# THE UNITED REPUBLIC OF TANZANIA
# NATIONAL EXAMINATIONS COUNCIL
# DIPLOMA IN SECONDARY EDUCATION EXAMINATION

## 740 MATHEMATICS

*Time: 3 Hours* *Friday, 14th May 2010 a.m.*

**Instructions**

1. This paper consists of sections A, B and C.
2. Answer **all** questions in section A, and **two (2)** questions from each of sections B and C.
3. Sections A and B carry 40 marks each and section C carries 20 marks.
4. Cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet (s).

This paper consists of 4 printed pages.

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## SECTION A (40 Marks)

Answer **all** questions in this section.

1. Using Figure 1, show that $\Delta ADB \equiv \Delta ADC$

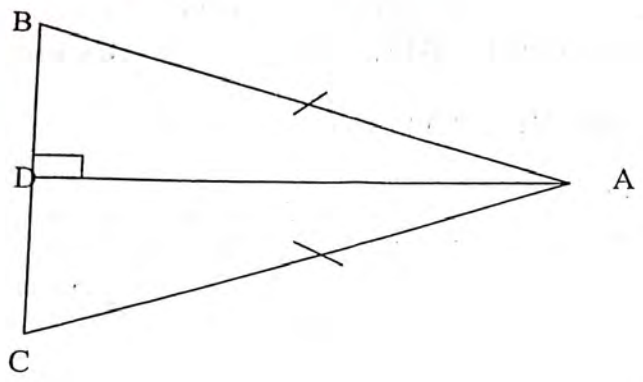


**Figure 1**

2. If $\text{Sin } A = \frac{3}{5}$ and $\text{Cos } B = \frac{15}{17}$, where A is obtuse and B is acute. Find the exact value of $\text{Sin}(A + B)$.

3. The statement **J** is formed from the sentences **P**, **G**, **M**. Write **J** in its most simplified form and use it to draw an electric circuit to flow when T is true.

| P | G | M | J |
|---|---|---|---|
| T | T | T | T |
| T | T | F | T |
| T | F | T | T |
| T | F | F | T |
| F | T | T | T |
| F | T | F | F |
| F | F | T | F |
| F | F | F | F |

4. A box contains 100 copper plugs; 27 oversize and 16 undersize. A plug is taken, tested but not replaced. A second plug is also taken, tested but not replaced. Find the probability that

(a) both plugs fitted in the socket.

(b) the first plug was oversize and the second one was undersize.





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5. Given that $3\sin\theta - 4\cos\theta = 2$. Find $\theta$ if $0° \leq \theta \leq 360°$.

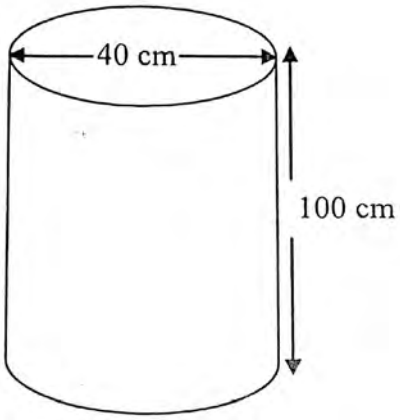
6. Given that $y = A\sinh nx + B\cosh nx$. Show that $\frac{d^2y}{dx^2} = n^2y$.

7. Find $\frac{dy}{dx}$ given that $y = (3x+2)(2x-1)$.

8. ABC is a triangle in which $\overline{AB} = \overline{AC}$ and the bisectors of $A\hat{B}C$ and $A\hat{C}B$ meet at point P. Prove that $\overline{PB} = \overline{PC}$.

9. A die is rolled five times. Find the probability of obtaining three sizes.

10. Draw the plan and the front elevation of the following cylinder using the scale 1 cm: 10 cm.




## SECTION B (40 Marks)

Answer **two (2)** questions from this section.

11. Discuss the significance of the following concepts in the learning of Mathematics.
    (a) Students' prior experiences
    (b) Language
    (c) Symbols
    (d) Pictures.

12. One of the demotivating factors in learning mathematics is the way teachers mark or assess Mathematics learning.
    (a) With examples support this statement.
    (b) As a competent mathematics teacher, what will you do to improve the situation?



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13. The ability to link Mathematics with everyday life is a very important competence in learning Mathematics. How can you use Mathematics curriculum materials to ensure that your students develop this competence?

14. (a) Write short notes on the following learning activities

    (i) Minds
    (ii) Hands
    (iii) Hearts

    (b) Why is it important to use the three (3) learning activities in (a) above?

## SECTION C (20 Marks)

Answer **two** (2) questions from this section.

15. Enhancing logical thinking is one of the significance of learning Mathematics. Explain how the assessment of Mathematics can support this statement.

16. Explain the principles you will apply to promote the learning of Mathematics among your learners?

17. Describe the importance of using computer knowledge in the teaching of Mathematics.

18. Describe the main features of a marking scheme for a Mathematics test

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