



SAMPLE TEST PAPER A TALENT SEARCH EXAM 2024

Time : 2 Hours

Class: 10th_STAGE - 2

Max. Marks : 240

INSTRUCTIONS

ĺ	[A]	General	:

- Attempt ALL the questions. Answer have to be marked on the OMR sheets 1.
- 2. This question paper contains 60 questions.
- 3. The question paper consists of **Part-I** and **Part-II**.
- 4. Part-I contains Section -A (Q.No. 1 to 20 of Mathematics) and Section-B (Q.No. 21 to 30 of Mental Ability)

Part-II contains Section - A (Q.No. 31 to 40 of Physics), Section-B (Q.No. 41 to 50 of Chemistry) and

- Section-C (Q.No. 51 to 60 of Biology)
- 5. Blank spaces are provided at the bottom of each page for rough work. No additional sheets will be provided for rough work.
- Blank paper, clipboard, log tabes, silde rules, calculators, cellular phones, pagers and electronic gadgets in any 6. form are NOT allowed.
- 7. Do not Tamper / multilate the OMR sheet or this booklet.
- 8. Do not break the seals of the question-paper booklet before instructed to do so by the invigilator.
- 9 SUBMIT the OMR sheet to the invigilator after completing the test & take away the test paper with you.
- [B] Filling of OMR Sheet :
- 10. In all the parts, each question will have 4 choices out of which only one choice is correct
- Use only Black/Blue ball point pen for filling the OMR sheet. 11.
- NOT BREAK THE SEAL WITHOUT BEING INSTRUCTED TO DO SO BY THE INVIGILATOR 12. On the OMR sheet, darken the appropriate bubble for each character of your name, Registration No., Phone No. etc.

[C] Marking Scheme :

13. For each right answer you will be awarded 4 marks if you darken the bubble corresponding to the correct answer and zero marks if no bubble is darkened. In case of bubbling of incorrect answer, minus one (-1) mark will be awarded.

Best of Luck

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PART - I

SECTION-A (MATHEMATICS)

(SINGLE CORRECT ANSWER TYPE)

This section contains (1-20) multiple choice questions. Each questions has four choices (A), (B), (C) and (D) out of which ONLY ONE is correct.

Q.1	lf se	$c\theta + tan\theta = 3$ find the	value	of $\sin \theta$ is				
	(A)	$\frac{3}{5}$	(B)	$\frac{4}{5}$	(C)	1	(D)	$\frac{\sqrt{3}}{2}$
Q.2	3 ^{x+1}	$+ 3^{2x + 1} = 270$, then x	equa	ls to				
	(A)	2	(B)	4	(C)	7	(D)	12
Q.3	Ten y	ears hence, the age of	Rohar	will be twice that of hi	s son.	If the sum of the age o	f Roha	an and twice the age of
	his s	on is 90 years, then the	prese	ent age of Rohan is				
	(A)	40 years	(B)	30 years	(C)	50 years	(D)	35 years
Q.4	If the	equation $x^2 + 2x + 5$	= 0 ar	$d 2x^2 + bx + c = 0 h$	ave ar	e common root then		
	(A)	b = 2, c = 5			(B)	$b=4,\ c=10$		
	(C)	b = 0, c = 10			(D)	b = 2, c = 10		
Q.5	The	value of $1^2 - 2^2 + 3^2 - 3^2$	4 ² + 5	$5^2 - 6^2 + \dots + 51^2$				
	(A)	-1275	(B)	1326	(C)	1308	(D)	-50
Space for rough works								



Q.6	$\frac{1}{1 \times 2}$	$\frac{1}{2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \frac{1}{4 \times 3}$	_+ 5	.+ <mark>1</mark> 100 ×101				
	(A)	<u>100</u> 101	(B)	1	(C)	<u>1</u> 101	(D)	<u>2</u> 101
Q.7	Thea	area of the figure forme	d by	x + y = 2 is		(in sq. units)		
	(A)	2	(B)	4	(C)	6	(D)	8
Q.8	ABC	is a triangle in which A	\B = 4	0 cm , BC = 41 cm ar	nd AC	= 9 cm . Then orthoco	entre c	of $\triangle ABC$ lies
	(A)	interior of the triangle			(B)	exterior of the triangle	е	
	(C)	on the triangle			(D)	at the midpoint of the	e triang	le.
Q.9	If —	$\frac{a+c-a}{a}, \frac{c+a-b}{b}, \frac{a+b}{c}$	<u>− c</u> ar	e in A.P., then which c	of the f	following is in A.P.?		
	(A)	a, b, c	(B)	a ² , b ² , c ²	(C)	$\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$	(D)	None of these
Q.10	The	points (a, b), (a ₁ , b ₁) ar	nd (a –	$a_1, b-b_1)$ are collinea	ar if			
	(A)	$ab = a_1b_1$	(B)	$ab_1 = a_1b$	(C)	a = b	(D)	$a_1 = b_1$
Q.11	The a of the	angle of elevation of a ki e kite is	ite fron	n the ground is 60° and	l its he	eight from the ground is	30 m.	The length of the string
	(A)	20 m	(B)	30√3 m	(C)	20√3 m	(D)	10√3 m
				- Space for roud	gh w	orks ———		



