MODEL TEST PAPER SUMMATIVE ASSESSMENT-II
(Solved)

Time : 2 hrs 30 min. **Maximum Marks : 80**

General Instruction –

- Read the question paper well before answering.
  1. Section A Q.1. to Q.10. carry 1 mark each.
  2. Section B Q.11. to Q.20. carry 2 marks each.
  3. Section C Q.21. to Q.30. carry 3 marks each.
  4. Section D Q.31. to Q.35. carry 4 marks each.

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SECTION-A

Choose the correct answer:

Q.1. One of the factors of $25x^2–0.01y^2$ is:

(i) $5x–y$ *(iii)* $5x–0.01y$
(ii) $5x+y$ *(iv)* $5x+0.1y$

Q.2. What will be the amount of discount if an article marked at Rs 460 is sold at a discount of 15%.

(i) Rs 89 *(iii)* Rs 83
(ii) Rs 79 *(iv)* Rs 69

Q.3. **The compound interest on Rs 4000 lent for 2 years at 5% per annum when the compound interest is payable annually is :**

(i) Rs 390 *(iii)* Rs 450
(ii) Rs 410 *(iv)* Rs 480

Q.4. The area of a trapezium with parallel sides 10 cm and 6 cm and height 5 cm is :

(i) 10 sq cm *(iii)* 40 sq cm
(ii) 20 sq cm *(iv)* 80 sq cm

Q.5. The standard form for 0.000035 is :

(i) $3.5x10^{-5}$ *(iii)* $3.5x10^{-6}$
(ii) $3.5x10^{5}$ *(iv)* $3.5x10^{6}$

Q.6. x and y vary directly with each other. When x is 12, y is 18. Which of the following is not a possible pair of corresponding values of x and y?

(i) 2, 3 *(iii)* 15, 20
(ii) 8, 12 *(iv)* 25, 37.5

Q.7. A point whose x-coordinate is zero and y-coordinate is non-zero will lie on the:

(i) x-axis *(iii)* y-axis
(ii) origin *(iv)* None of these

Q.8. Which is the next number in the series :

4, 9, 25, 49, 121, ……

(i) 129 *(iii)* 137
(ii) 169 *(iv)* 203

Q.9. Value of x in $6x = 29^2 - 23^2$ is

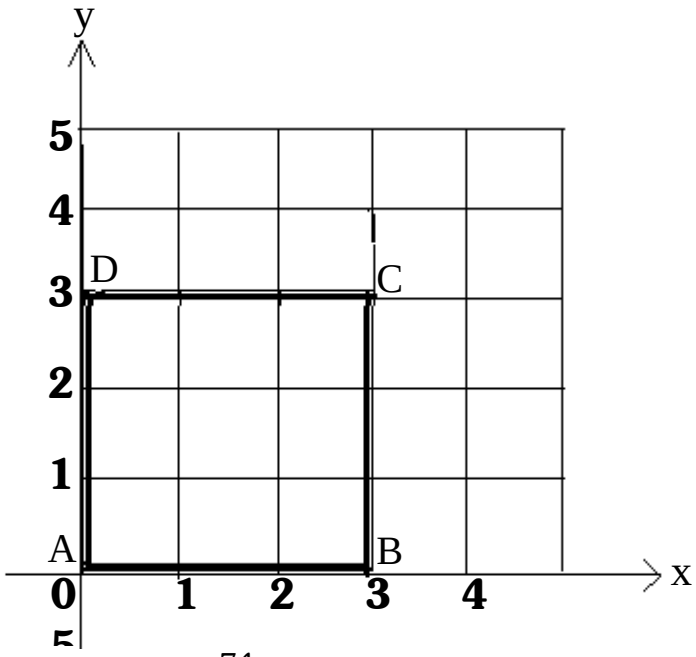
(i) 52 *(iii)* 48
(ii) 104 *(iv)* None of these

Q.10. The value of $(2^{-1} - 3^{-1})^{-1}$ is

(i) 1/6 *(iii)* 6
(ii) –6 *(iv)* None of these

SECTION-B

Q.11. Write the coordinates of the vertices of the adjoining figure ABCD shown.



Q.12. If 153a65 is a multiple of 9 where 'a' is a digit, what is the value of 'a'?

