

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE EDUCATION

DEPARTMENT OF SCIENCE AND MATHEMATICS EDUCATION

Programme: Post Graduate Diploma in Education

Course: PDE 517 METHODS OF TEACHING MATHEMATICS Duration 3 hours

Semester Examinations

JUN 2025

INSTRUCTIONS

Answer all questions in Section A and any **two** questions from Section B

Section A: (Compulsory question) (40 marks)

A1 (a) (i). Find the equation of the straight line which is perpendicular to the line $3x + 2y = 18$ and passes through the point $(-2, 3)$. **[3 marks]**

(ii). Factorize completely $3r^2 - 48$ **[3 marks]**

(iii). Show that $\log_b xy = \log_b x + \log_b y$ **[6 marks]**

(b). For each item in (i), formulate one teaching aim **[6 marks]**

(c). Formulate at two behavioural learning objectives for each item in (a)

[8 marks]

(d). Choose one item from (a) and prepare a detailed lesson plan (DLP) that that would maximizes pupil to pupil interaction during lesson delivery. **[16 marks]**

SECTION B: (60 marks)

Answer any **two** questions being careful to number them **B2** to **B4**

B2 (a) By the end of the lesson pupils should be able to;

(i). know mathematical facts e.g., mensuration of plane shapes ,

- (ii). think deeply the cosine rules
- (iii). understand factors and multiples.

Explain why the above objectives are not acceptable behavioural objectives.

[12 marks]

(b) A mathematics teacher needs to evaluate lessons critically. Suggest **four** reasons why teachers should evaluate lessons. [8 marks]

(c). Define the terms

- (i) Assessment,
- (ii) Evaluation in school mathematics [5, 5 marks]

B3. Three villages centres A , B , and C are joined by straight roads $AB = 8km$, $AC = 5.5km$ and angle $CAB = 70$ degrees.

(a) Calculate the area bounded by the three roads. [4 marks]

(b) Determine the length of the road BC . [4 marks]

(c) (i). Formulate at least three teaching aims of teaching the content examined. [3 marks]

(ii). Formulate at two behavioural learning objectives. [4 marks]

(iii) Prepare a detailed marking guide justifying your mark allocation. [5marks].

B4. (a). Show that $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$. [10 marks]

(b). Design a 10 minute group work task on how you would you teach quadratic equations with irrational roots to a Form Three class to ensure effective learning. Include specific activities of the learners in your answer. [10 marks]

(c) Identify five aspects included in a lesson evaluation. [10 marks]

(b). Suggest five reasons for assessing learners in school mathematics [10 marks]

END OF PAPER