CUET UG GAT Practice Test 2 with Answers PDF

Number of questions: 30   **Time Allowed: 30 mins.**

1. How many natural numbers between 200 and 400 are there which are divisible by 4, 5, 8 or 10?

   (a) 79   (b) 80
   (c) 81   (d) N

1. If the places of last two digits of a three-digit number are interchanged, a new number is obtained which is 27 less than the original number. Find the difference between the last two digits of the original number.

   (a) 6   (b) 9
   (c) 3   (d) Can't be determined

2. A candidate scoring 30% in an examination fails by 15 marks, while another candidate gets 60% which is 30 marks more than the minimum required for a pass. The minimum pass marks are

   (a) 75   (b) 45
   (c) 60   (d) 30

3. The pressure of a gas is directly proportional to its temperature and inversely proportional to its volume. The initial pressure, volume and temperature are 150 pascals, 20 cu.m. and 100° kelvin respectively. Find the final temperature if the final volume and pressure of the same gas are 8 cu. m. and 150 pascals respectively under same conditions.

   (a) 80° kelvin   (b) 50° kelvin
   (c) 40° kelvin   (d) None of these

4. The bisectors of the angles of a parallelogram enclose

   (a) another parallelogram
   (b) a rhombus
   (c) a rectangle
   (d) a trapezium

5. The parallel sides of a trapezium are 22 cm and 50 cm and the other sides are 26 cm and 30 cm. Its area is

   (a) $960 \, cm^2$ (b) $880 \, cm^2$
   (c) $840 \, cm^2$ (d) $864 \, cm^2$

6. If the price of coffee is raised by 25%, by what % must a houscholder reduce his consumption of coffee so as not increase his expenditure?

   (a) 20%   (b) 25%
   (c) 33.33%   (d) 40%

7. Three out of the following four expressions are exactly equal. Find the expression, which is not equal to the other three.

   (a) $12^2 \div 16 + 7 \times 3$
   (b) $16 \times 9 \div 12 + 9 \times 2$
   (c) $18^2 \div 12 + 3$
   (d) $16^2 \div 12 + 7 \times 2$

8. In a solution of 35 L, the ratio of milk to water is 4 : 1. If 7 L of water is added to the solution, then the ratio of milk to water in the resulting solution will be

   (a) 2 : 1   (b) 3 : 1
   (c) 5 : 1   (d) None of these

9. ABCD is a cyclic quadrilateral whose diagonals intersect at E. If ∠BEC = 80°, ∠DBC = 60° and ∠BDC = 40°, which of the following statements is not true?

   (a) BD bisects ∠ADC
   (b) AB = BC
   (c) DA = DC
   (d) AC bisects ∠BCD

10. Two pipes can separately fill a cistern in 10 min and 15 min respectively. There is also pipe which is attached to the outlet of the cistern. When all the three pipes are kept open, the cistern is full in 18 min. How long will the outlet pipe take to empty the full cistern?

    (a) 7 min   (b) 9 min
    (c) 12 min   (d) 10 min

11. Rice is mixed in the ratio of 2 : 3 and sold at Rs. 22 per kg, resulting in a profit of 10%. If the smaller quantity be Rs. 14 per kg, then the cost per kg of the larger quantity is

    (a) Rs. 23   (b) Rs. 24
    (c) Rs. 29   (d) Rs. 30

12. In a race of 200 m, A beats B by 10 m and A beats C by 5 m. By how many metres would C beat B in a 200 m race?

    (a) 5.13 m   (b) 10.5 m
    (c) 12 m   (d) None of these

13. Which is the smallest number which when multiplied with 1944 will make it a perfect square?

    (a) 8   (b) 2

    (c) 4   (d) None of these

14. A tank, which has a leak in the bottom is filled in 15 hr. Had there been no leak, it would have been filled in 12 hr. If the tank is full, the leak can empty the tank in how many hours?

