

QP CODE: 24900176 SERIES: A

Reg No:....

Name:....

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

FIRST SEMESTER MGU-UGP (HONOURS) REGULAR EXAMINATION NOVEMBER 2024

First Semester

Multi-Disciplinary Course - MG1MDCMAT100 - MATHEMATICS FOR COMPETITIVE EXAMINATIONS

(2024 ADMISSION ONWARDS)

Duration: 1 Hours

Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Interest (I), Appreciation (Ap), and Skill (S)

Students should attempt atleast one question from each course outcome to enhance their overall outcome attainability.

[Learning Domain][CO No(s)]

Maximum Marks: 50

Part A Multiple Choice Questions Answer any ten questions Each question carries 2 marks							
1	Finc	1 the H.C.F of $2^2 \times 3^3 \times 5 \times 7^2$,	$2^3 imes$	$5^2 imes7^4,\ 2 imes3^5 imes7 imes11$	[U]	[1]	
	a)	210	b)	2310			
	c)	14	d)	6			
2	Whi	ch of the following is a prime numb	oer?		[E]	[1]	
	a)	3	b)	4			
	c)	8	d)	9			
3	Sim	plify $1200 + 568 \div 8 - 35 =?$			[U]	[1]	
	a)	1458	b)	1294			
	c)	1236	d)	1352			

SERIES: A

4	Wł	nat is the square root of 6084?			[U]	[1]
	a)	78	b)	68		
	c)	72	d)	62		
5	Wh	at was the day of the week on 15 A	ugus	t 1947 ?	[U]	[3]
	a)	Saturday	b)	Friday		
	c)	Thursday	d)	Monday		
6	If th peri	ne principal is Rs.2000, the interest iod is 3 years, what is the simple in	rate : ntere	is 5% per annum and the time st?	[A]	[3]
	a)	Rs. 270	b)	Rs. 300		
	c)	Rs. 350	d)	Rs. 400		
7	A b of t	ox weighs 4.5 kg, and another box heir weights?	wei	ghs 750 grams. What is the ratio	[E]	[2]
	a)	5:1	b)	3:2		
	c)	6:1	d)	1:5		
8	The yea thei	e ages of Shakhi and Kanti are in the rs, the ratio of their ages will be 13 r ages?	e rati :12 .	o of 8:7 respectively. After 10 What is the difference between	[A]	[2]
	a)	2 years	b)	4 years		
	c)	6 years	d)	8 years		
9	By	selling an article for Rs.100, a man	gain	s Rs.15. Then find his gain %?	[K]	[2]
	a)	15 %)	$12\frac{2}{3}\%$		
	c)	$17\frac{11}{17}\%$	1) <u>-</u>	$17\frac{1}{4}\%$		
10	The incr	e monthly income of a person was R reased by 14 % . What is the increa	ls. 50 sed i	0000 . Next year, his income in rupees?	[A]	[2]
	a)	9000	b)	59000		
	c)	7000	d)	57000		
11	0.2	2% can be expressed as the decima	1		[U]	[2]
	a)	2.0	b)	0.2		
	c)	0.02	d)	0.002		
12	Fin	d the cost of Rs. 4500, 8.5% stoc	k at	4 premium.	[A]	[4]

	a) Rs.	4680		b)	Rs. 4689			
	c) Rs.	4650		d)	Rs. 4646			
13	If Roger of work in $\frac{1}{2}$	can do a piece o 5 days, in how	of work in 8 d many days wil	ays a l botl	and Antony comple h of them together	ete the same complete it?	[K]	[4]
	a) $\frac{40}{13}$			b)	$\frac{13}{40}$			
	c) $\frac{13}{8}$			d)	8			
14	A train train	avels 82.6 km	/hr. How many	meti	res will it travel in	15 minutes?	[A]	[4]
	a) 206	50 m		b)	20640 m			
	c) 2064	45 m		d)	20635 m			
15	A trip to a average s km/hr, 40 at an aver journey?	a destination is peed of 60 kn 00 km by boat age speed of 4	made in the fo n/hr, 3000 km at an average s 5 km/hr. Wha	llowi by p peed t is th	ng way : 900 km lane at an average of 25 km/hr, 15 ne average speed fo	by train at an speed of 500 km by taxi or the entire	[A]	[4]
	a)		$120\frac{60}{115}$		b)	$110\frac{65}{112}$		
	c)		$115\frac{65}{112}$		d)	$105 \frac{65}{112}$		
							(10	$0 \times 2 = 20)$
				Par	rt B			
			Multiple Answer Each quest	Choi any t tion c	ice Questions en questions carries 3 marks			
16		391					Ш	[1]
	The lowe	st term of $\overline{667}$	is				[-]	[-]
	a) $\frac{7}{19}$			b)	$\frac{17}{29}$			
	c) $\frac{13}{13}$			d)	11			
17	29 Which of	f the following	is equal to 3.1	4 × 1	19 10 ⁶		[K]	[1]
	a) 314			b)	3140			
	c) 314	0000		d)	None of these			
18	If $(a - b)$	h) = 4 and ah	$= 2$ then a^2 -	+ h ²			ПЛ	[1]
	(** *	- ,	_,				- J	