Q.12 In
$$\triangle ABC$$
, $\frac{AB}{AC} = \frac{BD}{DC}$, $\angle B = 70^{\circ}$ and $\angle C = 50^{\circ}$. Then $\angle BAD =$
(A) 20° (B) 30°



(C) 50° (D) 45°

Q.13 In the given figure, $\triangle ABC \sim \triangle PQR$. Then, $\frac{a}{p}$ is always equal to





Q.14 If the zeroes of the polynomial $x^3 + 5x^2 + 6x + 7$ are a - b, a and a + b, then the value of a is

(A)	$\frac{5}{3}$	(B) –5	(C) $-\frac{5}{3}$	(D)	-7
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Q.15 If $3 \sin \theta + 4 \cos \theta = 5$, then the value of $\sin \theta$ is

(A) $\frac{2}{3}$	(B) $\frac{4}{5}$	(C) $\frac{3}{5}$	(D) $\frac{5}{3}$
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Q.16	In a r	ight triangle ABC right	angleo	at B, if P and Q are p	points	on the sides AB and E	BC resp	pectively, then
	(A)	$AQ^2 + CP^2 = (AC^2 +$	PQ ²)		(B)	$2(AQ^2 + CP^2) = AC$	² + PQ	2
	(C)	$AQ^2 + CP^2 = AC^2 + F$	PQ ²		(D)	$AQ + CP = \frac{1}{2}(AC +$	PQ)	
Q.17	lf the table	cost of 3 chairs and 2 s and 2 chairs is	tables	s is ` 3500 and the c	ost of :	3 tables and 2 chairs	is ₹4(000 , then the cost of 2
	(A)	₹3750	(B)	₹3250	(C)	₹3000	(D)	₹2000
Q.18	ABC radiu	is a right angled trian s x cm has been inscri	gle wit bed in	h BC = 6 cm and Al \triangle ABC as shown in fi	B = 8c gure. ⁻	m . A circle with cent The value of x is	re O a	and A 8 cm R
	(A)	1 cm			(B)	2 cm		B = Q C
	(C)	3 cm			(D)	4 cm		$\leftarrow 6 \text{ cm} \rightarrow$
Q.19	Wate up a	r flows at the rate of 10 conical vessel whose o) metei liamet	per minute from a cy er at the base is 40 cr	lindric n and	al pipe 5 mm in diame depth 24 cm ?	eter. Ho	ow long will it take to fill
	(A)	48 minutes 15 secs			(B)	51 minutes 12 secs		
	(C)	52minutes 1 sec			(D)	55 minutes		
Q.20	Four	coins are tossed simul	taneou	usly. The probability o	f gettir	ng at least one head is	8:	
	(A)	<u>3</u> 16	(B)	<u>7</u> 16	(C)	<u>9</u> 16	(D)	<u>15</u> 16
				- Space for rou	gh w	orks ———		

SECTION - B (MENTAL ABILITY)

(SINGLE CORRECT ANSWER TYPE)

This section contains (21-30) multiple choice questions. Each questions has four choices (A), (B), (C) and (D) out of which ONLY ONE is correct.

Questions 21- 25 : There are Eight persons E, F, G, H, I, J, K and L are seated around a square table – two on each side. There are three lady members and they are not seated next to each other. J is between L and F. G is between I and F. H, a lady member is second to the left of J. L, a male number, is seated opposite of E, a lady member. There is lady member between F and I.

	Space for rough works							
	(A)	0	(B)	1	(C)	2	(D)	3
Q.25	If the	ere are 3 oranges and y	ou tak	e away 2, how many c	do you	have?		
	(A)	G	(B)	I	(C)	J	(D)	cannot be determined
Q.24	Who	among the following is	to the	immediate left of F?				
	(A)	E, G and J	(B)	E, H and G	(C)	G, H and J	(D)	cannot be determined
Q.23	Who	among the following a	re the	three lady members?				
	(A)	One	(B)	Two	(C)	Three	(D)	cannot be determined
Q.22	How	many persons are sea	ted be	tween K and F?				
	(A)	F	(B)	I	(C)	J	(D)	None of these
Q.21	Who	among the following is	seate	ed between E and H?				

