SANSKARAM GROUP OF SCHOOLS
संस्कारम् के साथ, सफलता का विश्वास।।
CLASS: 9 th 8 th OLYMPIAD PAPER Session : 2024-25 Date: 29.12.2024
Time: 1:00 Hrs. M.M.: 80
PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY
1. Please fill up on the particulars given on the OMR sheet carefully no manual
rechecking will be done.
2. Duration of Test is 1 hrs. This Question Paper Contains 80 Questions. All are
compulsory. Each question carries one Mark. There is NO NEGATIVE MARKING.
3. Answers are to be given on a separate OMR sheet.
4. Use black and blue ball pen only to darken the circle.
5. Mark your answers for questions $1-80$ on the single OMR sheet by darkening the
circles.
6. Sequence of questions is PHYSICS 1-20, CHEMISTRY 21-40, BIOLOGY 41-60,
MATHEMATICS 61-80.
7. Rough work can be done anywhere in the booklet but not on the OMR sheet/loose
paper.
8. Please return the OMR sheet to the invigilator after the test.
9. Do not fold OMR sheet and not make any stray marks on OMR sheet otherwise OMR
sheet will not be evaluate at all.
Student's Name:

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Q1. Two stones of equal masses are dropped from a rooftop of height h one after another. Their separation distance against time will				
a) Remain the same	b) Increase	c) Decrease	d) Be zero	
Q2. A boy begins to walk eastw	ard along a street in front of	A		
his house and the graph of his	position from home is	40-		
shown in the following figure	. His average speed for	set 20		
the whole time interval is equ	al to			
a) 8 m/min	b) 6 m/min	<u>5</u> 10	15 20	
c) 8/3 m/min	d) 2 m/min	ig 20-	-	
-, -,	-,	S Time	e (min)>	
O3. A car is moving with high v	velocity when it has a turn. A fo	rce acts on it outwardly becaus	e of	
a) Centripetal force	b) Gravitational force	c) Centrifugal force	d) All the above	
O4. Which one of the following	statements is not correct in unit	form circular motion:		
a) The speed of the particle re	mains constant	b) The acceleration always p	oints towards the centre	
c) The angular speed remains	constant	d) The velocity remains cons	stant	
O5. A bomb of mass 9 kg initia	lly at rest explodes into two piec	ces of masses 3 kg and 6 kg. If	the kinetic energy of 3	
kg mass is 216 J, then the velo	ocity of 6 kg mass will be			
a) 4 m/s	b) 2 ms-1	c) 3 ms-1	d) 6 m/s	
O6 Machine gun of mass 12 kg	$\frac{3}{10}$ fires 25 g bullets at the rate of	4 bullets per second with a velo	points of 500 m/s	
What force must be applied to	the gun to hold it in position	i suitets per second with a ver		
a) 20N	b) 12 5N	c) 50N	d) 75N	
07 A person is standing in an ϵ	elevator. In which situation he fi	nds his weight less than actual	weight	
a) The elevator moves upward	d with constant acceleration	nus mis weight less than actual	weight	
b) The elevator moves downy	ward with constant acceleration			
c) The elevator moves upward	d with uniform velocity			
d) The elevator moves downy	ward with uniform velocity			
08 The tension in the spring is	vard with dimonit velocity			
Qo. The tension in the spring is	$5 N \longleftarrow 5 N$			
a) ON	b) 2 5N	c) 5 0N	d) 10N	
09 A man starts walking from	a point on the surface of earth (assumed smooth) and reaches (liagonally opposite	
point What is the work done	by him	assumed smooth) and reaches (magonany opposite	
a) Zero	b) Negative	c) Positive	d) Nothing can be said	
O10 A light and a heavy body	have equal momenta. Which one	e has greater K F	d) Nothing can be said	
a) Lighter body	b) Heavy body	c) The K F are same	d) Data incomplete	
011 The Kinetic energy of the	body is double the momentum y	will be	d) Data meomplete	
Q11. The Kinetic chergy of the				
a) Unchanged	b) Become double	c) Quadruple d) Ir	creased by $\sqrt{2}$ times	
Q12. Power of a water pump is	2 kW. If $g = 10 \text{ m/sec}^2$, the amo	ount of water it can raise in one	minute to a height of	
10m is				
a) 2000 litre	b) 100 litre	c) 1000 litre	d) 1200 litre	
Q13. A man does a given amou	nt of work in 10 sec. Another m	an does the same amount of we	ork in 20 sec. The ratio	
of the output power of first man	to the second man is			
a) 1	b) ¹ / ₂	c) 2/1	d) None of these	
Q14. Force F on a particle movi	ing in a straight line varies with	distance d as shown in the figu	re. The work done on the	
particle during its displaceme	nt of 12 m $\uparrow F(N)$			
	2			
	Z			
		d(m)		
	0 3	3 7 12		
a) 13J	b) 18J	c) 21J	d) 26J	
Q15. The earth E moves in an e	lliptical orbit with the sun S	E C		
at one of the foci as shown in	figure. Its speed of motion	E		
will be maximum at the point	1 \ A	A() _B	
a) C	b) A	''S		
c) B	a) D			