    (a) 60 hr   (b) 3 hr

    (c) $\dfrac{20}{3}$ hr   (d) None of these

15. Two concentric circles have radii 13 cm and 5 cm. If AB, the chord of the bigger circle, touches the smaller circle, then the length of AB is

    (a) 24 cm   (b) 18 cm

    (c) 12 cm   (d) 8 cm

16. What is the solution set for P if the roots of the equation $3x^2 + Px + 6 = 0$ are real and equal?

    (a) $\pm\, 2\sqrt{2}$ (b) $\pm\, 3\sqrt{2}$

    (c) $\pm\, 6\sqrt{2}$ (d) $\pm\, 2\sqrt{6}$

17. If 'm' is a prime number greater than 3, what will be the remainder when $(m^2 + 17)$ is divided by 12?

    (a) 1   (b) 5

    (c) 6   (d) None of these

18. Two equal amounts were distributed as loans, at the same rate, the first at a simple interest and the second at a compound interest. If the ratio of the interests at the end of the second year is 20 : 21, what is the rate of interest? Compound interest was being compounded annually.

    (a) 20%   (b) 15%

    (c) 10%   (d) None of these

19. Some person can complete a piece of work in 12 days. Twice the number of such persons can complete half of the same work in how many days?

    (a) 12 days   (b) 6 days

    (c) 3 days   (d) None of these

20. The sum of a two-digit number and its reverse is equal to 99. How many such two-digit numbers are there?

    (a) 6   (b) 9

    (c) 8   (d) None of these

21. A is thrice as fast as B, and therefore is able to finish a work in 60 days less than B. Find the time in which they can do it, working together.

    (a) 20 days   (b) 10 days

    (c) 22.5 days   (d) 40 days

22. The adjacent sides of a parallelogram are 18 cm and 25 cm and the included angle of the parallelogram is 150°. The area of the parallelogram is

    (a) 315 sq. cm   (b) 450 sq. cm

    (c) 360 sq. cm   (d) 225 sq. cm

23. Two pipes can fill a tank in 15 min and 20 min respectively. A third pipe at the bottom empties the tank in 30 min. Find the time required to fill a tank, which is already $\dfrac{1}{4}$ full?

    (a) 12 min   (b) 9 min

    (c) 8 min   (d) 7 min

24. Excluding stoppages the speed of a bus is 54 km/hr and including stoppages it is 45 km/hr. For how many minutes does the bus stop per hour?

    (a) 12 min   (b) 10 min

    (c) 17 min   (d) 15 min

25. The total cost of a trip is constant. The cost per head reduces from Rs. 25 to Rs. 20, when 20 more people join in. Find how much it would reduce further if 25 more join this new group.

    (a) Rs. 4   (b) Rs. 5

    (c) Rs. 8   (d) Rs. 6

26. A man bought a T.V. set priced at Rs. 1,600. He was given successive discounts of 20% and 10%. The price he paid was:

    (a) Rs. 1,200   (b) Rs. 1,224

    (c) Rs. 1,168   (d) Rs. 1,152

27. If no income tax is charged on the first Rs. 2,000 of the income, how much does a man pay as income tax at 3 paise per rupee, if his total income is Rs. 5,000?

    (a) Rs. 150   (b) Rs. 90

    (c) Rs. 9   (d) None of these

28. There are 3 copies of 4 different books. In how many ways can they be arranged on a shelf?

    (a) $4! \times 3!$ (b) $\dfrac{12!}{3! \times 3! \times 3! \times 3!}$

    (c) $\dfrac{12!}{13!}$ (d) $12! \times 3! \times 3! \times 3!$

29. Solve for x

$$\log_2 x + \log_4 x + \log_{16} x = \frac{2}{4}$$

(a) 2

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

(c) 8

(d) 7

30. The price of an article was increased by p%. Later the new price was decreassed by p%. If the latest price was Re. 1, the original price was