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Q.26 Pointing to a woman, a man said, "The sister of her mother's husband is my aunt." How is he related to that woman?

	(A)	Nephew	(B)	Father	(C)	Uncle	(D)	Brother
Directi	on (Q.	No. 27 to Q. No.29) F	ind th	e missing number i	n the	following series		
Q.27	7	26 3	2	5 3	8	44 2 6	4	? 5 9
	(A)	25	(B)	26	(C)	32	(D)	29
Q.28	2, 9	, 28, 65, ?						
	(A)	78	(B)	82	(C)	126	(D)	105
Q.29	1, 7,	, 23, 55, 109, 19	1, ?					
	(A)	225	(B)	180	(C)	317	(D)	307
Q.30	Ram 25km	Singh went 20 km to th to meet Satnam. How	e east far is :	, then turned north and Satnam from the poin	d walko t wher	ed another 5km. Then e Ram Singh started?	he tur	ned west and covered
	(A)	5√2 km	(B)	32 km	(C)	5 km	(D)	27km

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PART - II

SECTION-A (PHYSICS) (SINGLE CORRECT ANSWER TYPE)

This section contains (31-40) multiple choice questions. Each questions has four choices (A), (B), (C) and (D) out of which ONLY ONE is correct.

Q.31 The value of R for which total power dissipated in the circuit is 150 W is



- Q.33 Which of the following is correct regarding the nature of parallel and anti-parallel currents?
 - (A) Parallel currents repel and antiparallel currents attract.
 - (B) Parallel currents attract and antiparallel currents repel.
 - (C) No force exist due to both currents.
 - (D) None of these.
- Q.34 For the two circuit I and II shown below, the voltmeter readings would be



- (A) 0 V in circuit I and 2 V in circuit II.
- (C) 0 V is circuit I and 3 V in circuit II.
- (D) 3 V in circuit I and 0 V in circuit II.

3 V in both the circuits.

Q.35 An object 4 cm high is placed at a distance of 15 cm in front of a convex mirror having a radius of curvature of 10 cm. Then the image formed is at a distance of

(B)

(A) 7.5 cm behind the mirror

(B) 3.75 cm in front of the mirror

(C) 7.5 cm in front of mirror

(D) 3.75 cm behind the mirror

Q.36 The magnetic field lines due to a bar magnet are correctly shown in figure.



Q.37 A ray of light travelling in air is incident on the plane of transparent medium. The angle of incidence is 45° and that of refraction is 30°. Find the refractive index of the medium.

- (A) 2 (B) $\frac{1}{\sqrt{2}}$
- (C) 1 (D) $\sqrt{2}$
- Q.38 A small block B is placed on block A of mass 5 kg and length 20 cm. If initially the block is placed at the right end of block A. A constant horizontal force of 10 N is applied on the block A. All the surfaces are assumed frictionless. Find the time in which B separates from A.



- Q.39 An object of height 5 cm is kept at a distance 25 cm from the optical centre of a converging lens of focal length 10 cm. The height of the image is
 (A) 2.33 cm
 (B) 2.32 cm
 - (C) 3.33 cm (D) 2.22 cm
- Q.40 A particle starts from rest with uniform acceleration and its velocity after n seconds is v. The displacement of the body in last two seconds is
 - (A) $\frac{\nu(n+1)}{n}$ (B) $\frac{2\nu(2n+1)}{n}$ (C) $\frac{2\nu(n-1)}{n}$ (D) $\frac{\nu(n-1)}{n}$

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SECTION-B (CHEMISTRY)

(SINGLE CORRECT ANSWER TYPE)

This section contains (41-50) multiple choice questions. Each questions has four choices (A), (B), (C) and (D) out of which ONLY ONE is correct.

Q.41 Kanav took two test tubes marked as I and II. In test tube I, he put calcium carbonate and hydrochloric acid while in test tube II, he put zinc granules and hydrochloric acid. He passed the gas coming out from both the test tubes in lime water. What are his observations ?



- (A) The gas coming out from test tube I turns lime water milky.
- (B) The gas coming out from test tube II turns lime water milky.
- (C) The gases coming out from both the test tubes turn lime water milky.
- (D) None of these

(A)

(i)

Q.42 The charge on 1 gram ions of AI^{3+} is : ($N_A = Avogadro number$, e = charge on one electron)

(A)	$\frac{1}{27}$ N _A e coulomb	(B)	$\frac{1}{3} \times N_A^{}e$ coulomb
(C)	$\frac{1}{9} \times N_A$ e coulomb	(D)	$3 \times N_A e$ coulomb

- Q.43 Which of the following correctly represents 360 g of water ?
 - (i) 2 mole of H_2O (ii)
 - (iii) 6.022×10^{23} molecules of water (iv) 1.2044×10^{25} molecules of water
 - (B) (i) and (iv) (C) (ii) and (iii)

