

	NTSE - 1 ST PHASE										
	MADHYA PRADESH										
04.11.2018											
PART - 1 MAT (MENTAL ABILITY TEST)											
ANSWER KEY											
1	В	26	А	51	В	76	A				
2	А	27	Bonus	52	В	77	D				
3	D	28	С	53	В	78	А				
4	D	29	С	54	D	79	С				
5	В	30	A	55	В	80	В				
6	A	31	В	56	С	81	С				
7	В	32	C	57	D	82	Α				
8	В	33	В	58	D	83	В				
9	A	34	В	59	A	84	А				
10	А	35	Bonus	60	В	85	С				
11	А	36	В	61	A	86	D				
12	С	37	D	62	В	87	А				
13	А	38	С	63	С	88	D				
14	D	39	В	64	С	89	В				
15	D	40	D	65	A	90	B/C				
16	C	41	D	66	A	91	А				
17	С	42	Bonus	67	В	92	В				
18	D	43	С	68	С	93	С				
19	D	44	D	69	D	94	С				
20	C	45	Α	70	А	95	С				
21	C	46	D	71	D	96	А				
22	D	47	A	72	D	97	С				
23	A	48	В	73	С	98	С				
24	В	49	В	74	А	99	В				
25	В	50	В	75	А	100	В				

The NTSE CELL of CatalyseR has taken utmost care to prepare this answer key. Still, there can be a few discrepancies because of typing error. In any case, the error will be under 5%.



NTSE - 1ST PHASE

MADHYA PRADESH

04.11.2018

PART - 2 (SCHOLASTIC APTITUDE TEST)

ANSWERKEY

SCIENCE			SOCIAL SCIENCE				MATHEMATICS			
PHY	SICS	BIOL	.OGY	HIST	ORY	CIV	/ICS	MATHEMATICS		
1	А	27	В	41	В	71	В	81	D	
2	В	28	В	42	А	72	А	82	A	
3	А	29	D	43	С	73	С	83	D	
4	С	30	В	44	D	74	D	84	А	
5	С	31	А	45	С	75	А	85	D	
6	В	32	D	46	А	ECON	OMICS	86	В	
7	В	33	В	47	A	76	С	87	С	
8	А	34	D	48	В	77	В	88	BONUS	
9	D	35	В	49	С	78	В	89	В	
10	А	36	D	50	D	79	D	90	В	
11	D	37	Α	51	A	80	В	91	А	
12	С	38	В	52	A			92	А	
13	С	39	C	53	С			93	В	
CHEM	IISTRY	40	С	54	В			94	С	
14	В			55	С			95	А	
15	D			GEOG	RAPHY			96	В	
16	А			56	D			97	С	
17	С			57	D			98	С	
18	В			58	В			99	С	
19	D			59	В			100	А	
20	Α			60	В					
21	A			61	С			The NTS	E CELL of	
22	A			62	А			Cataly	seR has	
23	В			63	А			Drepa	are this	
24	A			64	Α			answer	key. Still,	
25	Α			65	С			there ca	n be a few	
26	Α			66	С			discre	pancies	
		-		67	Α			error In a	nv case the	
				68	Α			error	willbe	
				69	В			und	er 5%.	
				70	В					

NTSE 2018-19 (STAGE – I) MADHYA PRADESH SOLUTION

MAT

Direct	tion :	In question no	. 1 – 10 the	ere is a missing n	umber sh	own by ques	stion mark (?). This term is one
of the	follov	wing four alter	-native give	en.			
Choos	se the	correct numbe	er.				
1.	7, 8,	11, 16, 23, ?					
	(a)	31	(b) 32	(c)	37	(d)	40
Sol.	(b)	32					
		Difference is a	as follows				
		+1, +3, +5, +7	', +9				
		23 + 9 = 32					
2.	6, 9,	12, 15, 18, ?			$\langle \rangle$		
	(a)	21	(b) 20	(c)	19	(d)	22
Sol.	(a)	21 Diffe	erence $(+3)$	constant			
3.	2. 5.	10, 50, 500, ?					
	(a)	5	(b) 10	(c)	50	(d)	25000
Sol.	(d)	25000				- ()	
		Product of two	o consecutiv	ve terms			
		$2 \times 5 = 10$					
		$5 \times 10 = 50$		\sim			
		$10 \times 50 = 500$					
		$50 \times 500 = 250$	000				
		10.70.0					
4.	3, 6,	18, 72, 7	(1) 01(- ()	200	(1)	2/0
C.I	(a)	144	(b) 216) (c)	288	(d)	360
501.	(a)	300 Preciding term	is multipli	ed by (2, 3, 4, 5)) to get	t nevt term	
		$3 \times 2 = 6$		cu by (2, 5, 4, 5) to ge	t next term.	
		$6 \times 3 = 18$					
		$18 \times 4 = 72$					
		$72 \times 5 = 360$					
		,_ 0 000					

5. 2, 6, 12, 20, ? (a) 28 (b) 30 (c) 42 (d) 48 (b) **30** Sol. 2 + 4 = 66 + 6 = 1212 + 8 = 2020 + 10 = 306. 2, 5, 9, ?, 20, 27 (a) 14 (b) 16 (c) 18 (d) 24 Sol. (a) 14 2 + 3 = 55 + 4 = 99 + 5 = (14)14 + 6 = 201, 4, 9, 16, 25, 36, ? 7. (d) 59 (c) 52 (a) 48 (b) 49 (b) 49 Sol. Series of squares of natural numbers $1^2, 2^2, 3^2, \ldots, 7^2 = 49$ 5, 15, 45, 135, ? 8. 407 (b) 405 (a) 406 (c) (d) 408 Sol. (b) 405 5 + 10 = 15(Difference is multiplied by 3) 15 + 30 = 4545 + 90 = 135135 + 270 = 4053, 4, 9, 16, 27, ? 9. (a) 64 (b) 46 (c) 48 (d) 70 Sol. (a) 64 Two separate series 3, 9, 27, (3¹, 3², 3³) (2)

10. 2, 5, 11, 23, ? 47 (c) 49 (d) 50 (a) (b) 48 (a) 47 Sol. $2 \times 2 + 1 = 5$ $5 \times 2 + 1 = 11$ $11 \times 2 + 1 = 23$ $23 \times 2 + 1 = 47$ In certain language GOLD is coded as IQNF, how is WIND is coded in that language? 11. (d) DNIW **YKPF** (b) XJOE (c) VHMC (a) Sol. **(a)** YKPF $\xrightarrow{+2}$ GOLD **IQNF** $\xrightarrow{+2}$ WIND YKPF 12. If D = 4, BAD = 07, then what will be the value of ANT? (d) 37 (b) 17 (a) 8 (c) 35 Sol. (c) 35 (Each alphabet corresponds to its place value) A + N + T1 + 14 + 20 = 35In a certain language 'KITE' is written as 'JHSD', how is 'STRONG' is coded. 13. (a) RSQNMF SRQNMF (c) SRNQMF (b) (d) RSQRSQ Sol. (a) **RSQNMF** JHSD KITE **STRONG RSQNMF** 14. If code of 'HEMA' is 27, then code of 'VELU' will be? (a) 56 (b) 42 (c) 54 (d) 60 22 + 5 + 12 + 21 = 60(d) 60 Sol. If RARE is written as SBSF then 'AREA' will be written as-15. (a) FSBS (b) BSBF (c) SBFB (d) BSFB Sol. (d) **BSFB** $\xrightarrow{+1}$ RARE SBSF $\xrightarrow{+1}$ AREA **BSFB** (3)

