**EXAMINATIONS COUNCIL OF SWAZILAND**

**JUNIOR CERTIFICATE EXAMINATION**

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| **CANDIDATE NAME** |  |

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| **CANDIDATE NUMBER** |  |  |  |  |  |  |  |  |  |

**MATHEMATICS 309/01**

Paper 1 **NOVEMBER 2014** **2 hours 30 minutes**

Candidates answer on the question paper

**READ THESE INSTRUCTIONS FIRST**

1. Write your centre number, candidate number and name on all the work you hand in.

2. This paper is in two sections:

**SECTION A :**(52 MARKS): All answers in this section must be written in the answer spaces provided.

**SECTION B :** (48 MARKS): All answers in this section must be shown on the GRID provided. Read the instructions on how to use the ANSWER GRID at the beginning of SECTION B.

Answer **all** questions in this paper.

3. All necessary working must be done in the spaces below each question.

**SCRAP PAPER IS NOT ALLOWED. FAILURE TO SHOW NECESSARY WORKING WILL RESULT IN LOSS OF MARKS.**

4. Graph paper and tracing paper will be provided when needed.

5. Calculators and tables are **not** allowed in this paper.

6. At the end of the examination, hand in the question paper, the Answer Grid and any other paper used. Do not remove any pages from the question paper.

7. **FAILURE TO FOLLOW THE ABOVE INSTRUCTIONS WILL RESULT IN LOSS OF MARKS.**

8.The total of the marks for this paper is 100.

**SECTION A**

**Answer all questions in the spaces provided**

**1** **(a)** Round off 27053 to 3 significant figures.

 **(b)** What is the value of 7 in the number 358.679?

 **(c)**  Round off 12.693 to 2 decimal places.

 (*a*).............................................[1]

 (*b*).............................................[1]

 (*c*).............................................[1]

**2** **(a)** Work out 50 $÷$ 0.001.

 **(b)** Write 0.03296 in standard form.

 (*a*)............................................[2]

 (*b*)............................................[1]

**3** **(a)** What are the missing numbers in the following sequence?

 1131 ,\_\_\_ , 931 , 831 , 731 ,\_\_\_.

 **(b)** You are given that  = { even numbers}.

 Describe  in words.

 (*a*) …….................and.......................[2]

 (*b*)  = {..........................................................................................}[1]

**4** Given that *a* = $-$2*, b* = 5 and *c* = $-$3,

 Find the value of

**(a)** ,

 **(b)** .

 (*a*).............................................[2]

 (*b*).............................................[2]

**5** The diagram shows the net of a solid.

Write down

**(a)** the name of the solid,

 **(b)** the number of edges and the number of vertices the solid.

 (*a*).............................................[1]

 (*b*)............edges..........vertices [2]

**6** **(a)** Write down the product of $-$6 and *y* .

 **(b)** How many terms are in the following expression?

 

 (*a*).............................................[1]

 (*b*).............................................[1]

 **(c)** A motorist has 72 litres of petrol in his car.

 He then uses *d* litres of petrol.

 Write an expression for the number of litres left in his car.

 (*c*).............................................[1]

 **(d)** What is the lowest common multiple (LCM) of  and ?

 (*d*).............................................[1]

**7** The diagram below is made of two semi-circles.

The larger semi-circle has radius 10 cm and centre O.

Calculate the perimeter of the diagram. [ Use  =3.14 ]

 NOT TO SCALE

10 cm

 O

 Perimeter =..........................................[3]

**8** Calculate the sizes of the angles marked *a* and *b*.

 NOT TO SCALE

43°

57°

 *a*

 60°

 *b*

 *a* = ...........................................[2]

 *b* =............................................[1]

**9** The lengths of five pieces of wood are 45cm, 52cm, 36cm, 58cm and 49cm.

 **(a)** Calculate the mean length.

**(b)** The length of a sixth piece is included.

 The mean length of the six pieces is 48.5cm.

 Find the length of the sixth piece.

 (*a*).............................................[2]

 (*b*).............................................[3]

**10** Simplify the following expressions.

 **(a)** 

 **(b)** 

(*a*).............................................[3] (*b*)............................................[2]

**11** The ratio of Nitrogen to Phosphorus to Potassium in a mixture is 5: 3: 4.

 Find the mass of a mixture containing 16 kg of potassium.