Q.13. Solve and write the answer as a positive exponent:

$$\left(\frac{1}{6}\right)^{-2} \times 6^{-4}$$

Q.14. Geeta types 620 words in one hour. How many words would she type in 6 minutes?

Q.15.

$$\begin{array}{r} A\ \ 1 \\ +\ 1\ \ B \\ \hline B\ \ 0 \end{array}$$

Find the values of the letters A and B.

Q.16. The area of a rhombus is 192 sq m. If one of its diagonal is 16 m, find the length of the other diagonal.

Q.17. Solve:

$$(4^{-1} + 8^{-1}) \div \left(\frac{2}{3}\right)^{-1}$$

Q.18. The C.P. of a sofa set is Rs 5,500 included 10% VAT. Find the price before VAT was added.

Q.19. Regroup the following terms and factorise:
10mn + 4m + 5n + 2

Q.20. A shopkeeper offers 4% discount on calculator to his customers. What does a customer pay for a calculator whose marked price is Rs 650?

SECTION-C

Q.21. Plot the following points on the graph paper-

(i) (6, 0)
(ii) (0, 5)

Name the axis on which the two points lie.

Q.22. The area of a rectangle is $5a^2 + 25a$. If its breadth is 25a, then find its length.

Q.23. Find the compound interest on Rs 20,000 for an year at 10% per annum compounded half yearly.

Q.24. A shopkeeper offers his customers 10% discount and still makes a profit of 26%. What is C.P. of an article marked Rs 280?

Q.25. By what number should $\left(\frac{-3}{2}\right)^{-3}$ be divided so that the quotient is $\left(\frac{9}{4}\right)^{-2}$?

Q.26. The area of four walls of a room is 57.4m^2. If the room is 5m long and 3.2m wide, find the height of the room.

Q.27. Solve and find the value of x:
$16^{3x} = 32^{(5x-13)}$

Q.28. The cost of 7y metres of cloth is Rs ($14y^2 + 21y^3$). Find the cost of 1m cloth.

Q.29. Veena can buy 25 books worth Rs. 500 each. How many books will she be able to buy for the same amount if each book costs Rs. 125 more?

Q.30. The area of a rectangular field is 836 sq.m. Breadth of the field is 22 m. What is the perimeter of the field?

SECTION-D

Q.31. In a section of Tihar jail there were 800 prisoners at one time and food for them was sufficient for 15 days. Then some prisoners were transferred to an adjoining section and the food lasted for 25 days. How many prisoners were transferred?

Q.32.The following table shows the number of articles and their cost in rupees:

No. of articles	**2**	**4**	**6**	**8**	**10**
Cost price (in Rs)	**150**	**300**	**450**	**600**	**750**

(i) Represent the above table by a graph.
(ii) From the graph answer the following questions.
(a) What will be the cost of 7 articles.
(b) How many articles can be purchased for Rs 375?

Q.33.Factorise:
(i) $x^2 - 8x - 65$
(ii) $x^4 - (y + z)^4$

Q.34. 15 cylindrical pillars of a building are to be painted and the diameter and height of each pillar is 48cm and 7m respectively. Find the cost of painting if the rate is Rs. 2 per sq.m.

Q.35. A rectangular sheet of paper 11cm × 10cm is rolled along its length and a cylinder is formed. Find the volume of the cylinder so obtained.

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SOLUTIONS

Time : 3 hrs **Max Marks : 80**

Q.1. (iv)
Q.2. (iv)
Q.3. (ii)
Q.4. (iii)
Q.5. (i)
Q.6. (iii)
Q.7. (iii)
Q.8. (iii)
Q.9. (i)
Q.10 (iii)

Q.11. A(0,0), B(3,0), C(3,3), D(0,3)

Q.12. The value of a is 7.

Q.13. $\left(\frac{1}{6}\right)^{-2} \times 6^{-4}$

$= 6^2 \times 6^{-4} \left[a^{-m} = \frac{1}{a^m} \right]$

$= 6^{2+(-4)} \left[a^m \times a^n = a^{m+n} \right]$

$= 6^{-2} \left[a^{-m} = \frac{1}{a^m} \right]$

Q.14.

Time (min)	60	6
Words typed	620	x

$\frac{x}{y} = k(direct\ variation)$

$\frac{60}{6} = \frac{620}{x}$

$60x = 620 \times 6$

$x = \frac{620 \times 6}{60} = 62$

In 6 minutes 62 words are typed.

