(c) b (d) b2 = 4ac.

1. The line of symmetry for the relation Y = -x2 + 2x + 4 is (a) 1 (b) 2 (c) 3 (d) 4.
2. Multiply 2.7 x 10-4 by 6.3 x 106 and leave your answer in standard form. (a) 1.7 x 103 (b) 1.7 x 10-3 (c) 1.701 x 103 (d) 17.0 x 103.
3. If 9(2-x) = 3, find x (a) 1 (b) 3/2 (c) 2 (d) 5/2.
4. In what number base is the addition 465 + 24 + 225 = 1050? (a) ten (b) nine (c) eight (d) seven.
5. If Un = n(n2 + 1), evaluate U5 – U4 (a) 18 (b) 56 (c) 62 (d) 80.

1

7

8

3

4

6

x

2

2

5

3

4

÷

1. Simplify (a) 9 (b) 4½ (c) 2 (d) ½.
2. If √50 - k√8 = 2/√2. Find K. (a) -2 (b) -1 (c) 1 (d) 2.
3. A sales boy gave a change of N68 instead of N72. Calculate his percentage error. (a) 4% (b) 55/9% (c) 515/7 (d) 7%.

x2 – y2

(x + y)2

(x – y)2

(3x + 3y)

x – y

3

3

x + y

1. Simplify: ÷ (a) (b) x + y (c) (d) x + y.

2x – 5

2

1. Solve the inequality < (2 – x) (a) x > 0 (b) x < ¼ (c) x>2½ (d) x <2¼.
2. Which of the following lines represents the solution of the inequality 7x < 9x – 4? (a) (b)

–2

0

2

–2

0

2

–2

0

2

–2

0

2

(c) (d)

\_3√q

r

1. Given that P1/3 , make q the subject of the equation. (a) q = P√r (b) q = P3r (c) q = Pr3 (d) q = pr1/3.
2. A cube and cuboid have the same base area. The volume of the cube is 64cm3 while that of the cuboid is 80cm3. Find the height of the cuboid. (a) 2cm (b) 3cm (c) 5cm (d) 6cm.

V

Y

W

U

X

460

950

Find <UVW. (a) 510 (b) 480 (c) 390 (d) 34.



7m

1530

2m

Find the value of m in the diagram. (a) 340 (b) 270 (c) 230 (d) 170.

1. If sin x = 5/13 and 00 ≤ x ≤ 900, find the value of (Cos x – tan x). (a) 7/3 (b) 12/13 (c) 79/156 (d) 209/156.
2. The bearing of Y from X is 0600 and the bearing of Z from X is 0600. Find the bearing of X from Z. (a) 3000 (b) 2400 (c) 1800 (d) 1200.
3. If 2log(33/8) = 6, find the value of x. (a) 3/2 (b) 4/3 (c) 2/3 (d) ½.
4. If P = [y : 2y > 6] and Q = [y : y – 3 ≤ 4], where is an integer, find PnQ. (a) [3, 4] (b) [3, 7] (c) [3, 4, 5, 6, 7] (d) [4, 5, 6].
5. If y varies directly as the square root of (x + 1) and y = 6 when x = 3, find x when y = 9. (a) 8 (b) 7 (c) 6 (d) 5.
6. The graph of the relation y = x2 + 2x + k passes through the point (2, 0). Find the value of K. (a) 0 (b) -2 (c) -4 (d) -8.

Arts

Business

450

Science

750

Technical

The pie chart shows the distribution of 600 mathematics textbooks for Arts, Business, Science and technical classes.

Use it to answer questions 91 and 92.

1. How many text books are for the technical class? (a) 100 (b) 150 (c) 200 (d) 250.
2. What percentage of the total number of textbooks belongs to science? (a) 12½% (b) 205/6 (c) 25% (d) 412/3%.

2y0

2x0

800

X + 100

500



In the diagram, PQ is a straight line. Calculate the value of the angle labeled 2y. (a) 1300 (b) 1200 (c) 1100 (d) 1000.