16.	Find	the odd man out	t -					
	(a)	Pen	(b)	Pencil	(c)	Student	(d)	Sharpner
Sol.	(c)	Student						1
		Pen, Pencil, Sha	arpnei	are stationery c	bjects			
17.	Find	the odd man ou	t -					
	(a)	Car	(b)	Bus	(c)	Scooter	(d)	Jeep
Sol.	(c)	Scooter					()	
		Car, Bus, Jeep	are for	ur-wheeler vehic	cles bu	t scooter is a two	-whee	eler.
18.	Find	the different ter	m -					
100	(a)	Petrol - Car			(b)	Electricity – Te	levisi	on
	(c)	Ink - Pen			(d)	Dust – Vacuum	Clea	ner
Sol.	(d)	Dust – Vacuum	n Clea	ner				7
		Except dust-vac	cuum	cleaner, all othe	r requi	res first one to ru	in the	second one.
19	Find	the odd term-						
17.	(a)	March	(b)	December	(c)	July	(d)	September
Sol.	(d)	September	(0)	2	(0)		()	
		Except Septem	ber (3	0 days) all other	given	months have 31	days.	
20	D . 1				Č		2	
20.	Find	the odd term -	(1-)	(0)	(-)	124	(1)	210
Sal	(a)	24	(D)	60	(C)	124	(a)	210
501.	(0)	124 24 =	2×10^{-1}	3×4				
		60 =	3 × .	4×5				
		210 =	5 × 1	5 × 7				
		But 124 cannot	be wi	ritten as product	of thre	ee consecutive na	tural	numbers.
01	If (D	alian' is called '	Teech	ar' (Taaahar' i	a (Dali	tiaian' Dalitiaia	n' ia ('Destar' 'Destar' is 'Advessta'
21.	11 P	once is caned	te' is	'Surgeon' then	s Poll	vill catch the crim	II IS	Doctor, Doctor is Advocate,
	(a)	Police	10 15	Surgeon, then	(h)	Advocate	initars :	
	(c)	Teacher			(d)	Doctor		
Sol.	(c)	Teacher			(4)	20000		
		Police catch the	e crim	inals. But police	is cal	led Teacher (in co	ode la	nguage).
				Ŧ		×		/
22	In a	ortain language	'Dad'	is written as 'C	roon'	'Groop' is 'Dhus'	, ол	ua' is 'Vallow' than what will be
22.	the c	volour of Blood?	Reu	is written as G	ieen,	Gleen is blue	, ы	ue is renow then what will be
	(a)	Red	(\mathbf{b})	Vellow	(\mathbf{c})	Bhie	(d)	Green
Sol.	(d)	Green	(Co	te for red)		Diac	(u)	
	()		(200	······································				

Direct	tion :	O. No. 23 – 25 I	n a ce	ertain language	if						
(i)	(i) tik jik pik means she is good,										
(ii)	pik	ne pea means go	od ai	nd bad.							
(iii)	se n	e pik means ran	and	good then -							
23.	Wha	it is the code of 's	good'	?							
	(a)	pik	(b)	ne	(c)	pea	(d)	jik			
Sol.	(a)	pik									
	"good" is common in all three statements and "pik" is also common in all codes.										
24.	What is the code of 'and'?										
	(a)	pik	(b)	ne	(c)	se	(d)	tik			
Sol.	(b)	ne									
		"and" is commo	on in 2	2 nd and 3 rd statem	nent w	hich correspoi	nds to "r	ie"			
25.	Wha	it is the code of '	Ram''	?			. (
	(a)	ne	(b)	se	(c)	pik	(d)	pea			
Sol.	(b)	se	Ran	$n \rightarrow $ "se"		- , (s					
26.	10 v	ears ago age of S	uloch	ana's mother wa	s 4 tir	nes the age of	Sulocha	na. After 10 years her age will be			
	twic	e of Sulochana's	age.	What is the age o	of Sulo	chana today.					
	(a)	20 years	(b)	10 years	(c)	30 years	(d)	15 years			
Sol.	(a)	20						5			
	Let age of sulochna 10 years ago = x										
	10 years ago, age of sulochna's mother = $4x$										
	10 years after today age of sulochna = $x + 20$										
		10 year after to	day ag	ge of sulochna's	mothe	r = 4x + 20					
		\Rightarrow	4 <i>x</i> +	20 = 2(x + 20)	7						
			Solv	x = 10							
		\Rightarrow	Pres	ent age of Sulocl	nna = .	x + 10 = 20 ye	ars				
27.	The	difference betwee	en th	e age of Rahim	and hi	is uncle is 30	years. 7	years ago the sum of both's age			
	was	66 years, what is	the a	ge of uncle?							
	(a)	51	(b)	49	(c)	39	(d)	41			
Sol.	(Bol	nus)	. :. 3	7 and the maine	- f	amentan in \F	Character	has muchased both finite in 729			
28.	Wha	price of an orang	t orou	and the price of a purchased by	or wat	ermeion is 5.	Snyam	nas purchased both truits in <38.			
	(2)	2	(h)	3	(c)	4	(d)	6			
Sol.	(a) (c)	4	(0)	5	(0)	-	(u)	0			
		4 oranges	+	2 watermelon	=	38					
		4×7	+	2×5	= 38						
		4 oranges									
					(5)					

29.	In w feet	what time a monl at the same time	key wi	ll reach at the t	op of 6	50 feet pol	le. If he jur	nps 3 fee	t in a second and drops 2
	(a)	60 sec	(b)	50 sec	(c)	58 sec	(d)	57 sec	
Sol.	(c)	58							
		In 57 seconds i	nonke	y will reach (3 -	- 2) × :	57 = 57 fe	et		
		In the next sec	ond it	will jump 3 feet					
			Ans	$=58^{\text{th}}$ second					
30.	Ran	nesh got some m	angoe	s in which no	ofripe	mango wa	as thrice the	number	of raw mangoes if he hot
•••	in to	otal 68 mangoes.	then h	low many out o	f them	were raw?	?		
	(a)	17	(b)	16	(c)	34	(d)	18	
Sol.	(a)	17							
		Let number of	raw m	angoes $= x$					
		Ripe mangoes	= 3x	C					
		Total $3x + x =$	68						
		<i>x</i> = 17							
21	The	magant times in t	h	$t_{ab} = (\cdot, 20, T)$		to hand is	in North E	ant diman	tion than what will hat he
51.	ne	tion of hour hand	ine wa	uch is 0 . 20. 11	le min		5 III INOILII E	ast direc	tion,then what will be the
		West	u : (b)	South East	(0)	East	(b)	North	Wast
Sol	(a) (b)	west South-East	(0)	South-East	(0)	Last	(u)	north	- West
501.	If minute hand points towards North-east direction, then hour hand will point towards. South-east $\overline{South-east}$								
32.	A to	ourtoise travel 1	k.m. ir	n 4 hours. After	every	k.m. he re	sts fro 20 m	in. Ident	ify the time taken by him
	to tr	avel 3.5 k.m. dis	tance	(In hours)?					
	(a)	14	(b)	13	(c)	15	(d)	12	
Sol.	(c)	15							
		To travel 3.5 k	m (it v	vill rest 3 times))				
		$3 \times 20 \text{ min} = 6$	<u>0 min</u>	Total rest time	= (1 hr	s)			
		Travel time $= 2$	1×3.5	= 14 hrs					
		: 1otal	time =	= 14 + 1 = 15 hr	S				
33.	At 5	5 : 15 Hrs. what w	will be	the angle betwe	een the	both hand	ls of the clo	ck?	
	(a)	72.5°	(b)	67.5°	(c)	64°	(d)	58.5°	
Sol.	(b)	67.5°							
		$(60^{\circ} + 7.5^{\circ}) = 6$	57.5°						
					(6	6			