Q.15. The value of A=7, B=9.

Q.16. Diagonal of a rhombus= 16m

Area of the rhombus = $192\,m^2$

$$\frac{1}{2}\times d_1 \times d_2 = 192$$

$$\frac{1}{2}\times 16 \times d_2 = 192$$

$$8d_2 = 192$$

$$d_2 = \frac{192}{8} = 24$$

The other diagonal of rhombus=24m.

Q.17. $\left(4^{-1}+8^{-1}\right)\div\left(\frac{2}{3}\right)^{-1}$

$$\left(\frac{1}{4}+\frac{1}{8}\right)\div\left(\frac{3}{2}\right)$$

$$\left(\frac{2+1}{8}\right)\div\frac{3}{2}$$

$$\frac{3}{8}\div\frac{3}{2}$$

$$\frac{3}{8}\times\frac{2}{3}=\frac{1}{4}$$

Q.18 Let the price of sofa set before VAT was added } =Rs

A.T.Q,

x + 10% of x =Rs 5500

$$\frac{10x}{100} = 5500$$

$$\text{x} + \frac{10x + x}{10} = 5500$$

$$\frac{11x}{10} = 5500$$

$$x = \frac{5500\times 10}{11} = 5000$$

Price of sofa set before VAT added= Rs 5000

Q.19 10 mn + 4m + 5n +2

2m (5n+2) + (5n + 2)

(5n + 2) (2m +1)

Q.20 M.P. of calculator = Rs 650

Discount = 4% of Rs 650

$$= \frac{4}{100} \times 650 = Rs26$$

Money customer pays = Rs 650 – Rs 26

= Rs 624

Q.21 x coordinate = 3
y coordinate = 5
Point A lies on x-axis
Point B lies on y-axis

Q.22 Breadth of rectangle = 25 a

Area of rectangle $= 5a^2 + 25a$

$l \times b = 5a^2 + 25a$

$25a \times l = 5a^2 + 25a$

$$l = \frac{5a^2 + 25a}{25a}$$

$$l = \frac{5a\ (a + 5)}{25a}$$

The length of rectangle $= \frac{a+5}{5}$

Q.23.

$$P\left(1+\frac{R}{200}\right)^{2n}$$

$$A = 20000\left(1+\frac{10}{200}\right)^{2}$$

$$A = 20000\times\frac{21}{20}\times\frac{21}{20}$$

$$A = Rs22050$$

$$C.I = A - P$$

$$= Rs22050 - Rs20000$$

$$C.I = Rs2050$$

Q.24. M.P. of an article = Rs 280

Discount = 10% of Rs 280

$$= \frac{10}{100}\times 280 = Rs28$$

Selling Price = M.P – Discount

= Rs 280 – 28= Rs 252

Profit % = 26

$$C.P = \frac{S.P\times 100}{100+\Pr ofit\%}$$

$$= = \frac{252\times 100}{100+26}$$

$$= \frac{252\times 100}{126}$$

C.P of article =Rs 200

Q.25. Let the number to be divided = x

A.T.Q

$$\left(\frac{-3}{2}\right)^{-3} \div x = \left(\frac{9}{4}\right)^{-2}$$

$$\left(\frac{2}{-3}\right)^{3} \div x = \left(\frac{4}{9}\right)^{2}$$

$$\frac{8}{-27} \div x = \frac{16}{81}$$

$$\frac{8}{-27x} = \frac{16}{81}$$

$$x = \frac{8 \times 81}{-27 \times 16}$$

$$= \frac{-3}{2}$$

The number to be divided = $\frac{-3}{2}$

Q.26. Area of four walls= 57.4 m^2

Length of the room= 5 m

Width of the room= 3.2 m

A = 57.4

$2 \times h\ (l+b)$ = 57.4

$2 \times h\ (5+3.2)$ = 57.4

$2 \times h \times 8.2$ = 57.4

16.4 h = 57.4

h = $\frac{57.4}{16.4} = \frac{574}{164} = 3.5$

Height of the room = 3.5 m

Q.27.

