The Brigade School-Revision Test (2020

- 21) Total points 34/40 Mathematics Std: X .Marks: 40 Email address * mananmehtabatman@gmail.com 0 of 0 points Name * Manan Y Mehta Name of the School * **TBSM TBSW** TBSG Class / sec * 10A

Question 1 10 of 10 points



- \checkmark i) In an A.P, If Tn = 4, d = 2, Sn = -14; Find n and a. * 3/3
- n=8,a=7
- n=7,a=-8
- n=7,a=2

Feedback

Given, Tn= 4, d=2 and Sn=-14. a+(n-1) d=4a+(n-1)2=4a=4-(n-1)2=6-2n (1) Given, Sn=-14 n/2 (a+Tn) = -14n/2 (6-2n+4) = -14simplifying, $n^{-5}n - 14 = 0$ (1) On solving, we get n=7, n=-2taking n=7,a=-8ANS: n=7,a=-8 (1)

The Brigade School- Revision Test (2020 - 21)	
√ ii) Show that (x-1) is a factor of x ³ - 7x ² + 14x - 8 hence completely factorize the above expression. *	3/3
	✓
(x-1)(x-2)(x+4)	
(x-1)(x+2)(x-4)	
Feedback	
Let $p(x)=x$ to the power $3-7x^4+14x-8$ By factor theorem, if $(x-1)$ is a factor of $P(x)$, $P(1)=0$ (1m) Here $P(1)=1-7+14-8=0$ Hence $(x-1)$ is a factor of $P(x)$. (1m) Now, Dividing $P(x)$ by $(x-1)$, we get quotient $=x^6-6x+8$	

On factorising: $x^{-6}x + 8 = (x - 2)(x - 4)$ Hence ANS: (x-1)(x-2)(x-4) (1m)

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√ iii) If A=■(0&-1@2&5), B=■(1&3@6&4), c= ■(1&0@-3&-2), find A(B+C) *

                                                                                               4/4
   ) •(-3 & -2 @ -19 & -16)
    ■(-3 & 2 @ 19 & 16)
■(-3 & -2 @ 19 & 16)
  Feedback
  B+C = \blacksquare (1\&3@6\&4) + \blacksquare (1\&0@-3\&-2)
  = ■(2&3@3&2)
  A(B+C) = \blacksquare (0\&-1@2\&5) X \blacksquare (2\&3@3\&2)
  = (0x2+-1x3 \& 0x3+-1x2 @ 2x2 + 5x3 \& 2x3+5x2)
  = ■( -3 & -2 @ 19 & 16 )
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10 of 10 points

3/3

Question 2

i) Using properties of proportion, find the value of solve: *

$$\frac{\sqrt{5}+\sqrt{5}-x}{\sqrt{5}-\sqrt{5}-x}=3$$

- x = 4/15
- x = 15/4
- x = 25/4

Feedback

 $(\sqrt{5} + \sqrt{(5-x)})/(\sqrt{5} - \sqrt{(5-x)}) = 3/1$ Applying Componendo and dividendo , and simplifying we get, $(\sqrt{5})/(\sqrt{5}-x)=2$ (2m) Cross multiplying and squaring, we get, 5 = 4(5-x)X=15/4 (1m) ANS: x=15/4

✓	ii) Mrs. Sheila Sarin deposited Rs. 1500 per month in a Recurring deposit	4/4
	scheme of a bank 9 months. If she gets Rs. 675 as interest at the time of	
	maturity, find the rate of Interest, if the interest is calculated at the end	
	of each month. *	

- Rate of interest = 12%, The maturity value = Rs 18,675
- Rate of interest = 12% , The maturity value = Rs 14,175
- Rate of interest = 14%, The maturity value = Rs 18,675

Feedback

Given: SI=Rs 675 Time for which money is deposited = 9 months. Money deposited per month= Rs 1,500 P=Rs 1,500, n=9 months then,

SI = [p X (n(n+1))/2x12]x r/100Substituting and solving, we get r= 12% Hence rate of interest =12% per annum. (1m) The total money deposited = $1500 \times 9 = \text{Rs } 13,500 \text{ (1m)}$ Therefore, the maturity value = Rs 13,500+ Rs 675= Rs 14,175 (1m) Ans:i) Rate of interest = 12% The maturity value = Rs 14,175 (1)

✓ iii) Solve the inequation $-2\frac{2}{3} \le x + \frac{1}{3} < 3\frac{1}{3}$, $x \in Z^*$ 3/3

- { 3, -2,-1,0,1,2,3}
- {-3, -2,-1,0,1,2}
- {-2,-1,0,1,2, 3}

Feedback

 $-2\ 2/3 \le x + 1/3 < 3\ 1/3\ x \in Z$

 $-8/3 - 1/3 \le x$

 $-9/3 \le x$

 $-3 \le x \dots (1)$

x < 10/3 - 1/3

x < 9/3

x<3(2)

 $-3 \le x < 3 \ x \in Z$

ANS: X={-3,-2,-1,0,1,2}

Question 3 8 of 10 points (n-1)7=994-105=889 Solving, n= 128 Ans: n= 128

✓ i) How many three digit natural numbers are divisible by 7 *	2/2
O 142	
O 114	
128	~
Feedback	
Sol: 3 digit natural numbers divisible by 7 are 105,112, 119,994 This is an AP with a= 105 and d= 7.	
Now Tn = 994	
a+ (n-1)d= 994 105 + (n-1) 7 = 994	

✓	ii) A retailer purchases an air conditioner for Rs. 35,000 from a company. 2/2
	He sold it to a consumer at a profit of Rs. 5,000. Calculate the tax liability
	of the retailer if the GST rate on air conditioner is 28% *

