



In partnership with

GENERAL FOUNDATION PROGRAMME

PLACEMENT TEST SAMPLE QUESTION PAPER

ACADEMIC YEAR 2019 – 2020

MATHEMATICS B - Science

Introductory Remarks:

- Try to answer all questions within the allocated time period of 90 minutes.
- Use only calculators approved by the exam in-charge.
- Mark your answers on the answer booklet and show your work clearly.

1. Find the solution using the quadratic formula: $6x^2 + 5x - 4 = 0$
2. Factorise the equation: $x^2 - 10x + 24 = 0$
3. Determine the solution set of the inequality: $22 \leq 1 + 11x - 4x$
4. Find the solution set of:

$$\begin{cases} 5y > 2x + 10 \\ y \geq 3 \end{cases}$$

For questions 5 – 8. Given that

$$f(x) = \frac{2x + 1}{2x - 2} \quad \text{and} \quad g(x) = x^2 - 4$$

5. Find $g\left(\frac{1}{2}\right)$.
 6. Compute $(g \circ f)(-2)$.
 7. What is $(f \circ g)(x)$.
 8. Determine $f^{-1}(x)$.
9. Omar Al-Habsy invested his hard-earned money in a bank that gives 3.5% simple interest rate for 2 years and 5 months. What is the accumulated amount now if he invested OMR 1500?
 10. Jacob deposited OMR 5000 in the Bank of Oman at 10% interest compounded quarterly. What is the amount of money will he get after 8 years?
 11. Expand the logarithm:
 - a) $\log_a q^3 r^4 t^6$
 - b) $\log_a \frac{q^3 \sqrt{r^5}}{t^4}$
 12. Write as a single logarithm, and if possible, simplify your answer:
 - a) $\log_4 10 + \log_4 40 - 3 \log_4 5$
 - b) $\log_8 5 + \log_8 6 - \log_8 \left(\frac{1}{4}\right)$
 13. Solve the equation for x :
 - a) $7^{2x} = 7^{3x+1}$
 - b) $2^{2x} - 2^{x+1} - 15 = 0$

14. The following figures give the number of children injured on Muscat roads each month for a certain period of 7 months.

55 72 50 66 50 47 38

- a) Write down the **mode** for these data.
- b) Calculate the **median** of these data.
- c) Calculate the **mean** of these data.

15. The time it took a random sample of runners to complete a race are summarized in the table.

Time taken (t minutes)	Frequency
20 – 29	5
30 – 39	10
40 – 49	36
50 – 59	20
60 – 69	9

- a) Work on the **mean** time of the data.
- b) Work out the **mode** of the data.
- c) Work out the **median** of the data.

-----END OF EXAMINATION-----