$$16^{3x} = 32^{5x-13}$$
$$(2^4)^{3x} = (2^5)^{5x-13}$$
$$2^{12x} = 2^{5(5x-13)}$$
$$2^{12x} = 2^{25x-65}$$
$$12x = 25x - 65$$
$$25x - 12x = 65$$
$$13x = 65$$
$$x = 5$$

Q.28. Cost of 7y m cloth= $14y^2 + 21\ y^3$

Cost of 1 m cloth= $14y^2 + 21\ y^3 \div 7y$

$$= \frac{7y^2(2+3y)}{7y} = y(2+3y)$$

Cost of 1 m cloth = $y(2+3y)$

Q.29. Let the number of books that can be purchased amount be as x

Books	25	x
Cost (in Rs)	Rs 500	Rs 625

$x \times y = k$ (inverse variation)

$25 \times 500 = x \times 625$

$x = \frac{500 \times 25}{625} = 20$

Number of books that can be bought for Rs 625=20

Q.30. Area of a rectangular field = 836 m^2

Breadth of field = 22 m

Length of field = $\frac{\text{Area}}{\text{Breadth}}$

$= \frac{836}{22}$

$l = 38$

Perimeter of field $= 2 \times (l + b)$

$= 2 \times (38+22) = 2 \times 60 = 120$ m

Q.31. Let the number of prisoners be x

Number of prisoners	Number of days
800	15
x	25

$x \times y = k$ (inverse variation)

$800 \times 15 = x \times 25$

$x = \frac{800 \times 15}{25}$

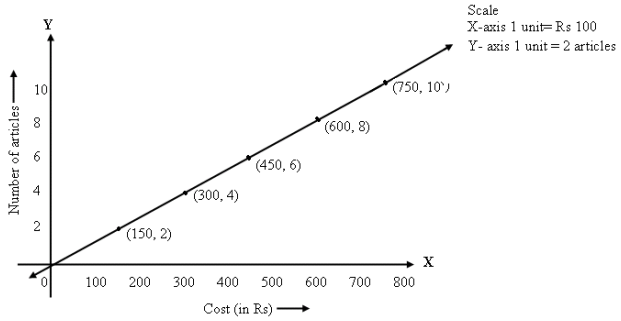
$= 480$

If x is the number of prisoners left then
number of prisoners transferred } $800 - 480 = 320$

Q.32. (ii) (a) Cost of 7 articles = Rs 525

(b) Number of articles that can be purchased for Rs 375= 5

(i) Graph



Q.33. (i) $x^2 - 8x - 65$

$x^2 + (5 - 13)\, x - 65$

$x^2 + 5x - 13x - 65$

$x(x + 5) - 13(x + 5)$

(x – 13) (x + 5)

(ii) $x^4 - (y + z)^4$

$$\left(x^2\right)^2 - \left[\left(y+z\right)^2\right]^2$$
$$\left[x^2 + (y+z)^2\right]\left[x^2 - (y+z)^2\right]$$
$$\left[x^2 + (y+z)^2\right]\left[(x)^2 - (y+z)^2\right]$$
$$\left[x^2 + (y+z)^2\right]\left[x + (y+z)(x - (y+z)\right]$$
$$\left[x^2 + (y+z)^2\right]\left[(x+y+z)(x-y-z)\right]$$

Q.34. Diameter of a pillar = 48 cm

Radius of pillar = 24 cm = 0.24 m

Height of a pillar = 7 m

Curved surface area of a pillar = $2\pi rh$

$$= 2 \times \frac{22}{7} \times 0.24 \times 7$$

$$= 10.56 \text{ m}^2$$

Curved surface area of 15 pillars = 10.56×15

Cost of painting 15 pillars = $10.56 \times 15 \times 2$

= Rs 316.80

Q.35. Length of the paper becomes the perimeter of the base of the cylinder and the width becomes height.

Let the radius of the cylinder = r
Height of the cylinder = h
Perimeter of the base of the cylinder = $2\pi r$

$2\pi r = 11$

$$2 \times \frac{22}{7} \times r = 11$$

$$r = \frac{7}{4} cm$$

Volume of the cylinder $= \pi r^2 h$

$$\frac{22}{7} \times \frac{7}{4} \times \frac{7}{4} \times 4$$

$$= 38.5 cm^3$$

Hence, volume of the cylinder $= 38.5 cm^3$

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