

TEST ON Exponents, Squares and Square Roots, & FM-100  
Cubes and Cube Roots

1. Evaluate: (i)  $(\frac{5}{2})^{-3}$  (ii)  $(\frac{-3}{4})^{-4}$  2+2=4
2. Simplify: (i)  $(2^1 \times 5^{-1})^{-1} \div 4^{-1}$  3+3=6  
(ii)  $(4^{-1} + 8^{-1}) \div (\frac{2}{3})^{-1}$
3. By what number should  $(\frac{1}{2})^{-1}$  be multiplied so that the product is  $(\frac{-5}{4})^{-1}$ ? 4
4. By what number should  $(\frac{-3}{2})^{-3}$  be divided so that the quotient is  $(\frac{9}{4})^{-2}$ ? 4
5. Find the value of  $x$  for which  $(\frac{4}{9})^4 \times (\frac{4}{9})^{-7} = (\frac{4}{9})^{2x-1}$  2
6. If  $5^{2x+1} \div 25 = 125$ , find the value of  $x$ ? 4
7. If  $(2^{3x-1} + 10) \div 7 = 6$ , then find the value of  $x$ ? 4
8. Simplify: (i)  $\frac{10^{-5} \times 125 \times 3^{-5}}{6^{-5} \times 5^7}$  (ii)  $\frac{27 \times x^{-2}}{3^2 \times x^{-8}}$  ( $x \neq 0$ ) 4+4=8
9. Express in standard form: 2+2+2+2=8  
(i)  $243 \times 10^5$  (ii)  $0.0009$  (iii)  $50,000$  (iv)  $0.0000463$
10. Express in usual form: 3+3+3=6  
(i)  $5.4 \times 10^3$  (ii)  $8 \times 10^{-2}$  (iii)  $5.08 \times 10^4$
11. Simplify:  $\frac{1}{1+x^{-n}} + \frac{1}{1+x^n}$  4
12.  $6^{2x+1} \div 26 = 216$ , then find the value of  $x$ ? 4
13. By what least number should 3675 be multiplied to get a perfect square number? Also find the number whose square is the new number. 4
14. By what least number should 6300 be divided to get a perfect square number? Also find the number whose square is the new number. 4
15. Find the largest number of 2 digits which is a perfect square. 4

16. Without adding, find the sum: [3]  
 $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17$
17. Find the Pythagorean triplet whose smallest number is 12. [3]
18. Evaluate:  $[(337)^2 - (336)^2]$ . [2]
19. Using the identity  $(a+b)^2 = (a^2 + 2ab + b^2)$ , evaluate (i)  $(609)^2$  (ii)  $(725)^2$ . [3+3=6]
20. What is the smallest number by which 3087 may be multiplied so that the product is a perfect cube? [2]
21. What is the smallest number by which 392 may be divided so that the quotient is a perfect cube? [2]
22. Evaluate:  $\sqrt[3]{216 \times (-343)}$ . [2]
23. Evaluate: (i)  $\sqrt[3]{\frac{-125}{512}}$  (ii)  $\sqrt[3]{\frac{729}{1000}}$  (iii)  $\sqrt[3]{\frac{-512}{343}}$ . [2+2+2=6]
24. Evaluate: (i)  $(0.8)^3$  (ii)  $(1\frac{3}{10})^3$ . [2+2=4]