(a) Re. 1

(b) Rs. $\left(\dfrac{1-p^2}{100}\right)$

(c) Rs. $\left(\dfrac{10000}{10000 - p^2}\right)$

(d) Rs. $\dfrac{\sqrt{1-p^2}}{100}$

Answer Key

1. (c)	2. (c)	3. (c)	4. (c)	5. (d)	6. (a)	7. (d)	8. (a)	9. (c)	10. (b)
11. (b)	12. (a)	13. (d)	4. (a)	15. (a)	16. (c)	17. (c)	18. (c)	19. (c)	20. (b)
21. (c)	22. (d)	23. (b)	24. (b)	25. (a)	26. (d)	27. (b)	28. (b)	29. (c)	30. (c)

Explanations

1. **c** Let x, y and z be the digits at unit's place, ten's place and hundredth place, respectively. Then the number formed will be 100z + 10y + x.

   When the last two digits are interchanged, then the number so formed = 100z + 10x + y

   Now, according to the given problem

   100z + 10y + x – 27 = 100z + 10x + y

   9y – 9x = 27 or y – x = 3

   Thus, the difference between the last two digits will be 3.

2. **c** If P be the maximum marks, then
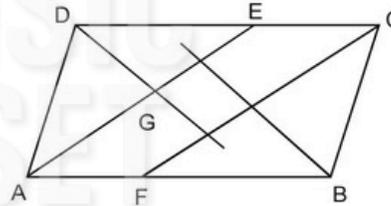
   $$\frac{30}{100}P + 15 = \frac{60}{100}P - 30$$

   Solving we get $\frac{30}{100}P = 45$ or $P = \frac{4500}{30} = 150$

   Hence, the pass marks $= \frac{30}{100} \times 150 + 15 = 60$

3. **c** We have $\dfrac{P_1 V_1}{T_1} = k = \dfrac{P_2 V_2}{T_2}$

   or $\dfrac{150 \times 20}{100} = \dfrac{150 \times 8}{T_2} \Rightarrow T_2 = 40°$ kelvin

4. **c**

   Let the bisector of ∠A be AE and ∠C be CF.

   $\angle DEA = \angle EAB = \dfrac{\angle A}{2}$, $\angle ECF = \dfrac{\angle C}{2}$

   But ∠A = ∠C

   ∴ ∠DEA = ∠ECF

   ∴ AE is parallel to CF.

   Similarly, the bisectors of B and D are parallel.

   Hence, the bisectors form a parallelogram.

   $\angle ADG = \dfrac{1}{2}\angle D$, $\angle DAG = \dfrac{1}{2}\angle A$.

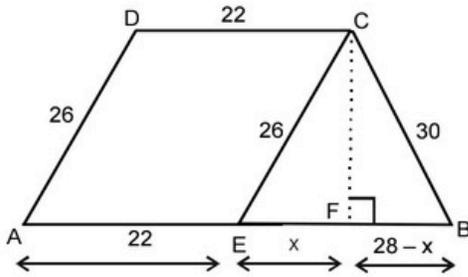   ∴ $\angle ADG + \angle DAG = \dfrac{1}{2}(\angle D + \angle A) = \dfrac{1}{2} \times 180° = 90°$

   (Sum of two adjacent angles of a parallelogram is 180°)

   ∴ ∠DGA = 90°

   Hence, the enclosed parallelogram is a rectangle.

5. d

Draw CE parallel to DA.

Then CE = 26 cm. Draw CF perpendicular to BE.

Let EF be x.

AE = 22 cm

∴ BE = 28 cm. Hence, BF = 28 − x

$26^2 − x^2 = 30^2 − (28 − x)^2$ [Since each side is equal to CF^2.]

Solving this equation, we get x = 10 cm

Hence, $CF^2 = 26^2 − 10^2 = 576$

∴ CF = 24 cm

Area of the trapezium

$= \frac{1}{2}(22 + 50) \times 24$ sq. cm = 864 sq. cm

6. a Reduction in consumption $= \frac{25}{25 + 100} \times 100 = 20\%$

7. d Let us check each of the four options using BODMAS rule.