Space for rough works

20 mole of water

(D)

(ii) and (iv)

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V-MAT 2024 / 10th / S-2/SAMPLE PAPER [13]

Q.46 Match the following

	(A)	5	(B)	6	(C)	4 (D) 3	
Q.48	An e	lement with atomic nur	nber 4	0 is placed in period			
	(C)	Electronegativity of N	a^+		(D)	Electron affinity of Na ⁺	
	(A)	Electronegativity of N	а		(B)	Electron Affinity of Na	
Q.47	Ionis	ation potential of Na wo	ould be	e equal in magnitude v	vith		
	(C)	i - c, ii - b, iiii - d, iv	/-a		(D)	i - c, ii - d, iii - a, iv - b	
	(A)	i - a, ii - c, iii - d, iv -	b		(B)	i - c, ii - d, iii - b, iv - a	
	(iv)	CH ₃ H ₃ C-C-CH ₂ -CH CH ₃	3		(d)	2-Bromo-2-methyl pentane	
	(iii)	OH I H₃C—CH—CH₃			(c)	2-Methyl butan-1-oic acid	
	(ii)	Br H ₃ C—C—CH ₂ —CH CH ₃	₂—CH	3	(b)	2, 2-Dimethyl butane	
	(i)	$H_3C-H_2C-CH-0$	COOF	I	(a)	Propan-2-ol	

- Q.49 The molecular mass of compound A is 168 g/mol. Its empirical formula is C₄H₄S find its molecular formula.
 - (A) C_4H_5S (B) $C_8H_8S_2$ (C) C_2H_2S (D) C_2H_4S
- Q.50 The concentration of an HCl solution having pH equal to 2 is 10^{-x} M. Calculate the value of x. Assume complete dissociation of HCl.

(A) 1 (B) 2 (C) 4 (D) 5

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SECTION-C (BIOLOGY)

(SINGLE CORRECT ANSWER TYPE)

This section contains (51-60) multiple choice questions. Each questions has four choices (A), (B), (C) and (D) out of which ONLY ONE is correct.

Q.51	Acid rain is due to the precipitation of										
	(A)	CO ₂			(B)	Hydrogen sulphide					
	(C)	Oxides of sulphur	ides of sulphur			(D) CFCS					
Q.52	Chro	nic bronchites due to in	halatio	on of cotton fibres ove	r long	time is due to					
	(A)	Silicosis	(B)	Asbestosis	(C)	Byssinosis	(D)	Pneumoniosis			
Q.53	The	term factor was given b	y men	del is now known is							
	(A)	Chromosome	(B)	DNA	(C)	Gene	(D)	Pisum sativum			
Q.54	A DN	IA helix complimentary	pairin	g is always between							
	(A)	A and C	(B)	A and G	(C)	A and T	(D)	C and T			
Q.55	Ener	gy absorb by producer	is								
	(A)	100 %	(B)	10 %	(C)	1 %	(D)	None of these			
				- Space for roug	gh w	orks ———					

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Q.56	"Orig	jin of species" was written by							
	(A)	Mendel	(B)	Lamarck	(C)	Darwin	(D)	Calvin	
Q.57	AIDS	S virus contains genetic	mater	ial					
	(A)	DNA	(B)	RNA	(C)	Chromosome	(D)	Gene	
Q.58	Steri	lization in male is perfo	rmed	surgically by					
	(A)	Vasectomy			(B)	Gonorrhoea			
	(C)	AIDS			(D)	Tubetomy			
Q.59	Oest	rogen is released from							
	(A)	Adrenal cortex			(B)	Pancreas			
	(C)	Testes			(D)	Ovary			
Q.60	Vaso	opressin is produced by	y						
	(A)	Thyroid			(B)	Pancreas			
	(C)	Adrenal			(D)	Pituitary			

Space for rough works _____

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SAMPLE TEST PAPER ANSWER KEY V-MAT 2024 STATE – 2_ Class-10th

	MATH		MENTAL ABILITY		РНҮ		CHE		BIO
Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answers
1	В	21	D	31	В	41	А	51	С
2	А	22	С	32	А	42	D	52	D
3	С	23	В	33	В	43	D	53	С
4	В	24	С	34	С	44	А	54	С
5	В	25	С	35	D	45	А	55	С
6	А	26	D	36	D	46	D	56	С
7	D	27	D	37	D	47	D	57	В
8	С	28	С	38	D	48	А	58	А
9	С	29	D	39	С	49	В	59	D
10	В	30	А	40	С	50	В	60	D
11	С								
12	В								
13	D								
14	С								
15	С								
16	A C								
17	С								
18	В								
19	В								
20	D								

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