34	Wha	t would be the a	ngla ha	atwaan tha naadl	es of	$clock at 8 \cdot 3$	D DM in th	na avaning?
57.	(a)	90°	(b)	75°	(c)	60°	(d)	85°
Sol.	(u) (b)	75°	(0)	10	(•)		(4)	
		$(60 + 15)^\circ = 75$	0					
35.	If th	e dav for dav afte	er tom	orrow is Saturda	v. the	n what will b	e the day	three days before the tomorrow?
	(a)	Thursday	(b)	Monday	(c)	Saturday	(d)	Sunday
Sol.	(Boi	nus)						
36.	If 7 -	-4 - 1 = 714, 9 -	-2-3	= 932, then 8 –	0-4	= ?		
	(a)	804			(b)	840		
	(c)	408			(d)	480		
Sol.	(b)	840						
		(Last digit com	es in tl	he middle)				
37.	44 ×	75 = 7454						
	34 ×	65 = 6453						
	24 ×	55 = 5452						
	14 ×	45 = ?				$\langle \rangle$		
	(a)	4432	(b)	4462	(c)	4342	(d)	4451
Sol.	(d)	$4451 = 14 \times 45$	(The	first digit of fir	st nu	mber shifts t	o one's p	lace, the second digit of second
		number shifts to	o ten's	place)				
38.	In th	e following num	ber sei	ries, how many 8	8 are t	here before the	hat there i	s 7 but after the 5 is not there
	783	3785127833	3478	256683				
	(a)	One	(b)	Two	(c)	Three	(d)	Four
Sol.	(c)	I hree						
		<u>78(5)</u>	(5 sh	ould not be aft	er 5)			
39.	If th	e digits of numb	er 6 4	9 2 7 5 8 are v	vritter	in ascending	g order th	en how many digits will remain
	cons	stant?		¥		·		
	(a)	One	(b)	Two	(c)	Three	(d)	None
Sol.	(b)	Two						
			_					
		0 4 9 2 7	50					
		2 4 5 6 7	8 9					
					(7	0		

40.	In the number se	ries how many	9 are there, befor	e them. There is 2	3 and	after them there is 2.
	392439239	39239293	(2)	Two	(4)	More than 2
Sol	(a) Zero (d) More than	(U) Und		1 w0	(u)	More than 5
501.	Four times	(392) annears	1			
	i our times	UJZ) uppeur				
41.	If the following	series is arrange	ed in opposite dire	ection then which	n num	ber will be 4 th from the left?
	7, 3, 9, 7, 0, 3, 8	4, 6, 2, 1, 0, 5,	11, 13			
	(a) 9	(b) 7	(c)	5	(d)	0
Sol.	(d) 0	Observe	from right fourth	number is zero.		
42.	In the following	number series,	how many number	ers are written tw	ice?	
	GOSSRGM	LGTPQQR	PPSOGTLG	Ρ		
	(a) 3	(b) 5	(c)	1	(d)	2
Sol.	Bonus	R, T, L, 0	Q appe	ears twice in the s	series.	
43	C is the mother of	$\Delta f \Delta$ and B If Γ) is husband of B	then what is the	relati	on between C and D?
чу.	(a) Mother	(b) Au	t (c)	Mother in law	(d)	Sister
Sol.	(c) Mother in 1	aw			(4)	
	C is the mo	other in law of l).			
	$\overline{\mathbb{C}}$					
	AT BE	+				
44.	Pointing toward	s a women Sin	non told that she	is the daughter	of on	ly sister of my father. How that
	women is related	l with Simon?				
	(a) Mother		(b)	Father's sister/a	unt (j	paternal aunt)
	(c) Sister		\checkmark			
	(d) Cousin=da	ughter of pater	nal aunt/Daughter	of Father's sister	r	
Sol.	(d) Cousin=da	ughter of pater	hal aunt/Daughter	of Father's sister	r	
		Simon's	Sim	ion's		
		Father) (Paterr	nal Aunt	Da	aughter of
		\square			Pat	ernal aunt
	,					
		_		\downarrow		
	🤇 Simon		(Wa	omen)		
45.	If EODGH is co	de for BLADE	what is the code	for CRICKET?		
			(9	n		

Sol.	(a) (a)	FULFNHW FULFNHW BLADE CRICKET	(b) FLUNF $\xrightarrow{+3}$ $\xrightarrow{+3}$	WH (c) EODGH FULFNHV	FULFNWH	(d)	None
46.	Wha	t is the code of I	DESK if KITE i	is written as	%2\$# and ST	UD is wri	tten as @\$57.
Sal	(a) (d)	8% © # 7 # @ %	(b) © 8 % #	ŧ (c)	#7%@	(d)	7 # @ %
501.	(u)	7 # @ 70 $D \rightarrow 7$					
		$E \rightarrow \#$					
		$S \rightarrow @$					
		$K \rightarrow \%$					
47.	If 'A	' is substituted b	by 1, 'B' by 2 a	and upto 'Z'	which is '26',	, what wi	Il be, the sum of the numbers for
	the v	38	(b) 41	(c)	40	(d)	37
Sol.	(a) (a)	38 38	(0) 41	(0)		(u)	
		DECAY					
		4 + 5 + 3 + 1 +	25 = 38				
48.	If 'S	poon' is called '	Plate', 'Plate' is	s called 'Kn	ife', 'Knife' is	called 'Ju	ug', Jug is called 'Glass', 'Glass'
	is ca	lled 'Saucer' and	l 'Saucer' is cal	lled 'Spoon'	by what do yo	ou cut frui	it?
Sol.	(a) (b)	Spoon Jug	(b) Jug Knife \rightarrow Jug	(C) (Code for K	nife)	(d)	Saucer
40	(~) In o	contain and DO	DE is written	ac 5126 and	DIND is write	ton og 27	02 How is PIDE written in that
49.	nn a code	ertain code KO	DE IS WHILEII à		DIND IS WIIL		92. How is KIDE written in that
	(a)	5276	(b) 5726	(c)	5376	(d)	5326
Sol.	(b)	5726					
		$R \rightarrow 5$ $I \rightarrow 7$	\mathbf{igstar}				
		$D \rightarrow 2$	~******				
		$E \rightarrow 6$					
50.	If 'ta	able' is called 'ch	nair', chair' is c	alled 'cot',	cot' is called '	'pot' and	'pot' is called 'filter' where does
	a pe	rson 'sit'?					
	(a)	Pot	(b) Cot $(C + 1)$	(c)	Chair	(d)	Filter
501.	(D)	COL	(Code for cha	.ш.)			
51.	Anit	a ranks twelfth in	n a class of fort	y six. What	will be her ran	k front th	e last.
				(9)		