(a) $12^2 \div 16 + 7 \times 3 = 144 \div 16 + 7 \times 3 = 9 + 21 = 30$

(b) $16 \times 9 \div 12 + 9 \times 2 = 16 \times \frac{9}{12} + 9 \times 2 = 12 + 18 = 30$

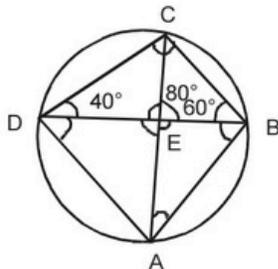(c) $18^2 \div 12 + 3 = 324 \div 12 + 3 = 27 + 3 = 30$

(d) $16^2 \div 12 + 7 \times 2 = 256 \div 12 + 14 = \frac{256}{12} + 14$

So, an option (d) is not equal to the other three.

8. a $\frac{M}{W} = \frac{\frac{4}{5} \times 35}{\frac{35}{5} + 7} = \frac{28}{14} = 2 : 1$

Hence, M : W = 2 : 1.

9. c

In △ BEC, ∠BEC = 80° and ∠EBC = 60°

∴ ∠ECB = 40°

∠ADB = 40° = ∠ACB (Angles in the same segment)

Also ∠BDC = 40° (Given)

∴ BD bisects ∠ADC.

AB and BC subtend 40° at the circumference.

∴ AB = BC

DA subtends 40° at C

(∵ ∠BEC = 80°, ∠EDC = 40°)

DC subtends 60° at A

(∵ ∠DAC = ∠DBC = 60°)

∴ DA ≠ DC

∠ACB = 40° and ∠DCA = 40°

∴ AC bisects ∠BCD.

10. b In 1 min first pipe fill $\frac{1}{10}$ of the cistern.

In 1 min second pipe will fill $\frac{1}{15}$ of the cistern.

Let the third pipe take x min to empty the cistern.

In 1 min third pipe will empty $\frac{1}{x}$ of the cistern.

Now, according to the problem

$\frac{1}{10} + \frac{1}{15} - \frac{1}{x} = \frac{1}{18}$

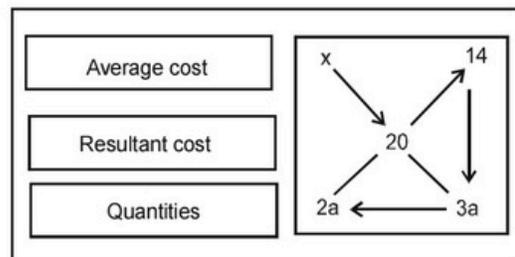$\Rightarrow \frac{3x + 2x - 30}{30x} = \frac{1}{18} \Rightarrow 15x - 90 = 5x$

$\Rightarrow 10x = 90$

$\Rightarrow x = 9$ min.

11. b Cost price of the mixture per kilogram

$= \frac{22 \times 100}{110} = Rs. 20$

Assume cost price of larger quantity per kilogram be x.

Average cost		
Resultant cost		
Quantities		

$\frac{x - 20}{20 - 14} = \frac{2a}{3a}$

$\Rightarrow \frac{6}{x - 20} = \frac{3}{2} \Rightarrow 3x = 72$

$\Rightarrow x = Rs. 24$

Alternative method:

Let 2kg and 3kg of rice priced at Rs. 14 and Rs. x be mixed.

Cost price of Mixture = Rs. 20

Cost price of mixture = Rs. $\dfrac{3x + 28}{5}$

$\therefore \dfrac{3x + 28}{5} = 20 \Rightarrow 3x + 28 = 100$

$\Rightarrow 3x = 72 \Rightarrow x = $ Rs. 24

12. **a** When A covers 200 m, B covers 190 m and C covers 195 m. i.e. when C covers 195 m, B covers = 190 m, and when C covers 200 m, B covers =

$\dfrac{190}{195} \times 200 = 194.87$ m

Hence, C would beat B by 200 – 194.87 = 5.13 m in a 200 m race.

