

# HMC 2014 - SECOND ROUND

## BOOKLET - **A**

### INSTRUCTIONS

- Before you start, make sure that your details are filled in accurately.
- Do not open this booklet until told to do so.
- This examination paper consists of 30 multiple choice questions. Each question is followed by answers marked A, B, C, D and E. Only one of them is correct.
- The final answers must be entered in the correct box on the ANSWER SHEET which is supplied separately.
- Each correct answer is worth:
  - 4 marks in Part 1 (Questions from 1 to 15)
  - 6 marks in Part 2 (Questions from 16 to 30)
- There is a penalty, -1 mark, for every incorrect answer.
- Exam duration is 75 minutes and no extra time will be given.
- Calculators and geometric instruments are NOT permitted.
- Diagrams are NOT necessarily drawn to scale.
- Rough paper, pen, pencil, and rubber are permitted.
- Start when the invigilator tells you to do so. Good luck!

## PART – I

1) What will be the new price of a soccer ball after 20% discount if its original price is R150?

- A) R130                      B) R100                      C) R110                      D) R120                      E) R140

2) Consider the following sequence: 1, 3, 6, 10, 15, ... The next two numbers in this sequence add up to

- A) 49                      B) 21                      C) 28                      D) 20                      E) 18

3)  $\frac{2}{5}$  cup of milk is needed to make 45 biscuits. How many cups are needed for 1 350 biscuits?

- A) 12                      B) 45                      C) 60                      D) 75                      E) 30

4) A clock is showing 09:58 where all digits are different. After how many minutes will the digits be different again?

- A) 1min                      B) 2min                      C) 25min                      D) 14min                      E) 13min

5) In a 100m race, what will be the position of you if you pass the runner in the second place?

- A) 1                      B) 2                      C) 3                      D) 4                      E) 5

6) Which of the following is the largest?

- A)  $20 \times 1 + 4$                       B)  $(2 + 0) \times 14$                       C)  $(20 + 1) \times 4$                       D)  $20 + 1 \times 4$                       E)  $20 \times (1 + 4)$

7) There is a certain relationship between the following months and the corresponding numbers given below;

January: 4

May: 2

February: 5

June: 2

March: 4

July: 3

April: 3

August: ?

What must be the number corresponded to August?

A) 5

B) 3

C) 2

D) 1

E) 4

8)  $19 - 17 + 15 - 13 + 11 - 9 + 7 - 5 + 3 - 1 = ?$

A) 2

B) 18

C) 10

D) 21

E) 0

9) What is the size of the angle between the hour hand and the minute hand of a clock at 17:00?

A)  $5^\circ$

B)  $17^\circ$

C)  $90^\circ$

D)  $120^\circ$

E)  $150^\circ$

10)  $\frac{1}{4} \div \frac{3}{8} + \frac{1}{3} = ?$

A)  $\frac{2}{5}$

B)  $\frac{2}{6}$

C) 1

D)  $\frac{2}{3}$

E) 0

11) A man drives 1400km distance from Johannesburg to Cape Town by a car. He leaves Johannesburg at 1:47pm and reaches Cape Town at 5:12am next day. How long does the journey take?

A) 8h35m

B) 18h59m

C) 12h35m

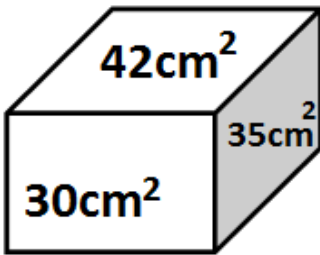
D) 15h45m

E) 15h25m

12) What is the difference between the largest odd 4-digit number with different digits and the smallest even 4-digit number with different digits?

- A) 8641                      B) 8851                      C) 8843                      D) 8999                      E) 8888

13) The areas of three faces of a rectangular box are  $30\text{cm}^2$ ,  $42\text{cm}^2$ , and  $35\text{cm}^2$ . What is the volume of the box?

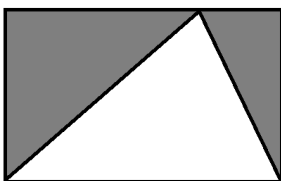


- A)  $107\text{ cm}^3$                       B)  $214\text{ cm}^3$                       C)  $75\text{ cm}^3$                       D)  $210\text{ cm}^3$                       E)  $410\text{ cm}^3$

14) If the areas of a square, a regular hexagon and an equilateral triangle are the same, then which shape(s) has the longest side.