Sol.	(a) (b) Anita	34 th 35th a's rank from las	(b) t = 46	35^{th} 5 - 12 + 1 = 35	(c)	36 th	(d)	37 th		
52.	Five Sancl	boys took part hit but behind M	in a 1 ohit.	race. Parbir finis Who won the rac	hed b xe?	efore Mohit but	behir	nd Mihir. Suresh finished before		
Sol.	(a) (b) Mihi	Prabir Mihir r > Prrbir > Mo	(b) ohit >	Mihir • Suresh > Sancl	(c) nit	Mohit	(d)	Suresh		
Direction: In question no 53-65, there is a question mark in blank space and it isonly one of the four										
alterna	atives g	given under the	quest	tion which satisf	ies the	e samerelation as	s is fo	und between two patterns to the		
left of	the sig	gn:: given in the	quest	ion. Find the cor	rect al	ternative -				
53.	Cobb	oler : Leather : Ta	ailor :	:?						
	(a)	Thread	(b)	Cloth	(c)	Shirt	(d)	Button		
Sol.	(b)	Cloth								
	Cobb	oler: Leather : :	Tail	or : Cloth						
	Seco	nd is the object	on w	hich the first pe	rson v	work				
54.	AB :	ZY : : CD : ?								
	(a)	XY	(b)	WV	(c)	WX	(d)	XW		
Sol.	(d)	XW								
	CD:	XW								
	Sum	01 C + X = 2/ D + W - 27				× •				
	105	$\mathbf{D} + \mathbf{W} = \mathbf{Z}$								
55.	125 :	5::64:?	(h)		(a)	0	(4)	16		
Sol	(a) (b)	2	(0)	4	(\mathbf{c})	0	(u)	10		
501.	(0)	5 64.?								
	Cube	e root of $64 = 4$								
56	Iewe	llery · Gold · · F	urnite	Ire · 9						
50.	(a)	Table	(h)	Tree	(c)	Wood	(d)	Paint		
Sol.	(c)	Wood					(••)			
	Furn	iture is made fi	om v	vood as jeweller	y is m	ade form gold.				
57.	1 · 8	:: 27 : ?		U I	-	0				
~	(a)	37	(b)	47	(c)	57	(d)	64		
Sol.	(d)	64								
	n^{3} : ($(n+1)^{3}$								
	3 ³ :4	$s^{3} = 64$								
58.	Fish	: Water :: Bird :	?							
					/4/))				
					(1)	J)				

 Fish : water (Fish swims in water) Bird: Air (Bird Fly in air) 59. Defeat : Win :: Grief :? (a) Joy (b) Farsh (c) Sorrow (d) Defeat Sol. (a) Joule (b) Watt (c) Newton (d) Litre 60. Time : Second :: Power : ? (a) Joule (b) Watt (c) Newton (d) Litre 61. Madhya Pradesh : Bhopal :: Gujarat : ? (a) Gandhinagar (b) Watt (c) Ganganagar (d) Gandhipur 62. India : Rupee :: Japan : ? (a) Dollar (b) Yen (c) Rual (d) Piso 63. Thermometer : Temperature :: Seismograph : ? (a) Temperature (b) Humidity (c) Earthquake Intensity Instrument used to measure carthquake intensity is seismograph 64. Aeroplane : Hangar :: Cloth : ? (a) Home (b) Shop (c) Almirah (c) Almirah (d) Hanger 55. Sachin Tendukar : Cricket :: P.V. Sindhu : ? (a) Badminton (b) Hockey 	Sol.	(a) Water(d) Air	(b) Sky	(c)	Food	(d)	Air
 59. Defeat : Win :: Grief ? (a) Joy (b) Farsh (c) Sorrow (d) Defeat 50. (a) Joy Antonym pair (Defeat – Win) Similarly Gref – Joy 60. Time : Second :: Power : ? (a) Joule (b) Watt (c) Newton (d) Litre 50. (b) Watt Watt is the unit of power 61. Madhya Pradesh : Bhopal :: Gujarat : ? (a) Gandhinagar (b) Gangtok (c) Ganganagar (d) Gandhipur 50. (a) Gandhinagar (b) Yen (c) Rual (d) Piso 50. (b) Yen Currency of Japan in yen 63. Thermometer : Temperature :: Seismograph : ? (a) Temperature (b) Humidity (c) Earthquake Intensity (d) Electric current 50. (e) Earthquake Intensity (d) Electric current (e) Earthquake Intensity (f) Earthquake Intensity (g) Bohop (c) Almirah (d) Hanger 51. Acroplane : Hangar :: Cloth : ? (a) Home (b) Shop (c) Almirah (c) Almirah Closed building used to keep aeroplane is hangar. Similarly cloths are kept in almirah. 65. Sachin Tendukar : Cricket :: P.V. Sindhu : ? (a) Badminton (b) Hockey 		Fish : water (Fish sy Bird: Air (Bird Fly	wims in water in air))			
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 62. India : Rupee :: Japan : ? (a) Dollar (b) Yen (c) Rual (d) Piso Sol. (b) Yen Currency of Japan in yen 63. Thermometer : Temperature :: Seismograph : ? (a) Temperature (b) Humidity (c) Earthquake Intensity (d) Electric current Sol. (c) Earthquake Intensity Instrument used to measure earthquake intensity is seismograph 64. Aeroplane : Hangar :: Cloth : ? (a) Home (b) Shop (c) Almirah Closed building used to keep aeroplane is hangar. Similarly cloths are kept in almirah. 65. Sachin Tendulkar : Cricket :: P.V. Sindhu : ? (a) Badminton (b) Hockey 	Sol.	(a) Gandhinagar					
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 Closed building used to keep aeroplane is hangar. Similarly cloths are kept in almirah. 65. Sachin Tendulkar : Cricket : : P.V. Sindhu : ? (a) Badminton (b) Hockey 	Sol.	(c) Almirah	(0) 5110p		7 thin an	(u)	Tunger
65. Sachin Tendulkar : Cricket : : P.V. Sindhu : ?(a) Badminton(b) Hockey		Closed building use	d to keep aero	plane is hang	gar. Similarly	y cloths a	re kept in almirah.
(a) Badminton (b) Hockey	65.	Sachin Tendulkar : C	Cricket : : P.V.	Sindhu : ?			
		(a) Badminton		(b)	Hockey		
(c) Cricket (d) Women cricket		(c) Cricket		(d)	Women cric	ket	
Sol. (a) Badminton	Sol.	(a) Badminton	 . . .	• • • • •			
P.V. Sindhu is a Badmination player just Sachin is Cricket player		P.V. Sindhu is a Bac	dmination pla	yer just Sach	in is Cricket	player	
				(11	n		















Direction (86 – 90): In each of the following questions which one of the answer figure should come after the problem figure:











	<u>SAT</u>	
1.	Conductivity of superconductors is :	
	(a) Infinite (b) Very large (c) Very small (d) Zero	
Sol.	(A)	
2.	The S.I. unit of magnetic field intensity is:	
	(a) Weber (b) Tesla (c) Oerstead (d) Gauss	
Sol.	(B)	
3.	If the distance traveled by an object is zero, then the displacement of the object is :	
	(a) zero (b) not zero (c) negative (d) may or may not be zero	
Sol.	(A)	
	Displacement ≤ Distance	
4.	Which of the following is non-conservative force?	
Ē	(a) Electrostatic force (b) Gravitational force	
	(c) Viscous force (d) Spring force	
Sol.	(C)	
	Viscous force.	
	Exp:- For viscous force,	
	Work done is path dependent not just on initial & final position.	
5.	Escape velocity of a particle from the earth is approximately.	
	(a) 7 km/s (b) 1.1 km/s (c) 11.2 km/s (d) 112 km/s	
Sol.	(C)	
	11.2 km/s	
	$v_e = \sqrt{2 g R_E}$ [R _E – Radius of Earth]	
6.	When a satellite falls to an orbit of smaller radius its kinetic energy:	
	(a) decrease (b) increase (c) remain same (d) none of these	
Sol.	(B)	
	Increase $KE = \frac{1}{GmM_E}$	
	$\frac{1}{2} - \frac{1}{2} - \frac{1}{R_E}$	
7.	How many time does a ray bend on passing through a prism?	
~ -	(a) once (b) twice (c) thrice (d) none	
Sol.	(B)	
	Twice	
	(24)	

Waves inside a gas are: 8. (a) longitudinal (b) transverse (c) partly longitudinal partly transverse (d) none of these Sol. (A) longitudinal 9. Choose the source of energy which is different from others. Sun light (b) Falling water (c) Wind (d) Petroleum (a) Sol. **(D)** Exp:- Petroleum is conventional energy source 10. Which is called Earth's satellite? (d) mars (b) sun (c) venus (a) moon Sol. (A) 11. Which is the colour at lower end of visible spectrum? (d) violet (a) red (b) green (c) yellow Sol. **(D)** Exp:- $\mu \propto \frac{1}{\lambda}$ Violet has least wavelength How many planets have rings around them? 12. 4 (a) 3 (b) 2 (c)(d) 5 Sol. **(C)** Jupiter, Saturn, Uranus, Neptune have rings. 1 kWh equals to : 13. (b) 3.6×10^5 J (c) 3.6×10^6 J (d) 3.6×10^7 J (a) 3.6×10^4 J **(C)** Sol. $1 \text{ kWh} = 10^3 \times 60 \times 60 \text{ (Js}^{-1}) \text{ (s)}$ $= 3.6 \times 10^{6} \text{ J}$ Which one of the following will show Tyndall Effect. 14. Solution of salt (b) Milk (a) (c) Solution of copper sulphate (d) None of the above Sol. **(B)** Colloids show tyndall effect. Milk is a colloid

(25)

15.	Which one of the following is solution.
	(a) Soil (b) Aerosols (c) Coal (d) Soda-water
Sol.	(D)
	It is a liquid solution of water and CO_2 gas.
16.	Write chemical formula of Magnesium Chloride
	(a) $MgCl_2$ (b) $CaCl_2$ (c) $Cu(NO_3)_2$ (d) $CaCO_3$
Sol.	(A)
	Magnesium (Mg^{2+}) Chloride (Cl^{-}) valency
17.	Isotopes of an element contains
	(a) Similar physical properties (b) Different chemical properties
	(c) Different number of neutrons (d) Different atomic number
Sol.	(C)
	Different no of neutrons
	Isotopes are atoms of same elements which have same atomic number but different mass
	numbers, so they have different no. of neutrons.
18.	Valency electron in Cl ⁻ ion is
	(a) 16 (b) 8 (c) 17 (d) 18
Sol.	(\mathbf{B})
	$CI = \text{Atomic No. 1/}$ $CI^{-} (2, 8, 8)$
	CI = (2, 0, 0) In chloride Ion, Total 18 e^-
	in chioride ion, rotar ro e
19.	Which one of the following is correct electronic configuration of sodium.
Sal	(a) $2, 8$ (b) $8, 2, 1$ (c) $2, 1, 8$ (d) $2, 8, 1$
501.	(D) As per Bohr- Bury Rule
	Atomic no. of Na is 11
	: Electronic configuration : 2, 8, 1
20.	Physical state of water at 0°C is
	(a) Solid (b) Liquid (c) Gas (d) None of the above
Sol.	(A)
	Water freezers at 0°C to form ice.
	(26)

21.	Solution is
	(a) Homogeneous mixture (b) Heterogeneous mixture
	(c) Colloidal (d) All of the above
Sol.	(A)
	In solution solute and solvent from one phase. \therefore They are homogeneous mixture.
22.	Components present in air can be separated by
	(a) Fractional distillation (b) Evaporation
	(c) Boiling (d) None
Sol.	(A)
	Liquefied air is passed into the bottom of fractionating column and different gases present in air are separated as per their B P
	are separated as per then D.1.
23.	Which one of the following is
	(a) Na^+ (b) Cl^- (c) H_2 (d) None of the above
Sol.	(B)
	Chloride ion has negative charge, it is an anion.
24.	Electron is invented by
	(a) J.J. Thomson (b) Dalton (c) Niels Bohr (d) None of the above
Sol.	(A)
	J.J. Thomson
25.	The maximum number of electrons in a shell can be shown by
	(a) $2n^2$ (b) $2n^3$ (c) $2n^2 + 1$ (d) None of the above
Sol.	(A)
	(as per Bohr-Bury Rule)
26	Distribution of electrons in carbon is as follows
20.	(a) $2 4$ (b) $2 2 2$ (c) $4 2$ (d) None of the above
Sol	(a) $2, 4$ (b) $2, 2, 2$ (c) $4, 2$ (d) None of the above
501.	At No. of C is 6
	: Electronic configuration is 2, 4.
27.	All fungi are
	(a) Parasites (b) Saprophytes (c) Symbiont (d) Heterotrophs
Sol.	(B)
	Fungi are saprophytes that depend on dead and decaying organic matter for its nutrition.

28.	An exception to cell theory is	
	(a) Bacteria (b) Virus (c)	Algae (d) All
Sol.	(B)	
	Viruses are neither living nor non-living so the	ey cannot be included in cell theory.
29.	Chemical composition of chromosome is	
	(a) DNA and lipids	(b) DNA and carbohydrates
	(c) Proteins and lipids	(d) DNA and proteins
Sol.	(D)	
	Chromosomes are made up of DNA and his	tone proteins in which DNA is wrapped around
20	histone proteins.	
30.	DNA replication (synthesis) occurs in	Caluer (I) Mahar
Sal	(a) G-phase (b) S-phase (c) (\mathbf{R})	G ₂ phase (d) M phase
501.	In cell cycle DNA synthesis occurs in s-phase	(synthesis phase) in which the amount of DNA in
	a cell is doubled.	
21	Destaria (astara) and	
31.	(a) Virus (b) Bacteria (c)	Fungi (d) Algae
Sol.	$(a) \forall \Pi us \qquad (b) Dacterna \qquad (c)$	(u) Algae
201	The viruses, which feed on bacteria are called	bacteriophages.
37	Cristae is with	
32.	(a) Nucleus (b) Chloroplast (c)	Cell wall (d) Mitochondria
Sol.	(D)	(d) Millochondina
	Cristae are the infoldings of inner mitochondri	al membrane which increases its surface area.
33.	Association of algae and fungi forms	
	(a) Mycorrhiza (b) Lichen (c)	Flower (d) Bio fertilizer
Sol.	(B)	
	The symbiotic association between algae and	d fungi is called lichen in which algae provides
	nutrition to fungi while fungi provides shelter a	and water to algae.
34.	Energy flow in ecosystem is	
	(a) Tetra directional (b)	Tri directional
Sal	(c) Bi-directional (d)	Uni-directional
501.	The energy flow in ecosystem is always unidi	rectional as the energy is always transferred from
	producers to consumers and from lower trophic	c level to higher trophic level.
	r r	