Short cut:

In a race of L length, if Ist beats 3rd by x_1 distance, Ist beats 2nd by x_2 distance and 2nd beats 3rd by x_3 distance, then their relation is given by $(L - x_2) x_3 = L (x_1 - x_2)$.

Using this, we get

$(200 - 5)x_3 = 200(10 - 5)$

$195 \times x_3 = 200 \times 5$

$x_3 = 5.13$ m.

13. **d** The factors of 1944 are

$2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 3 \times 3$ or $2^2 \times 2 \times 3 \times 3^4$

So if one more 2 and 3 are multiplied, i.e. $2 \times 3 = 6$, then it make 1944 a perfect square.

14. **a** Without leak a tank can be filled in 12 hr.
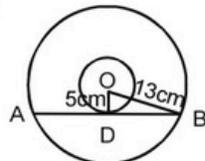
In 1 hr a tank will be $\dfrac{1}{12}$ filled.

In 1 hr, a tank with a leak will be $\dfrac{1}{15}$ filled.

So, if the tank is full, then in 1 hr it will empty

$\dfrac{1}{12} - \dfrac{1}{15} = \dfrac{5 - 4}{60} = \dfrac{1}{60}$ of the tank.

Thus, in 60 hr, it will empty the whole tank.

15. **a**

Let O be the centre of both the circles.

If AB touches the inner circle at D, then OD is perpendicular to AB and D is the mid-point of AB.

$\therefore$ BD^2 = OB^2 – OD^2 = 13^2 – 5^2 = 144

Thus, BD = 12 cm. $\therefore$ AB = 24 cm.

16. **c** The roots are real and equal,

$b^2 - 4ac = P^2 - 4 (6) (3) = 0$,

i.e. $P = \pm\sqrt{72}$ or $\pm 6\sqrt{2}$.

17. **c** Let us check with the few prime numbers which are greater than 3, say, 5, 7, 11, 13...

Now $\dfrac{5^2 + 17}{12} = \dfrac{25 + 17}{12} = \dfrac{42}{12}$, remainder 6.

$\dfrac{7^2 + 17}{12} = \dfrac{49 + 17}{12} = \dfrac{66}{12}$, remainder 6.

$\dfrac{11^2 + 17}{12} = \dfrac{121 + 17}{12} = \dfrac{138}{12}$, remainder 6 and so on.

Thus, in each case, we have found that remainder is 6.

Alternative method:

Any prime number can be written as 6n – 1 or 6n + 1

Case I: Let m = 6n – 1

Then $m^2 + 17 = (6n - 1)^2 + 17 = 36n^2 - 12n + 18$

$= 12 (3n^2 - n + 1) + 6$ … (i)

When (1) is divided by 12 we get 6 as the remainder.

Case II: Let m = 6n + 1

Then $m^2 + 17 = (6n - 1)^2 + 17 = 36n^2 + 12n + 18$

$= 12 \left(3n^2 + n + 1\right) + 6$ … (ii)

When (ii) is divided by 12, we get 6 as the remainder.

18. **c** According to the problem, we have

$$\dfrac{20}{21} = \dfrac{\dfrac{P \times r \times t}{100}}{P\left[\left(1 + \dfrac{r}{100}\right)^t - 1\right]}$$

where P is the principal, r is the rate of interest, t is the duration.

Here, t = 2 years

Thus $\dfrac{20}{21} = \dfrac{\dfrac{r \times 2}{100}}{\left(1 + \dfrac{r}{100}\right)^2 - 1} = \dfrac{2r}{100} \times \dfrac{100^2}{r^2 + 200r}$

$\Rightarrow \dfrac{20}{21} = \dfrac{200}{r + 200} \Rightarrow r = 10\%$.

19. **c** Let number of persons who can complete the job in 12 days = x

Let the number of days taken by 2x persons to complete half the work = y.