 .....................................[3]

**12** **(a)** Complete the figure below such that line *AB* is a line of symmetry.

 (2)

*B*

*A*

 **(b)** Write down the name of the following polygon.

**(c)** Name the prism whose cross section is the shape above.

 (*b*).....................................................................[1]

 (*c*)……….........................................................[1]

**13** Shade the regions represented by the sets below.

 **(a)** *P* ∩ *Q*



*P*

 *Q*

 [2]

 **(b)** ( *A**B*  *C*)′

*B*

 

*A*

*C*

 [2]

**14** A car travelled at an average speed of 120 km/hr.

Calculate the distance travelled by the car after 45minutes..

 .................................................[3]

**15** Arrange these numbers in order of size, starting with the largest.

 989 898 989 988 988989 998 998

 .....................................................................................................................................[2]

**SECTION B**

For each question four possible answers are provided. By working out choose the correct answer and indicate this by a cross on the corresponding letter on the **answer grid** provided.

*Example:*

**100** Work out 12 $÷$ 4 is:

 **A** 48 **B** 16 **C**  8 **D**  3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **A** | **B** | **C** | **D** |
| **100** |  |  |  |  |

*Answer:*

**16** The solution of the equation: 2*x* + 6 = 10 – 2*x* is

 **A**  *x* = 0 **B** *x* = 1 **C** *x* = 2 **D** *x* = 4.

**17** Work out .

 **A** 2 **B** 2.5 **C** 5 **D** 7.5

**18** Change  to a fraction in its simplest form.

 **A**  **B**  **C**  **D** 

**19** Calculate the area of the triangle below.

NOT TO SCALE

 5cm

12cm

7cm

 **A** 17.5 **B**  24 **C** 35 **D** 42

**20** A straight line that joins two points on the circumference of a circle is called:

 **A** an arc **B**  a chord **C** a segment **D** a sector

**21** The value of  is

 **A** 9*mn* **B** 3 **C**  **D** .

**22** The equation of a straight line with gradient 3 and passing through the point

( 0 , 4 ) is

 **A** *y* = *x* + 3 **B** *y* = 4*x* + 3 **C** *y* = 3*x* **D** *y* = 3*x* + 4

**23** What is the image of the point ($-$2 , 4) after a translation with vector ?

 **A** (1, 1) **B** (−5, 7) **C** (5, −7) **D** (−1, 1)

**24** What is the probability that a person was born on the 31st of the month in an ordinary year?

 **A**  **B** **C** **D** 

**25** The number of lines of symmetry and the order of rotational symmetry for the

 parallelogram below is

 **A** 0 and 1 **B**  0 and 2 **C** 1and 1 **D** 2 and 2

**26** *ABC* is a right-angled triangle, *AB* = 5, *BC* = 13 and *AC* = 12.

NOT TO SCALE

*B*

 13

5

*C*

*A*

12

 The values of  and respectively are

 **A** and **B** and **C** and **D** and

**27** In a pack of 52 playing cards, the probability of picking a red card at random is

 **A** **B**  **C**   **D**

**28** 7m2  =

 **A** 70cm2 **B** 700cm2 **C** 7000cm2 **D** 70 000cm2

13cm

**29** The total area of the figure below is

NOT TO SCALE

 1cm

10cm

3cm

 1cm

 **A** 37.5cm2 **B** 39cm2 **C**  45cm2 **D**  55cm2

**30** Which of the following is a set of rectangular numbers?

 **A** { 1,2,3,5,7} **B** {1,3,6,10,15} **C**  {1,4,9,16,25} **D** { 4,6,8,9,10}

**31** The expression  simplifies to

 **A**  **B**  **C**  **D** 

**MULTIPLE CHOICE ANSWER GRID**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **A** | **B** | **C** | **D** |
| **16** |  |  |  |  |
| **17** |  |  |  |  |
| **18** |  |  |  |  |
| **19** |  |  |  |  |
| **20** |  |  |  |  |
| **21** |  |  |  |  |
| **22** |  |  |  |  |
| **23** |  |  |  |  |
| **24** |  |  |  |  |
| **25** |  |  |  |  |
| **26** |  |  |  |  |
| **27** |  |  |  |  |
| **28** |  |  |  |  |
| **29** |  |  |  |  |
| **30** |  |  |  |  |
| **31** |  |  |  |  |