1. When a number is subtracted from 2, the result equals 4 less than one-fifth of the number. Find the number. (a) 11 (b) 15/2 (c) 5 (d) 5/2.
2. Express - as a single fraction. (a)

x – 7

x2 + x - 6

x – 2

x2 + x - 6

x – 1

x2 + x - 6

1

x - 2

x – 7

x2 + x - 6

2

x + 3

(b) (c) (d)

1. An interior angle of a regular polygon is 5 times each exterior angle. How many sides has the polygon? (a) 15 (b) 12 (c) 9 (d) 6.

P

Q

S

T

1980

R

720

y0



In the diagram above, find the value of y. (a) 180 (b) 540 (c) 920 (d) 1080.

1. A pyramid has a rectangular base with dimensions 12m by 8m. If height is 14m, calculate the volume. (a) 344m3 (b) 448m3 (c) 632m3 (d) 840m3.
2. Express 0.0462 in standard form. (a) 0.462 x 10-1 (b) 0.462 x 10-2 (c) 4.62 x 10-1 (d) 4.62 x 10-2.
3. The with terms of a sequence is 23n-2 which term of the sequence is 213? (a) 6th (b) 5th (c) 4th (d) 3rd.

**LORAL INT’L SECONDARY SCHOOL**

**IGBESA/FESTAC1ST TERM EXAMINATION 2014/2015**

**SUBJECT: MATHEMATICS CLASS: J.S.S. 3 TIME: 2HRS**

***OBJECTIVE TEST***

***INSTRUCTION: Answer all the questions***

1. Change 100101two to base ten (a) 35 (b) 40 (c) 37 (d) 73.
2. Express 2101three to base ten (a) 46 (b) 54 (c) 64 (d) 66.
3. Express 38 as a number in base two (a) 1001112 (b) 11101112 (c) 1011012 (d) 1001102.
4. Find the value of (11012)2 in base two (a) 101010012 (b) 11101112 (c) 1011012 (d) 1001102.
5. Subtract 11012 from 1100112 (a) 1101102 (b) 1110002 (c) 1110012 (d) 1101112.
6. Find the product of 100112 and 112 (a) 1110112 (b) 100112 (c) 1110012 (d) 1101112.
7. Convert 107 to a number in base two (a) 1100012 (b) 11001112 (c) 11101112 (d) 1101012.
8. The positive difference between the product of 78 and 36 and their sum is (a) 2894 (b) 2694 (c) 26940 (d) 9428.
9. The product of the square root of 16 and the square of 9 is (a) 3240 (b) 1296 (c) 36 (d) 324.
10. What number when divided by -50 will give 12 (a) -4 (b) 2 (c) -600 (d) 600.
11. Simplify 165 – (125) – 80 – 60 (a) -10 (b) 10 (c) 12 (d) 15.
12. Simplify (x + y) – (2x – 3y) (a) 4y – x (b) -4x – 3y (c) 3x + 4y (d) x – 4y.
13. Simplify 3x – 2y – (x – 2y) + (2x + y) (a) 5y + 3y (b) -4x – 3y (c) 4x + y (d) 6y – 3x.
14. The reciprocal of 12/3 is (a) 5/3 (b) 2/3 (c) 3/5 (d) 0.65.
15. Find the simple interest on N50,000 for 2 years at 5% per annum. (a) N5000 (b) N500 (c) N250 (d) N50,000.
16. How long will it take for N15,000 to yield N1500 in simple interest at a rate of 4% per annum. (a) 2 years (b) 3 years (c) 2½ years (d) 4 years.