	a)	18	b)	20		
	c)	25	d)	None of these		
19	The	H.C.F. of $$ 0.54, 1.8 and 7.2 $_{\rm is}$			[U]	[1]
	a)	1.8	b)	0.18		
	c)	0.018	d)	18		
20	Wha annu	t will be the compound interest on m?	Rs. :	5000 for 2 years at 8% per	[A]	[3]
	a)	Rs. 806	b)	Rs. 616		
	c)	Rs. 624	d)	Rs. 832		
21	Wha num	t should be subtracted from 15, 28 bers may be proportional?	, 20	and 38 so that the remaining	[E]	[2]
	a)	3	b)	4		
	c)	2	d)	5		
22	The elde is	difference between the ages of two r one was twice as old as the young	men er on	is 10 years. 15 years ago, the e. The present age of elder man	[An]	[2]
	a)	25 years	b)	30 years		
	a) c)	25 years35 years	b) d)	30 years40 years		
23	a) c) A di of 9	 25 years 35 years shonest dealer professes to sell his 50 gms for 1 kg weight. What is his 	b) d) good gain	30 years40 yearss at cost price but uses a weight percent?	[U]	[2]
23	a) c) A di of 92 a)	 25 years 35 years shonest dealer professes to sell his professes to sell his professes for 1 kg weight. What is his 10% 	b) d) good gain b)	30 years 40 years s at cost price but uses a weight percent? $5\frac{5}{19}\%$	[U]	[2]
23	 a) c) A di of 9: a) c) 	25 years 35 years shonest dealer professes to sell his 50 gms for 1 kg weight. What is his 10% $7\frac{5}{19}\%$	b) d) good gain b) d)	30 years 40 years s at cost price but uses a weight percent? $5\frac{5}{19}\%$ 6%	[U]	[2]
23 24	 a) c) A di of 9: a) c) The redu 	25 years 35 years shonest dealer professes to sell his 50 gms for 1 kg weight. What is his 10% $7\frac{5}{19}\%$ salary of a person was reduced by ced salary be raised so as to bring in	b) d) goodd gain b) d) 10% t at p	30 years 40 years s at cost price but uses a weight percent? $5\frac{5}{19}\%$ 6% . By what percent should his ar with his original salary?	[U] [E]	[2]
23	 a) c) A di of 93 a) c) The redu a) 	25 years 35 years shonest dealer professes to sell his p 50 gms for 1 kg weight. What is his 10% $7\frac{5}{19}\%$ salary of a person was reduced by ced salary be raised so as to bring in $\frac{1}{9}$	b) d) goodd gain b) d) 10% t at p b)	30 years 40 years s at cost price but uses a weight percent? $5\frac{5}{19}\%$ 6% . By what percent should his ar with his original salary? $\frac{100}{9}$	[U] [E]	[2]
23	 a) c) A di of 9: a) c) The redu a) c) 	25 years 35 years shonest dealer professes to sell his professes to sell his professes to sell his professes to sell his professes to get the self of the self	b) d) goodd gain b) d) 10% t at p b) d)	30 years 40 years s at cost price but uses a weight percent? $5\frac{5}{19}\%$ 6% . By what percent should his ar with his original salary? $\frac{100}{9}$ $\frac{10}{9}$	[U] [E]	[2]

25 If the rate of interest is 4% per annum for first year, 5% per annum for [A] [3] second year and 6% per annum for third year, then the compound interest of Rs. 10000 for 3 years will be

SERIES: A

a)	Rs. 1175.20	b)	Rs. 1600

c) Rs. 1575.20 d) Rs. 2010

Let the population of a town be P now and suppose it increases at the rate of [K] [2] R% per annum, then what is the Population after n years?