(28)

35.	Absorption of water is associated with
	(a) Root apex (b) Root hairs (c) Bark of roots (d) All of these
Sol.	(B) The absorption of water in roots occurs with the help of root hairs.
26	
36.	which gas is not responsible for global warming
Sal	(a) CO_2 (b) O_3 (c) NO_2 (d) N_2
501.	All of the following gases except nitrogen (N_c) contributes to global morning as (Ω_c, Ω_c) and
	NO ₂ are greenhouse gases.
37.	Lipoprotein is found in
Sal	(a) Cell membrane (b) Nucleus (c) Cytoplasm (d) Cell wall
501.	(A) The combination of linids (fats) and proteins which form a major constituents of all membrane
	The combination of tiples (fats) and proteins which form a major constituents of an memorane.
38.	Glycolysis takes place in
a 1	(a) Mitochondria (b) Cytoplasm (c) Nucleus (d) Chloroplast
Sol.	(B) Characharia is the first star of evidetion of find (Descinction). It examples is established of all in
	Glycolysis is the first step of oxidation of food (Respiration). It occurs in cytoplasm of all in which one molecules of glucose is converted into two molecules of puruvic acid
	which one molecule of glucose is converted into two molecules of pyruvic acid.
39.	Amphibians of plant kingdoms are
	(a) Bacteria (b) Gymnosperm (c) Bryophyta (d) Algae
Sol.	
	Bryophytes are also called Amphibians of plant kingdom as they require water for fertilization
	out may be present on land.
40.	When ATP is converted into ADP it releases
	(a) Enzymes (b) Secretions (c) Energy (d) Hormones
Sol.	(C)
	1 molecule of ATP is broken down to form ADP and inorganic phosphate to release about 7.3
	kilo calories of energy.
41.	The Harappan towns and cities were divided into large blocks
	(a) Square (b) Rectangular (c) Circular (d) Semi-circular
Sol.	(B)
	The Harappa town and cities were divide into large block that is rectangular which was made up
	of terracotta and the design of city roads cut at 90°
	(29)

42.	The most famous centre of learning during the Mauryan period was
	(a) Taxila (b) Ujjain (c) Nalanda (d) Vallabhi
Sol.	(A) Chanalana anall ha anno ach al an anno aiste d'anith tarilla an inspirite a ann tarita is in Dahistan
	Chanakya well known scholar was associated with taxila university, now taxita is in Pakistan
43.	In which year of Ashok coronation did the Kalinga war take place
Sol.	(a) Fifth year (b) First year (c) Eighth year (d) I hirteenth year (C)
	Ashoka sat on thrown in 269 BC and he attacked on Kalinga in 261 BC which was after 8 years
	of Ashoka caronation.
44.	Who build the stup of Sanchi?
	(a) Sariputra (b) Mahamogallana (c) Mahinda (d) Ashok
Sol.	(D) To spread the msessage of peace in 3 rd century located in Madhya Pradesh associated with
	Buddhism.
45	The foundr of Vijanagar kingdom was
	(a) Harihar I (b) Bukkaraya I (c) Both (a) and (b) (d) Krishnadevraya
Sol.	(C) Harihar & Bhuka were brothers.
46.	Taj Mahal is located
	(a) In Agra (b) Fatehpur Sikeri(c) In Delhi (d) None of these
Sol.	(A) Located at Agra built by Saha jahan in 1632, one of the seven wonders of the would.
47.	At where Britishers established the first factory in Bengal in 1651 A.D.
Sol	 (a) Hugli (b) Murshidabad (c) Kasim Bazar (d) Calcutta
40	Whe is associated with the reliev of Destring of Long
48.	(a) Lord Hastings (b) Lord Dalhousie
	(c) Lord Wellesley (d) Lord Cornwallis
Sol.	(B) for annercpation of kingdom, who donot have legal heir to the throne on minor.
49.	At which place was Tantya Tope hanged to death
~ -	(a) Jhansi (b) Kanpur (c) Shivpuri (d) Sagar
Sol.	(C) He was hanged in the year 18 th April 1859 at Madhav National parle shivpuri, he was famous for Guerilla warfare

50.	Rani Laxmi bai was also known as by which name	
	(a) Chhabili (b) Manu (c) Manikarnika (d) All of the above	
Sol.	(D)	
	All names belong to rani laxmi ai. childhood – mannikurni – nanu sahab – Manu.	
51.	What was the real name of Swami Vivekanand	
	(a) Narendranath (b) Mula Shankar	
	(c) Gadadhar chattopadhyaya (d) Mahes Das	
Sol.	(A)	
	Childhood name of swami vivekanand associated with Ramkrishna mission.	
52.	Chandra Shekhar Azad was born on 23 rd July 1806 at	
	(a) Jhabua (b) Bangagaon (c) Gurudaspur (d) Gwalior	
Sol.		
	Alirajpur was as per m.p. board book, the next suitable option is Jhabua.	
53.	Who gave the title of Mahatma to Gandhiji	
	(a) Romain Rolland (b) Louis Fisher	
~ •	(c) Ravindranath Tagore (d) Subhash Chandra Bose	
Sol.		
	Ravindra nath tagore gave manatma titles to manatma Gandhi on 1915	
54.	The credit of merger of states in India goes to?	
	(a) Jawahar Lal Nehru (b) Sardar patel	
a 1	(c) Fazal Ali (d) Mahatma Gandhi	
Sol.	(B) Also known iron man India integrated.	
55.	When was the constitution of India adopted	
	(a) 9 December 1946 (b) 16 August 1947	
	(c) 26 November 1949 (d) 26 January 1950	
Sol.	(c)	
	After 2 year 11 month 18 constitution was adopted	
56.	The resources are those things which :	
	(a) Satisfy human needs (b) Full fill some specific objectives	
a -	(c) Are needed for the human welfare (d) All the above	
Sol.	(D) Descurres and there this as which activity the house of a solution of the second	
	Resources are there things which satisfy the numan needs and have value.	