17. Approximate 0.03457 to 1 significant figure (a) 0.0 (b) 0.005 (c) 0.03 (d) 0.004.
18. The population of a school is 3718, approximate this to the nearest hundred (a) 3700 (b) 37 (c) 371 (d) 4000.
19. Calculate 0.09 x 0.78 to 3 decimal places (a) 0.070 (b) 0.0702 (c) 0.007 (d) 0.071.
20. Approximate 378772 to the nearest thousand (a) 379000 (b) 379 (c) 378000 (d) 400000.
21. Approximate 39563 to two significant figures (a) 39560 (b) 390000 (c) 400000 (d) 40000.
22. If 5 tins of milk cost N250, find the cost of 25 tins of milk (a) 1750 (b) 75000 (c) 1250 (d) 12500.
23. If 30 men can do a certain job in 15 days, how long will it take 10 men to do the same work? (a) 35days (b) 60days (c) 45days (d) 40days.
24. The coefficient of x in (x -5) (x + 4) is (a) 5 (b) 1 (c) 4 (d) -1.
25. The coefficient of m2 in 2m2 – 3m + 5 (a) 2 (b) -3 (c) 5 (d) 10.
26. Evaluate 232 – 72 (a) 529 (b) 460 (c) 580 (d) 480.
27. Find the product of (x + 3) and (x – 3) (a) x2 – 3 (b) x2 – 9 (c) x2 – 6 (d) x2 + 6.
28. Factorize 9a2 – 16 (a) (3a + 4)(3a – 4) (b) (a + 4)(3a – 4) (c) (4 – 3a)(4 + 3a) (d) (3a + 4)(3a + 4).
29. What is the value of 132 – 52 (a) 12 (b) 16 (c) 64 (d) 144.
30. What is the value of x in x + 2y = 5 and x – 2y = -1 (a) 6 (b) 3 (c) 2 (d) -2.
31. Solve the simultaneous equations x = y + 1 and x + 2y = 7 (a) (3, 0) (b) 93, 1) (c) (3, 2) (d) (3, 3).
32. Solve 3 – y/3 = 2 (a) -3 (b) -1 (c) 1 (d) 3.
33. Find the LCM of 15 and 45 (a) 15 (b) 30 (c) 45 (d) 60.
34. Express 33% as a decimal number (a) 0.03 (b) 0.31 (c) 0.32 (d) 0.33.
35. Solve the inequality 2 – x ≤ 3 (a) x ≥ -1 (b) x ≥ 1 (c) x ≥ 5 (d) x ≤ 5.
36. What number does the Roman numerical MCXII represent (a) 1112 (b0 892 (c) 102 (d) 112.
37. Simplify -7 – (-16) – 3 (a) +5 (b) +6 (c) +7 (d) -5.
38. Solve 6x + 4 ≤ 28 (a) x ≤ 0 (b) x ≤ 1 (c) x ≤ 2 (d) x ≤ 4.
39. Solve 5x + 5 = 26 + 2x (a) 4 (b) 5 (c) 7 (d) 6.
40. Subtract 1001s from 11102 and convert your answer to base 10 (a) 3 (b) 5 (c) 7 (d) 8.
41. The tally stands for (a) 19 (b) 23 (c) 33 (d) 43.
42. Find the value of x if 6//x – 1 = 2 (a) -4 (b) -2 (c) 4 (d) 5.
43. Find y if 3/x + 5 = 5/3 + x (a) -8 (b) 8 (c) 17 (d) 4.
44. Solve 3 – y/3 = 2 (a) -3 (b) -1 (c) 1 (d) 3.
45. Find the square root of 20¼ (a) 25/4 (b) 9/2 (c) 5/2 (d) 2/5.
46. In a toss of a fair dice, the probability of getting a 7 is (a) -1 (b) 0 (c) 1/5 (d) ½.
47. Solve the equation 3m + 2 = 11 (a) 9 (b) 6 (c) 4.5 (d) 3.
48. Which subject is this (a) Arithmetic (b) Mathematics (c) Civic (d) English.
49. What is the multiplicative inverse of m (a) 1/m (b) -1/m (c) –m (d) +m.