a) $P[1 + \frac{R}{100}]^n$ b) $P[\frac{R}{100}]^n$

c)
$$\left(1+rac{R}{100}
ight)^n$$
 d) $rac{P}{\left(1+rac{R}{100}
ight)^n}$

Find the annual income derived from Rs. 2500, 8% stock at 106. [A] [4]

- a) Rs. 250 b) Rs. 258
- c) Rs. 200 d) Rs. 208
- 28 Sanju and Surya can do a piece of work in 8 days. Surya and Rahul together [K] [4] can do it in 12 days. If Sanju is thrice as good as Rahul in working, find in what time Surya alone can do the work?
 - a) 48 b) 24
 - c) 16 d) 36
- A can do a piece of work in 10 days and B in 20 days. They work together [U] [4] but 2 days before the completion of the work A leaves. In how many days was the work completed?
 - a) 9 b) 6
 - c) 10 d) 8
- 30 The average speed of a bus is one-third of the speed of a train. The train [A] [4] covers 1125 km in 15 hours. How much distance will the bus cover in 36 minutes?

a)	12 km		b)	18 km

c) 21 km d) 15 km

 $(10 \times 3 = 30)$

END OF THE QUESTION PAPER

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Students should attempt atleast one question from each course outcome to enhance their overall outcome attainability.

[Learning Domain][CO No(s)]

Part A

Multiple Choice Questions Answer any ten questions Each question carries 2 marks

1 A trip to a destination is made in the following way: 900 km by train at an [A] [4] average speed of 60 km/hr, 3000 km by plane at an average speed of 500 km/hr, 400 km by boat at an average speed of 25 km/hr, 15 km by taxi at an average speed of 45 km/hr. What is the average speed for the entire journey?

a)
$$105\frac{65}{112}$$

b) $110\frac{65}{112}$
c) $115\frac{65}{112}$
d) $120\frac{60}{115}$

A train travels 82.6 km/hr. How many metres will it travel in 15 minutes? [A] [4]

- a) 20650 m b) 20645 m
- c) 20640 m d) 20635 m

SERIES: B

3	What was the day of the week on 15 August 1947 ?				[U]	[3]
	a)	Thursday	b)	Friday		
	c)	Monday	d)	Saturday		
4	Wł	nat is the square root of 6084?			[U]	[1]
	a)	78	b)	62		
	c)	72	d)	68		
5	0.2	can be expressed as the decimal			[U]	[2]
	a)	0.2	b)	0.002		
	c)	0.02	d)	2.0		
6	Fin	d the H.C.F of $2^2 \times 3^3 \times 5 \times 7^2$, 2	$^3 imes \xi$	$5^2 imes 7^4,\ 2 imes 3^5 imes 7 imes 11$	[U]	[1]
	a)	210	b)	2310		
	c)	14	d)	6		
7	The yea thei	e ages of Shakhi and Kanti are in the rs, the ratio of their ages will be 13: ir ages?	ratio 12 .	o of 8:7 respectively. After 10 What is the difference between	[A]	[2]
	a)	4 years	b)	8 years		
	c)	6 years	d)	2 years		
8	Sim	pplify $1200 + 568 \div 8 - 35 = ?$			[U]	[1]
	a)	1352	b)	1458		
	c)	1294	d)	1236		
9	By	selling an article for Rs.100, a man	gains	Rs.15. Then find his gain %?	[K]	[2]
	a)	15%	b)	$12\frac{2}{3}\%$		
	c)	$17\frac{11}{17}\%$	d)	$17\frac{1}{4}\%$		
10	If the period	ne principal is Rs. 2000, the interest iod is 3 years, what is the simple in	rate teres	is 5% per annum and the time t?	[A]	[3]
	a)	Rs. 400	b)	Rs. 300		
	c)	Rs. 270	d)	Rs. 350		