(31)

57.	Meaning of Resource conservation is:	
	(a) No use of resources (b)	To keep resources reserved
	(c) Prevent misuse of resources (d)	Balanced use of resources
Sol.	. (D)	
	concept of sustainable development	
58.	The major natural hazard of India is	
	(a) Drought (b) Flood (c)	Earthquake (d) Volcano
Sol.	. (B)	
	Flood	
59.	Kagiranga national park is located in -	
	(a) Uttar Pradesh (b) Assam (c)	Rajasthan (d) Orissa
Sol.	. (B)	
	Famous for one horned Rhinoceros.	
60.	Suitable soil for cotton production is	
	(a) Alluvial soil (b) Black soil (c)	Red soil (d) Laterite soil
Sol.	. (B)	
	Useful for growing cotton, also known as reg	gar soil.
61.	Father of Green revolution is	
	(a) Dr. Ennett (b)	Billcox
	(c) Norman Borlauge (d)	Nixon
Sol.	. (C)	
	Gave the concept of green revolution in the	world, in India by M.S. swaminathan.
62.	Yellow revolution is related to	
	(a) Oilseeds production (b)	Fruits production
	(c) Sheep production (d)	Fish production
Sol.	. (A)	
	Oil seeds like sunflower, mustard, groundnut e	tc
63.	Kharif crops are	
	(a) Rice, Millet, Maize (b)	Wheat, Gram, Jow
	(c) Jute, Tea, Coffee (d)	Tobacco, Rubber, Linseed
Sol.	. (A)	
	Kharif sown during rainy season.	
	(32)	

64.	Met	allic Mineral is	_						
	(a)	Iron	(b)	Diamond	(c)	Mic	a	(d)	Coal
Sol.	(A)	Iron							
65.	Whi	ich type is not i	nclude	ed in iron-ore					
	(a)	Hametite	(b)	Magnetite	(c)	Lim	onite	(d)	Lignite
Sol.	(C)	Limonite		C					
66.	Whi	ich is not a part	ofPu	blic Distributio	on syst	tem			
001	(a)	Proper value s	hop		(b)	Co-	operative	custor	ner storage
	(c)	Super market	P		(d)	Buf	fer stock		
Sol.	(C)	Super market	is not	related with he	ournar	nent.			
67	Fire	t rank of Diamo	nd Pr	oduction in Inc	lia				
07.	(a)	Madhya Prade	esh		<i>a</i> 1 <i>a</i> .	(b)	Bihar		
	(u) (c)	Uttar Pradesh	,011			(d)	Orissa		
Sol.	(A)	Panna – Madh	iya Pra	adesh			$\overline{\langle}$		
68	Tor	mur is famous f	for						
00.	(a)	Nuclear electr	icity		(h)	Sol	ar energy		
	(u) (c)	Hydro electric	vity		(d)	Wir	nd energy		
Sol.	(A)	Tarapura (Mal	harast	ra) Nuclear end	ergy				
60	The	manchestor of	cottor	textile in Sou	th Ind	ia is i	called_		
07.	(a)	Secunderabad	Conon	i textile ili sou	(h)	Coi	mbatore		
	(u) (c)	Thiruvanantha	ipuran	n	(d)	Gur	ntur		
Sol.	(B)	Coimbatore (7	r Famil	Nadu) famous	for te	xtile.			
70	Wh	ich is the chean	est me	ans of transpo	rt				
/0.	(a)	Air transport		uns of transpo	(b)	Wa	ter transpo	ort	
	(c)	Rail transport			(d)	Roa	d transpor	t	
Sol.	(B)	Water ways.							
71	Whi	ich country's pa	rliam	ent is treated is	s the n	nothe	r of world	narlia	ament
/ 1•	(a)	America	unun		(b)	Brit	ain	puint	
	(c)	India			(d)	Swi	tzerland		
Sol.	(B)				~ /				
	Brit	ain – one of the	oldes	t and parliame	ntary	<mark>form</mark>	of govern	ment.	

72.	Who protects the constitution -
	(a) Judiciary (b) Legislature (c) Executive (d) Finance commission
Sol.	(A) Judiciary
73.	From which country did we adopt fundamental rights?
	(a) England (b) China (c) U.S.A. (d) Ireland
Sol.	(C) United State of America
74.	How long can an ordinance remain in force?
	(a) Three months (b) Four months (c) Five months (d) Six months
Sol.	(D) After 6 months ordinance becomes null and void.
75.	The quorum requirement to the Rajya Sabha-
	(a) 25 (b) 50 (c) 75 (d) 100
Sol.	(A)
	Quaram mean at least 10% of the total member of house.
76.	The main function of the Foreign Exchange bank is :
	(a) Receiving the deposits (b) Advancing loans
a 1	(c) Exchange of money (d) All above
Sol.	(C) Exchange of money
77.	Agmark security icon is:
	(a) for Jewelery (b) for agricultural products
Sal	(c) for woolen clothes (d) for electrical appliances
501.	Agriculture products – Agmark Jewelry – Hall mark
	Industrial Product – ISI Wool mark – wool
78	Employment is provided in the National Rural Employment Gaurantee Scheme for
70.	(a) 150 days (b) 100 days (c) 200 days (d) One year
Sol.	(B)
	Minimum 100 day are guaranteed by government under NREGA.
79.	Expansion of the market is sported by -
	(a) Means of Transport (b) Means of Communication
	(c) Bank and Financial Institution (d) All of the above
Sol.	(D) All the given condition are necessary

(34)

80. World Trade Organization has been established: (a) 1985 year (b) 1995 year (c) 2001 year (d) 2005 year **(B)** 1st jan. 1995 Sol. Number r is termed as Rational number if it can be expressed as $\frac{p}{q}$, where p and q are integers 81. and, (a) p = 0 (b) $p \neq 0$ (c) q = 0(d) $q \neq 0$ Sol. **(D)** 82. Zero of the polynomial p(x) = 2x + 1 is (a) $-\frac{1}{2}$ (b) $\frac{1}{2}$ (c) 0 (d) 🔊 Sol. **(A)** 2x + 1 = 0 $x = -\frac{1}{2}$ Number of straight lines passing through the point (1, 2) is: 83. (c) 3 (a) 1 (b) 2 (d) ∞ Sol. **(D)** 84. Shape made by the bisectors of angles of a parallelogram is. (c) Circle (a) Rectangle (b) Square (d) Straight line Sol. **(A)** AG is angle bisector of $\angle BAD$ $\angle 1 = \angle 2$ ٢C D G DE is angle bisector of $\angle ADC$ $\angle 3 = \angle 4$ \Rightarrow $\angle BAD + \angle ADC = 180^{\circ}$ $2 \angle 2 + 2 \angle 3 = 180^{\circ}$ $\angle 2 + \angle 3 = 90^{\circ}$ (i)

ΔAHD In $\angle 2 + \angle 3 + \angle 5 = 180^{\circ}$ $90^{\circ} + \angle 5 = 180^{\circ}$ from (i) $\angle 5 = 90^{\circ}$ Then $\angle GHE = \angle 5 = 90^{\circ}$ (vertically opposite angles) Similarly $\angle GEF = 90^{\circ}$ $\angle BAD + \angle ABC = 180^{\circ}$ $2 \angle 1 + 2 \angle 6 = 180^{\circ}$ $\angle 1 + \angle 6 = 90^{\circ}$ In $\triangle AGB$ $\angle 1 + \angle AGB + \angle 6 = 180^{\circ}$ $\angle AGB + 90^\circ = 180^\circ$ $\angle AGB = 90^{\circ}$ Similarly \angle FEH = 90° Therefore \angle HGF = \angle HEF = \angle GFE = \angle GHE = 90° EFGH is a rectangle \Rightarrow If side of each cube is 3 cm, then volume of given figure is 85. (b) 27 cm^3 (a) 3 cm^3 (c) 15 cm^3 (d) 405 cm^3 Sol. **(D)** Number of cubes = 15Side of each cube = 3 cmVolume of one cube $= a^3 = 3^3 = 27$ Volume of 15 cubes = $15 \times 27 = 405$ cm³ Hero's formula for the Area of triangle is: 86. (a) $\frac{1}{2}$ (Base × Height) (b) $\sqrt{s(s-a)(s-b)(s-c)}$ (c) $\frac{a+b+c}{2}$ (d) $\sqrt{s.a.b.c}$ Sol. **(B)**