Now

Persons	Work	Days	
x	1	12	
x	$\frac{1}{12}$	1	... (i)
2x	$\frac{1}{2}$	y	
2x	$\frac{1}{2} \times \frac{1}{y}$	1	... (ii)

Using relations (i) and (ii), we get

$x \times \frac{1}{2y} = \frac{2x}{12} \Rightarrow y = 3$ days.

20. b The numbers are 90, 81, 72, 63, 54, 45, 36, 27 and 18.

21. c A = 3B

A takes x days to do work alone.

B takes (x + 60) days to do work alone.

A's one day's work = $\frac{1}{x}$

B's one day's work = $\frac{1}{x+60}$ $\therefore$ $\frac{1}{x} = \frac{3}{x+60}$
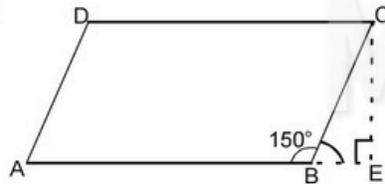
x + 60 = 3x $\Rightarrow$ 2x = 60 $\Rightarrow$ x = 30 days

A can do the work in 30 days.

B can do the work in 90 days.

In 1 day $\frac{1}{30} + \frac{1}{90} = \frac{4}{90} = \frac{2}{45}$ work is done.

$\therefore$ The work will take $\frac{45}{2}$ days = 22.5 days.

22. d

Let CE be the perpendicular from C to AB then
$\angle CBE = 30°$

BC = 18 cm, AB = 25 cm

i.e. sin30° = $\frac{CE}{BC} = \frac{CE}{18}$

CE = 18 sin30° = 9 cm

Area of the parallelogram

= AB . EC = (25)9 sq. cm = 225 sq. cm

23. b In 1 min first pipe will fill $\frac{1}{15}$ of the tank.

In 1 min second pipe will fill $\frac{1}{20}$ of the tank.

In 1 min third pipe empty $\frac{1}{30}$ of the tank.

So, in 1 min when all the three pipes are active,

they will fill $\frac{1}{15} + \frac{1}{20} - \frac{1}{30} = \frac{4+3-2}{60} = \frac{5}{60} = \frac{1}{12}$

Now in 1 min $\frac{1}{12}$ tank is filled, so remaining $\frac{3}{4}$

tank will be filled in $\frac{3}{4} \times 12 = 9$ min.

24. b Due to stoppages it covers 9 km less in 1 hr.

Time taken to cover 9 km = $\frac{9}{54} \times 60 = 10$ min.

Hence, on an average the bus stops for 10 min every hour.

25. a Suppose initially there were x people so we have 25x = 20(x + 20) or, x = 80. Therefore, total cost is 25 × 80 = Rs. 2,000. When there are 100 + 25 = 125 people, cost per head will be $\frac{2000}{125}$ = Rs. 16.

$\therefore$ There will be a further reduction of Rs. 4.

26. d 1600 × 0.8 × 0.9 = 1600 × 0.72

= Rs. 1,152

27. b Income tax to be paid on Rs. 3,000

= 0.03 × 3000 = Rs. 90

28. b Number of arrangements = $\frac{12!}{3! \times 3! \times 3! \times 3!}$

29. c $\log_2 x + \frac{\log_2 x}{\log_2 4} + \frac{\log_2 x}{\log_2 16} = \frac{21}{4}$

$\Rightarrow \log_2 x + \frac{\log_2 x}{2} + \frac{\log_2 x}{4} = \frac{21}{4} \Rightarrow 7\log_2 x = 21$

$\Rightarrow \log_2 x = 3 \Rightarrow 2^3 = x$

$\Rightarrow x = 8$

30. c Let the original price of the article be Rs. x

Then, $x \times \left(\frac{100+p}{100}\right) \times \left(\frac{100-p}{100}\right) = 1$

$x = \frac{100^2}{100^2 - p^2} = R\left(\frac{10000}{10000 - p^2}\right)$

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