11 Find the cost of Rs. 4500, 8.5 % stock at 4 premium. [A] [4]

	a)	Rs. 4680		b)	Rs. 4650			
	c)	Rs. 4689		d)	Rs. 4646			
12	Whi	ch of the follow	ving is a prime num	ber?			[E]	[1]
	a)	4		b)	9			
	c)	8		d)	3			
13	If R wor	oger can do a p k in 5 days, in	iece of work in 8 d how many days wil	lays a ll bot	nd Antony co h of them tog	omplete the same ether complete it?	[K]	[4]
		a)	$\frac{13}{40}$		b)	$\frac{8}{13}$		
		c)	$\frac{40}{13}$		d)	$\frac{13}{8}$		
14	The incr	monthly incom eased by 14 %	ne of a person was r . What is the increa	upee sed in	50000 . Next ncome in rupe	year, his income ees?	[A]	[2]
	a)	57000		b)	7000			
	c)	59000		d)	9000			
15	A bo of th	ox weighs 4.5 heir weights?	kg, and another box	weig	ghs 750 gran	ns. What is the ratio	[E]	[2]
	a)	5:1		b)	1:5			
	c)	6:1		d)	3:2			
							(10	$0 \times 2 = 20)$
Part B Multiple Choice Questions Answer any ten questions Each question carries 3 marks								
16	The elde is	difference betw r one was twice	veen the ages of two e as old as the young	o men ger or	is 10 years. ne. The preser	15 years ago, the nt age of elder man	[An]	[2]
	a)	40 years		b)	35 years			

c) 25 years d) 30 years

17 If the rate of interest is 4 % per annum for first year, 5 % per annum for [A] [3] second year and 6 % per annum for third year, then the compound interest

of Rs. 10000 for 3 years will be Rs. 1600 b) Rs. 1175.20 a) Rs. 2010 Rs. 1575.20 c) d) Which of the following is equal to 3.14×10^6 18 [K] [1] 3140000 b) None of these a) 314 c) 3140 d) If (a - b) = 4 and ab = 2, then $a^2 + b^2 = ?$ 19 [U] [1] None of these a) **b**) 25 18 d) 20 c) 20 Sanju and Surya can do a piece of work in 8 days. Surya and Rahul together [K] [4] can do it in 12 days. If Sanju is thrice as good as Rahul in working, find in what time Surya alone can do the work? 24 16 a) b) 48 c) d) 36 21 A can do a piece of work in 10 days and B in 20 days. They work together [U] [4] but 2 days before the completion of the work A leaves. In how many days was the work completed? a) 10 b) 9 6 d) 8 c) 22 What should be subtracted from 15, 28, 20 and 38 so that the remaining [E] [2] numbers may be proportional? a) 4 b) 5 c) 2 d) 3 23 What will be the compound interest on Rs. 5000 for 2 years at 8 % per [A] [3] annum? Rs. 806 Rs. 832 a) b) c) Rs. 624 d) Rs. 616 24 Let the population of a town be P now and suppose it increases at the rate of [K] [2] R % per annum, then what is the Population after n years? b) $\frac{P}{\left(1+\frac{R}{100}\right)^n}$ a) $P\left[\frac{R}{100}\right]^n$

SERIES: B

25	c)	$P\left[1 + \frac{R}{100}\right]^n$	d)	$\left(1+\frac{R}{100}\right)^n$		[2]
25	A d of 9	150 gms for 1 kg weight. What is his	good s gair	s at cost price but uses a weight percent?	[U]	[2]
	a)	10 %	b)	6 %		
	c)	$7rac{5}{19}\%$	d)	$5rac{5}{19}\%$		
26	The	e lowest term of $\frac{391}{667}$ is			[U]	[1]
	a)	$\frac{7}{19}$	b)	$\frac{17}{29}$		
	c)	$\frac{13}{29}$	d)	$\frac{11}{19}$		
27	The redu	e salary of a person was reduced by uced salary be raised so as to bring i	10 % it at p	b. By what percent should his par with his original salary?	[E]	[2]
	a)	$\frac{1}{9}$	b)	$\frac{9}{100}$		
	c)	$\frac{100}{9}$	d)	$\frac{10}{9}$		
28	The	$_{\rm H.C.F.\ of}$ 0.54, 1.8 and 7.2 $_{\rm is}$			[U]	[1]
	a)	1.8	b)	18		
	c)	0.18	d)	0.018		
29	Fin	d the annual income derived from R	ls. 25	00, 8% stock at 106.	[A]	[4]
	a)	Rs. 208	b)	Rs. 250		
	c)	Rs. 200	d)	Rs. 258		
30	The cov min	e average speed of a bus is one-third ers 1125 km in 15 hours. How m nutes?	of thuch c	the speed of a train. The train listance will the bus cover in 36	[A]	[4]
	a)	15 km	b)	18 km		
	c)	12 km	d)	21 km		

 $(10 \times 3 = 30)$

END OF THE QUESTION PAPER

SERIES: B