CAT 2013 QA Slot 2 Question Paper

Time Allowed :3 Hours	**Maximum Marks :**300	**Total questions :**100

General Instructions

Read the following instructions very carefully and strictly follow them:

1. **Duration of Section:** 40 Minutes
2. **Total Number of Questions:** 22 Questions (as per latest pattern, may vary slightly)
3. **Section Covered:** Quantitative Aptitude (QA)
4. **Type of Questions:**
   - Multiple Choice Questions (MCQs)
   - Type In The Answer (TITA) Questions – No options given, answer to be typed in
5. **Marking Scheme:**
   - +3 marks for each correct answer
   - -1 mark for each incorrect MCQ
   - No negative marking for TITA questions
6. **Syllabus Coverage:** Arithmetic, Algebra, Geometry, Number System, Modern Math, and Mensuration
7. **Skills Tested:** Numerical ability, analytical thinking, and problem-solving

1. If $x^2 - 7x + 12 = 0$, what is the value of $x^3 - 4x^2 + 3x$?

(1) 0

(2) 12

(3) 24

(4) 36

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2. A shopkeeper sells two items at Rs. 1000 each. On one, he gains 25%, and on the other, he loses 20%. What is his overall profit or loss percentage?

(1) 2.5% loss

(2) 2.5% profit

(3) No profit, no loss

(4) 5% loss

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3. The sum of the first n terms of an arithmetic progression is $2n^2 + n$. Find the 10th term.

(1) 39

(2) 40

(3) 41

(4) 42

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4. A and B run a 1200m race. A gives B a 120m head start. A runs at 5 m/s, and B at 4 m/s. Who wins, and by how much time?

(1) A wins by 24 seconds

(2) B wins by 24 seconds

(3) A wins by 12 seconds

(4) B wins by 12 seconds

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5. If $\log_2 x + \log_4 x = 3$, find x.

(1) 4

(2) 8

(3) 16

(4) 32

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6. A bag has 5 red and 7 blue balls. Two balls are drawn without replacement. What is the probability both are red?

(1) $\frac{5}{33}$

(2) $\frac{10}{66}$

(3) $\frac{5}{66}$

(4) $\frac{10}{33}$

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7. Find the number of ways to arrange 6 distinct books on a shelf if 2 specific books must be adjacent.

(1) 120

(2) 240

(3) 360

(4) 480

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8. The ratio of ages of A and B is 3:5, and their sum is 64. What will be their age ratio after 5 years?

(1) 25:45

(2) 28:44

(3) 29:45

(4) 26:48

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9. In a seating arrangement, 5 people (A, B, C, D, E) sit in a row. A and B must sit together, and C cannot sit at the ends. How many arrangements are possible?

(1) 24

(2) 36

(3) 48

(4) 60

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10. The HCF of two numbers is 12, and their LCM is 144. If one number is 48, find the other.

(1) 36

(2) 48

(3) 60

(4) 72

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11. A train travels 360 km at a uniform speed. If the speed increases by 6 km/h, it takes 1 hour less. Find the original speed.

(1) 45 km/h

(2) 30 km/h

(3) 36 km/h

(4) 42 km/h

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12. The sum of the squares of three consecutive integers is 194. Find the integers.

(1) 7, 8, 9

(2) 6, 7, 8

(3) 5, 6, 7

(4) 8, 9, 10

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13. A pipe fills a tank in 8 hours, another empties it in 12 hours. If both are opened, how long to fill?

(1) 24 hours

(2) 18 hours

(3) 16 hours

(4) 20 hours

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14. If $2x + 3y = 15$ and $xy = 6$, find $x^2 + y^2$.

(1) 37

(2) 24

(3) 27

(4) 30

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15. A rectangle has a perimeter of 50 cm and an area of 150 cm². Find its length.

(1) 15 cm

(2) 10 cm

(3) 20 cm

(4) 25 cm

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16. A number is increased by 25% and then decreased by 25%. What is the net percentage change?

(1) 6.25% decrease

(2) 6.25% increase

(3) No change

(4) 3.125% decrease

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17. A can complete a task in 15 days, B in 20 days. Together, how many days?

(1) 8.57 days

(2) 9 days

(3) 10 days

(4) 12 days

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18. Find the number of positive divisors of 720.

(1) 24

(2) 30

(3) 36

(4) 40

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19. Rs. 6000 is invested at 7% simple interest per annum for 4 years. Find the total amount.

(1) 7120

(2) 7200

(3) 7680

(4) 7800

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20. The 4th term of a geometric progression is 8, and the 7th term is 64. Find the 10th term.

(1) 256

(2) 512

(3) 1024

(4) 2048

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21. The average of 5 numbers is 20. If a number 10 is removed, what is the new average?

(1) 22.5

(2) 23.75

(3) 25

(4) 26.25

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22. A mixture has milk and water in the ratio 4:1. If 5 liters of water is added, the ratio becomes 2:1. Find the original milk quantity.

(1) 10 liters

(2) 20 liters

(3) 30 liters

(4) 40 liters

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23. Find the distance between points (2, 3) and (5, 7).

(1) 4

(2) 5

(3) 6

(4) 7

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24. In how many ways can 5 distinct letters be arranged in a circle?

(1) 24

(2) 48

(3) 120

(4) 60

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25. A die is rolled twice. What is the probability of getting a sum of 9?

(1) $\frac{1}{9}$

(2) $\frac{1}{12}$

(3) $\frac{1}{6}$

(4) $\frac{2}{9}$

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26. Solve for x: $3x - 5 = 7 - 2x$.

(1) 2.4

(2) 3

(3) 3.5

(4) 4

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27. A price is increased by 15% to Rs. 230. What was the original price?

(1) 200

(2) 210

(3) 220

(4) 230

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28. The area of a circle is 154 cm². Find its radius.

(1) 5 cm

(2) 6 cm

(3) 7 cm

(4) 8 cm

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29. A car travels 240 km in 4 hours. What is its speed?

(1) 50 km/h

(2) 60 km/h

(3) 70 km/h

(4) 80 km/h

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30. In how many ways can a committee of 3 be chosen from 6 people?

(1) 15

(2) 20

(3) 30

(4) 60

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31. Find the roots of $x^2 - 8x + 15 = 0$.

(1) 3, 5

(2) 2, 6

(3) 1, 7

(4) 4, 4

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32. An item is sold for Rs. 1200 at a 20% profit. Find the cost price.

(1) 900

(2) 960

(3) 1000

(4) 1100

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33. A and B can do a job in 6 days. A alone takes 10 days. How long does B take?

(1) 12 days

(2) 15 days

(3) 18 days

(4) 20 days

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34. The sum of an infinite geometric series is 12, and the first term is 8. Find the common ratio.

(1) $\frac{1}{3}$

(2) $\frac{2}{3}$

(3) $\frac{1}{2}$

(4) $\frac{3}{4}$