87.	If the number of observations n is even, then median is
	(a) $\left(\frac{n+1}{2}\right)^{th}$ term (b) $\left(\frac{n}{2}\right)^{th}$ term
	(c) Mean of $\left(\frac{n}{2}\right)^{\text{th}}$ and $\left(\frac{n}{2}+1\right)^{\text{th}}$ term (d) None of these
Sol.	(C) Mean of $\left(\frac{n}{2}\right)^{\text{th}}$ and $\left(\frac{n}{2}+1\right)^{\text{th}}$ term
88.	Product of any three consecutive even numbers is divisible by
C - I	(a) 2 (b) 4 (c) 16 (d) 12
501.	() Error
89.	Indian Mathematician Varahmihir wrote the
	(a) Arya Bhattiyani (b) Panen Sidehantika (c) Ganitsaar Sangrah (d) Leelawati
Sol.	(B) Panch siddhantika
90.	Remainder on dividing polynomial
	$3x^2 - x^3 - 3x + 5$ by $x - 1 - x^2$ is
	(a) 7 (b) 3 (d) $2x + 5$
Sol.	(c) 0 (d) $2x + 5$ (B)
	$\frac{x-2}{x-2}$
	$-x^{2} + x - 1) - x^{3} + 3x^{2} - 3x + 5$
	$\frac{+x^2 \pm x + x}{2x^2 - 2x + 5}$
	$\frac{\mp 2x^2 \mp 2x \pm 2}{\mp 2x \pm 2}$
	+3
91.	A rational number becomes $\frac{1}{3}$ on subtracting 1 from its numerator and it becomes $\frac{1}{4}$ when 8 is
	added to its denominator, the rational number is
	(a) $\frac{5}{12}$ (b) $\frac{1}{12}$
	(c) $\frac{7}{1}$ (d) $\frac{3}{1}$
	(d) 12 (d) 17

(37)

Sol. (A) Let rational number be $\frac{x}{y}$ $\frac{x-1}{y} = \frac{1}{3}$ 3x - 3 = y.....(i) 3x - y = 3 $\frac{x}{y+8} = \frac{1}{4}$ 4x = y + 84y - y = 8.....(ii) (i) - (ii)-x = -5 \Rightarrow x = 5Put in (i) 15 - y = 3y = 12Rational number = $\frac{5}{12}$ 92. How many numbers of two digits are divisible by 3 (d) 35 (a) 30 (b) 32 40 (c) Sol. **(A)** 99 12, 15,.... 1 = a + (n - 1)d $99 = 12 + (n-1) \times 3$ $99 = 12 + 3n - 3 \qquad 99 - 9 = 3n$ 90 = 3nn = 3093. Co-ordinates of a point on y-axis which is equidistant from the points (6, 5) and (-4, 3) are (d) (0, 0) (c) (3, 2) (a) (9, 0)(b) (0, 9) Sol. **(B)** Let point P(0, y) $\sqrt{(6-0)^2 + (5-y)^2} = \sqrt{(-4-0)^2 + (3-y)^2}$ $36 + 25 + y^2 - 10y = 16 + 9 + y^2 - 6y$ 61 - 10y = 25 - 6y $36 = 4y \implies y = 9$ Ans: P(0, 9)

94. Value of sec A(1 - sin A) (sec A + tan A) is
(a) 0 (b) 2 (c) 1 (d)
$$\infty$$

Sol. (C)
sec A(1 - sin) (sec A + tan A)
 $= \frac{1 - \sin^2 A}{\cos A} \times \frac{1 + \sin A}{\cos A}$
 $= \frac{1 - \sin^2 A}{\cos^2 A} = \frac{\cos^2 A}{\cos^2 A}$
 $= 1$
95. Length of Minute hand of a clock is 14 cm. Area formed by this hand in 5 minutes is:
(a) $\frac{154}{3}$ (b) 154 (c) $\frac{215}{3}$ (d) $\frac{205}{3}$
Sol. (A)
Radius (r) = 14 cm
Angle in 5 minutes = $5 \times 6^\circ = 30^\circ$
Area of sector
 $= \frac{9}{360} \times 27 \times 14 \times 14$
 $= \frac{1}{12} \times \frac{27}{7} \times 196$
 $= \frac{22}{3} \times 7$
 $= \frac{134}{3}$ sq. unit
96. Mean of first n natural numbers is :
(a) $\frac{n(n+1)}{2}$ (b) $\frac{n+1}{2}$ (c) $\frac{n}{2}$ (d) $\frac{n(n-1)}{2}$
Sol. (B)
Sum of first n natural number
 $s = \frac{n(n+1)}{2}$
 $Mean = \frac{n(n+1)}{2} = \frac{n+1}{2}$
(39)

97.	A box contains 3 blue, 2 white and 4 red marbles. A marble is drawn randomly. Probability of
	getting white marble is
	(a) $\frac{3}{5}$ (b) $\frac{2}{6}$ (c) $\frac{2}{9}$ (d) $\frac{2}{5}$
Sol.	(C) Total ball = 9 balls Probability of white ball = $\frac{2}{9}$
98.	Choose false statement from following:
	(a) All equilateral triangles are isosceles triangle
	(b) Some rational numbers are integers
	(c) All integers are not rational number
	(d) Some Isosceles triangles are equilateral triangle
Sol.	(C)
99.	Angle of elevation of a tower from a point at a distance of 15 meter from foot of the tower is
	60°. Height of tower is
	(a) 15 meter (b) $\sqrt{3}$ meter (c) $15\sqrt{3}$ meter (d) $\frac{15}{\sqrt{3}}$ meter
Sol.	(C)
	In right AABC
	h h h
	$\tan 60^{\circ} = \frac{1}{15}$
	$\sqrt{3} = \frac{h}{15}$
	$h = 15\sqrt{3}$ m
100.	N th term of a list of numbers is given by $a_n = (3 + 2n)$. Sum of first 24 terms will be
	(a) 672 (b) 670 (c) 570 (d) 572
Sol.	(A)
	$\mathbf{a}_{\mathrm{n}} = (3+2\mathrm{n})$
	$a_1 = 3 + 2 \times 1 = 5$
	$a_2 = 3 + 2 \times 2 = 7$
	$a_3 = 3 + 2 \times 3 = 9$
	a = 5, d = 2, n = 24
	$S_n = \frac{n}{2} [2a + (n-1)d] = \frac{24}{2} [2 \times 5 + 23 \times 2] = 12 [10 + 46] = 12 [56] = 672$
	∢▶ ∢▶∢▶
	(40)