



Attempt questions first; check the separate key afterward. Show steps and draw labelled diagrams where asked.

A. Very short answers - 1 mark each

1. Define class mark.
2. Find class mark of 20-30.
3. Find mean of 2, 4, 6.
4. Find median of 3, 5, 8.
5. Find mode of 2, 2, 3, 4.
6. What is cumulative frequency?
7. Can a dataset have two modes?
8. Find total frequency for 4, 6, 10.

B. Short answers / practice - 2 marks each

9. Find mean for $x=1, 2, 3$ with frequencies 2, 3, 5.
10. Find mean of classes 0-10, 10-20, 20-30 with frequencies 2, 5, 3.
11. Find median class for classes 0-10, 10-20, 20-30 and frequencies 3, 8, 9.
12. Find median for those same grouped data using interpolation.
13. Find modal class for frequencies 4, 10, 6 in classes 0-10, 10-20, 20-30.
14. Find mode for the preceding grouped data.
15. Write the grouped mean formula using class marks.
16. Find missing f if mean of 1, 2, 3 with frequencies 2, f , 2 is 2.
17. Find cumulative frequencies for 3, 7, 5, 5.
18. Find median of 4, 6, 9, 11.
19. Explain why grouped means may be approximate.
20. If every value rises by 5, how does mean change?

C. Application / reasoning - 3 marks each

21. For classes 0-10, 10-20, 20-30, 30-40 with $f=2, 4, 6, 8$, find mean.
22. For the same distribution find median.

23. Find missing frequency if $x=10, 20, 30, f=2, k, 3$ and mean 22.
24. Estimate mode if mean=20 and median=22 using the empirical relation.
25. Find mean of first five even positive integers.
26. Can the mean lie outside the minimum-to-maximum range?
27. Find mean for values 5, 10, 15 with frequencies 2, 4, 4.
28. For classes 0-10, 10-20, 20-30 with frequencies 4, 6, 10, find median by interpolation.
29. For the same distribution, find the estimated mean.
30. Find mode for classes 0-10, 10-20, 20-30 with frequencies 5, 12, 8.
31. A dataset has mean 18 for 12 observations. If an extra value 31 is added, find the new mean.

D. Extended practice - 5 marks each

32. Use direct and assumed-mean methods for classes 0-10, 10-20, 20-30 with $f=1, 2, 1$; compare results.
33. Find mean, median and mode for classes 0-10, 10-20, 20-30 with $f=5, 10, 5$.
34. Two groups have 20 and 30 students with means 60 and 70. Find combined mean; explain why simple average is wrong.
35. A grouped table uses class widths 10, 20, 10. Explain why frequencies alone should not determine histogram heights.

ANSWER KEY - Numerical / closed questions

- 2) 25. 3) 4. 4) 5. 5) 2. 7) Yes. 8) 20. 9) 2.3.
10) 16. 11) 10-20. 12) 18.75. 13) 10-20. 14) 16.
15) $\Sigma fx / \Sigma f$. 16) Any non-negative f ; data do not determine it. 17) 3, 10, 15, 20. 18) 7.5. 20) It rises by 5.
21) 25. 22) $80/3 \approx 26.67$. 23) $k=5$. 24) 26. 25) 6. 26) No. 27) 11. 28) 20. 29) 18.
30) $180/11 \approx 16.36$. 31) 19. 32) Both 15. 33) All 15. 34) 66.