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CLASS 11 APPLIED MATHEMATICS - PRACTICE QUESTIONS

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CLASS 11

Applied Mathematics

Sample Paper 3 - Questions

38 questions | 80 marks | 2026-27

Time: 3 hours. Answer all questions and subparts unless a choice is stated. Marks are shown on the right. Write answers on separate sheets. Independently prepared practice paper.

Section A - Objective questions

1. Convert the binary representation of the decimal number 35 back to decimal: 100011. **1**
(A) 34 (B) 36 (C) 35 (D) 37

2. Calculate the slope of the line through (20, 22) and (23, 28). **1**
(A) 2 (B) 1 (C) 3 (D) 4

3. Calculate simple interest on Rs 23000 at 5% per year for 3 years. **1**
(A) 3451 (B) 3450 (C) 3449 (D) 3452

4. Calculate the population variance of 18, 20, 22. **1**
(A) 8/3 (B) 5/3 (C) 14/3 (D) 11/3

5. An AP has first term 26 and common difference 2. Calculate its 32th term. **1**
(A) 88 (B) 89 (C) 87 (D) 90

6. Calculate log base 2 of 4194304. **1**
(A) 24 (B) 21 (C) 23 (D) 22

7. How many ordered arrangements of 3 distinct objects can be selected from 28 distinct objects? **1**
(A) 19657 (B) 19655 (C) 19658 (D) 19656

8. How many two-member committees can be chosen from 24 distinct people? **1**
(A) 276 (B) 275 (C) 277 (D) 278

9. Calculate the greatest integer satisfying 2x + 19 <= 37. **1**
(A) 9 (B) 11 (C) 8 (D) 10

10. For the parabola $y^2 = 84x$, find the distance of its focus from the origin. **1**
(A) 20 (B) 22 (C) 21 (D) 23

11. In a group, n(A) = 44, n(B) = 42 and n(A intersection B) = 29. Calculate n(A union B). **1**
(A) 59 (B) 56 (C) 57 (D) 58

12. Determine the value of lim as x tends to 25 of $(x^2 - 625)/(x - 25)$. **1**
(A) 52 (B) 50 (C) 49 (D) 51

13. For $f(x) = 21x^2$, find f'(3). **1**
(A) 128 (B) 127 (C) 126 (D) 125

14. Calculate the slope of the line through (23, 25) and (26, 31). **1**
(A) 2 (B) 1 (C) 4 (D) 3

15. Rs 21000 earns 10% interest compounded annually. Calculate its amount after two years. **1**
(A) 25409 (B) 25412 (C) 25411 (D) 25410

16. Calculate log base 2 of 134217728. **1**
(A) 28 (B) 27 (C) 26 (D) 29

17. An AP has first term 23 and common difference 2. Calculate its 29th term. **1**
(A) 79 (B) 78 (C) 81 (D) 80

18. For the parabola $y^2 = 92x$, find the distance of its focus from the origin. **1**
(A) 24 (B) 22 (C) 25 (D) 23

19. Calculate the greatest integer satisfying 2x + 20 <= 38. **1**
(A) 11 (B) 8 (C) 9 (D) 10

20. Determine the value of lim as x tends to 23 of $(x^2 - 529)/(x - 23)$. **1**
(A) 48 (B) 45 (C) 47 (D) 46

Section B - Short responses

21. Calculate the population variance of 20, 22, 24. **2**

22. Convert the binary representation of the decimal number 36 back to decimal: 100100. **2**

23. In a group, n(A) = 39, n(B) = 37 and n(A intersection B) = 24. Calculate n(A union B). **2**

24. How many two-member committees can be chosen from 29 distinct people? **2**

25. How many ordered arrangements of 3 distinct objects can be selected from 24 distinct objects? **2**

Section C - Short responses

26. Use first principles to differentiate $f(x)=24x^2$. Then calculate $f'(3)$, explaining the limiting step. **3**

27. Calculate the slope of the line through (19, 21) and (22, 27). Calculate the equation of the line and its x-intercept. **3**

28. Rs 24000 earns 10% interest compounded annually. Calculate its amount after two years. Compare with the amount under simple interest at the same rate and term. **3**

29. An AP has first term 22 and common difference 4. Calculate its 28th term. Show the governing rule, substitution and conclusion clearly. **3**

30. Calculate log base 2 of 16777216. Show the governing rule, substitution and conclusion clearly. **3**

31. Determine the value of lim as x tends to 24 of $(x^2 - 576)/(x - 24)$. Show the governing rule, substitution and conclusion clearly. **3**

Section D - Extended responses

32. Convert binary 101101 to decimal and decimal 26 to binary. Verify the second conversion using place values. **5**

33. Solve 2x + 3 <= 15 together with x >= 0. Represent the solution as an interval and explain whether both endpoints are included. **5**

34. For the observations 4, 6 and 8, find the mean, population variance and population standard deviation. Use division by n, not n - 1. **5**

35. Rs 10,000 is invested at 10% per year for two years. Compare simple interest with compound interest compounded annually. Calculate the extra interest due to compounding. **5**

Section E - Case and application questions

36. A deposit of ₹9000 earns 10% compound interest annually for two years.

(a) State the growth factor for one year. **1**

(b) Find the first year's amount. **1**

(c) Find the two-year amount and compound interest. **2**

37. Five observations are [5, 7, 9, 11, 13].

(a) Find their sum. **1**

(b) Find their mean. **1**

(c) Find their median and range, explaining each. **2**

38. A bag holds 7 red and 8 blue counters. One is drawn at random.

(a) State the total number. **1**

(b) Find the probability of red. **1**

(c) Find the probability of not red and explain your method. **2**

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