Rs. 9800

Rs. 1400

Rs. 11,200

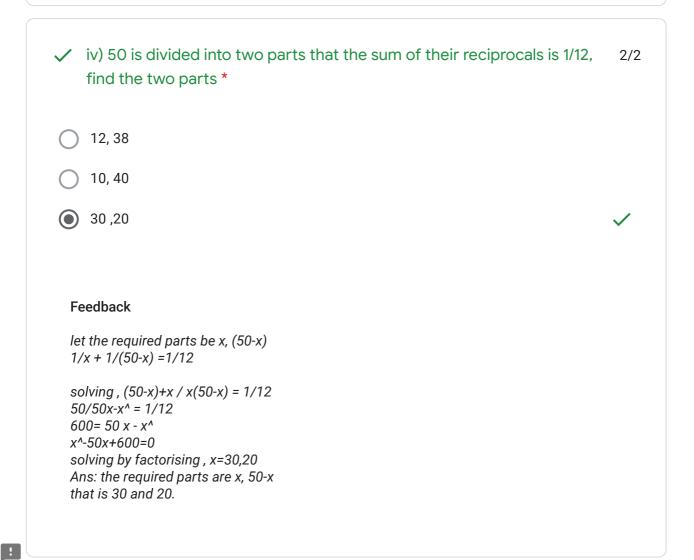
Feedback

Sol: For the retailer: C.P = Rs 35,000Input GST= 28%x35000=Rs 9800 that is input tax credit = Rs 9800 Selling price = Rs 35000+5000= Rs 40,000 Output GST= 28% of 40,000=Rs 11200 Tax liability = Output GST - input tax credit = 11200-9800 =Rs1400 ANS: Tax liability of the retailer is Rs 1400 Method 2:

Tax Liability of the retailer

- = Tax on value addition , i.e , Tax on profit
- = 28% of Rs. 5000 = Rs. 1400

✓	iii.) The value of P for which the roots are real and equal for the equation Px^2-4x+3 is *	ion 2/2
•	4/3	✓
0	-3/4	
0	3/4	
F	eedback	
	or a quadratic equation ax^+bx+c=0, if the roots are real and equal, Discriminent D= ^-4ac=0	
	ere a= p,b=-4,c=3	
1	6- 4xpx3=0 n solving we get p=4/3	

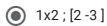


- X v) Let M be a matrix such that M X matrix ■(2&1@0&3) = matrix [4 7]; a) 0/2 State the order of m; b) Find m *
- 1x2;[-32]
- 2x1;[2-3]

X

1x2;[2-3]

Correct answer



Feedback

i) to find the order of matrix M, let the order be axb order of second matrix is 2x2 and the order of [4 -7] is 1x2 the product of matrix is possible, only when the number of columns in the first matrix is egual to the number of rows in the second.

b= 2 and the number of rows or resulting matrix is equal to 1, so the order of M is 1x2

ii) let M=[x y] $[x \ y] [2 \ 1] = [4 \ -7]$ [03]

[2x x+3y] = [4-7]

x=2, x+3y=-7 and therefore, y=-3

ANS: M = [2 - 3]

Question 4 6 of 10 points

✓	i) A cylindrical cistern whose diameter is 14cm is partially filled with	3/3
	water. If a conical block of iron whose radius of the base is 3.5 cm and	
	height 6 cm is wholly immersed in the water, by how much will the water	
	level rise ? (Take π = 22/7) *	

- 0.2 cm
- $0.5 \ cm$
- 0.35 cm

Feedback

For cone, r=3.5 = 7/2 cm, h = 6 cm Volume of the cone = $1/3\pi r^h = 1/3 \times 22/7 \times 7/2 \times 7/2 \times 6 = 77cm^3$ Radius of cistern = 7cm Volume of the water in the cistern cylinder = πr^h , 22/7 X 7 X 7 X h = 77 --> h = 77 X 7 / 22 X 7 X 7 = 1/2 = 0.5 hence, the water level will rise to a height of 0.5cm.

0/4 **(8&8@-8&24) (0&4@-4&8) (0&8@-8&0)** X Correct answer **●** (0&4@-4&8) **Feedback** Ans: $A^{A} = (3&1@-1&5) \times (3&1@-1&5) = (3\times3+1x-1&3x1+1x5@-1x3+5x-1&-1x1+5x5)$ **=■**(8&8@-8&24) -4A= (-4) **■**(3&1@-1&5) **= ■**(-12&-4@4&-20) $4I = 4 \times (1.80 @ 0.81)$ *=* **■**(4&0@0&4) $A^{-}4A + 4I = (8\&8@-8\&24) + (-12\&-4@4\&-20) + (4\&0@0&4)$ *=* **■**(0&4@-4&8)

~	iii)A manufacturer of TV sets manufactures a particular brand of TV set and marks it at Rs 70,000. He then sells the TV set to a wholesaler (in Patna) at a discount of 30%. The wholesaler sells the TV set to a dealer (in Agra) at a discount of 20 % on the marked price. If the rate of GST is 28%, find the tax paid by the wholesaler to the central - government. *	3/3 n
•) Rs 1960	~
C) Rs. 2100	
C) Rs 1560	
7 7 8 8 7 2 = =	Feedback There is an inter State transaction. The rate of GST on each transaction of machine is 28% For the manufacturer, MP= Rs 70,000 FOP = Rs70,000-30% of 70,000=Rs 49,000 FOR the wholesaler, FOP = Rs 49,000 FOP = Rs 49,000 FOP = Rs 70,000-20% of 70,000= RS.56,000 FOR TAX paid by the wholesaler to the central Government = Output tax - Input tax 28% of 56,000 - 28% of 49,000 FOR TAX POP = RS 49,000 FOR TAX PAID TO TAX POP = RS 1960 FOR TAX PAID TO TAX P	

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