- A) Square  
B) Hexagon  
C) Triangle  
D) Square and Hexagon  
E) All have equal sides

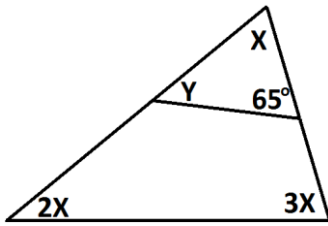
15) The breadth of the rectangle given below is  $10\text{cm}$  and its length is 1,5 times longer than its breadth. Find the area of the shaded region.



- A)  $15\text{cm}^2$                       B)  $150\text{cm}^2$                       C)  $100\text{cm}^2$                       D)  $50\text{cm}^2$                       E)  $75\text{cm}^2$

## PART – II

16) What is the value of Y in the following figure?



- A)  $65^\circ$       B)  $30^\circ$       C)  $85^\circ$       D)  $90^\circ$       E)  $95^\circ$

17) If each diagonal, row and column adds up to 15, then find Z.

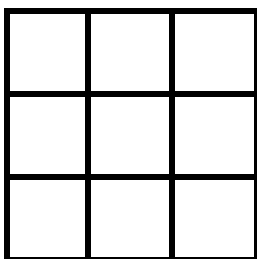
8		
		7
4	Z	

- A) 5      B) 2      C) 9      D) 6      E) 8

18) Tando is older than Sibahle. Sibahle is older than Luthando. Luthando is younger than Clare while Clare is older than Tando. List the people from oldest to youngest.

- A) T, S, L, C      B) S, C, L, T      C) L, C, S, T      D) C, T, S, L      E) T, S, C, L

19) Nine identical squares are combined in the figure given below. How many squares are there in total?



- A) 14      B) 9      C) 10      D) 15      E) 13

20) There are 7 brothers in a family. Each brother has one sister. How many children are there in the family?

- A) 14                      B) 8                      C) 15                      D) 13                      E) 10

21) The word DEAF is represented in numbers by 4516 and the word HI is represented in numbers by 89. Which of the following will represent AGE?

- A) 451                      B) 165                      C) 175                      D) 415                      E) 156

22) In how many different ways one can choose 2 prefects out of 5 learners?

- A) 5                      B) 2                      C) 1                      D) 10                      E) 3

23) What is the sum of the terms in the 10<sup>th</sup> row?

		1				row1
		1	1			row2
	1	2	1			row3
	1	3	3	1		row4
1	4	6	4	1		row5

- A) 126                      B) 70                      C) 252                      D) 35                      E) 512

24) Two identical robots can together complete a task in 6 hours. How many hours will it take three robots to complete the same task?

- A) 6                      B) 2                      C) 3                      D) 4                      E) 9

25) Jacob has 30 coins of R2s and R5s, which add up to R111. How many R5 coins does Jacob have?

- A) 17                      B) 6                      C) 24                      D) 20                      E) 5

26) How many positive divisors (factors) does 144 have?

- A) 6                      B) 8                      C) 9                      D) 12                      E) 15

27) In a class of 16 learners, 10 learners take Maths and 8 learners take Natural Science. How many learners take both Maths and NS if everyone does at least one subject?

- A) 16                      B) 18                      C) 0                      D) 2                      E) 1

28) A paper is divided into 5 pieces. One of these 5 pieces is again divided into 5. This operation is continued. Which of the following cannot be the number of paper pieces which might be obtained in this way?

- A) 1453                      B) 1565                      C) 1865                      D) 2025                      E) 2015

29) My brother and I went to a birthday party where all of 30 people including us had a mask on his/her face. I shook everyone's hand except one person. What is the possibility of that person being my brother?

- A)  $\frac{1}{30}$                       B)  $\frac{1}{29}$                       C)  $\frac{1}{28}$                       D)  $\frac{1}{2}$                       E)  $\frac{2}{3}$

30) Consider the following sequence: 1, 11, 21, 1112, 3112, 211213, ... What will be the next number?

- A) 312213                      B) 2111323                      C) 4111323                      D) 3111323                      E) 321123

**THE END**

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