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 Q16. The gravitational force F a) Sum of the masses b) P Q17. Two pieces of metal whe a) Both pieces must have eq c) Both pieces must have eq Q18. Velocity of sound in air I. Increases with temperature IV. Is independent of pressu 	between two objects does not de roduct of the masses c) Gravita in immersed in a liquid have equ ual weights. ual volumes II. Decreases with temper re V. Is independent of tem	epend on tional constant d) Distance be al up thrust on them; then b) Both pieces must have equ d) Both are floating to the sa rature III. Increase with prese perature	etween the masses al densities me depth ssure
Choose the correct of	ption:	-	
a) Only I and II are true	b) Only I and III are true c)	Only II and III are true d) O	nly I and IV are true
Total displacement of the	object during the time interval w	hen there is $v(m/s) 4^{+}$	λ
non-zero acceleration and	retardation is	$\uparrow 3 +$	
a) 60 m	b) 50 m	2	
c) 30 m	d) 40 m		
,	,	1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
Q20. A particle shows distance	e – time curve as given in the fig	ure. The	1 (300)
maximum instantaneous veloc	ity of the particle is around the p	oint	D
a) D	b) A	s s /	, С
c) B	d) C		
			time
Q21. Which one of the following	ing is not a solution?		
a) HCl reagent	b) Brass c) HCH	O + water d) Ker	osene + water
Q22. Boiling point of water is $273K$	- b) $0K$	c) 373K	d) 100K
O^{23} The process by which a t	nixture of sodium chloride and a	mmonium chloride can be sena	rated is called_
a) Sublimation	b) chromatography	c) evaporation	d) distillation
O24. Which of the following s	tatement is true?	e) e vaporation	u) ulbulluloli
a) Colloidal solutions do not	show Tyndal effect.	b) Colloidal solutions show I	Brownian movement.
c) Colloidal solutions are ho	mogeneous	d) Size of the colloidal partic	les is less than 1nm.
Q25. DHOKALA is a type of	solution.		
a) Solid-in-solid	b) Solid-in-gas	c) Solid-in-liquid	d) Gas-in-solid
Q26. China dish is			
a) Brittle and heat resistant	b) Durable and heat resistant	c) Brittle and corrosive d) Du	rable and non-corrosive
Q_2 . Compound A on strong I	ted with a few drops of sodium l	a reduisit brown futures and a ye	vipitate appeared in the
compound A Identify the ca	tion and anion present in the cor	mound A	ipitate appeared in the
a) Copper (II) and nitrate	b) Lead (II) and chloride	c) Zinc and sulphate d) I	ead (II) and nitrate
O28. What will be the mass/m	ass percentage of a solution cont	aining 30 gm of common salt in	n 220 gm of water?
a) 3%	b) 1.2%	c) 12%	d) 22%
Q29. Cheese is an example of	which type of colloid?		
a) Gel	b) Foam	c) Sol	d) Solid sol
Q30. Which process is used to	separate a mixture of two miscil	ble liquids A and B having boili	ing points 56° C and 65°
C respectively?			1) 0, 1', ('11, ('
a) Distillation	b) Fractional distillation	c) Sublimation x^2 Volume the state of the second secon	d) Steam distillation.
comple of the element and d	iscover that it is made up of three	pointerical element \mathbf{A} . You ob sisctopes \mathbf{X} 48 \mathbf{X} 52 \mathbf{X} 54 to	help your science team
calculate the atomic mass of	the substance. You send the foll	owing drawing of your sample	with you report.
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	₩ C O O O		

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In the report you also inform remaining crossed circular at	the science team that the circoms are X-54 what is the ave	cular; a erage at	toms are in toms are in toms are in the second s	X-48, star ss of X?	atoms are	X-52 and the
a) 50.5	b) 51.5	c) 52.5			d) 53.5
Q32. How many sub-atomic pa	rticles are present in an α - pa	article u	ised in Ru	utherford's	s scattering	g experiment?
No. of protons	No. of Neutrons No.	o. of Ele	ectrons			
a) 4	0 0					
b) 2	0 2					
c) 2	2 0					
d) 2	2 1					
Q33. A certain sample of eleme Z in this sample?	ent Z contains 60% of 69Z an	d 40%	of 71Z. W	hat is the	relative ato	omic mass of element
a) 69.2	b) 69.8	c) 70.0			d) 70.2
Q34. Consider following as a p	ortion of the periodic table f	rom Gr	oup No. I	13 to 17. V	Vhich of th	e following statements
is are true about the elements	s shown in it?				V	Z
I) V, W, X and Z are less electron	ctropositive than X.		117			N7
II) V, W, X and Y are more e	electronegative than Z.		vv			Ŷ
III) Atomic size of Y is great	er than that of W.					
IV) Atomic size of W is small	ller than that of X.		v			
a) I, II and III	b) II and III		Λ			
c) I and IV	III an d IV					
Q35. Which rays are used to di	agnose Intestinal cancer?					
a) Laser Rays	b) Cathode Rays	c) X-Rays			d) γ – Rays
O36. How many times weight	of proton is greater than the i	mass of	the electr	ron?		
a) 1838	b) 1836	c) 1338			d) 1336
O37. 'Proton' is:	-,	- ,	,			.,
a) Nucleus of Deuterium	b) Ionised hydrogen molec	ule c) Ionised	hvdrogen	atom	d) An alpha particle
O38. Arrange of the following	consist of one electron, one i	proton a	and zero r	neutron?		.,
a) 1H2	b) 1H1	c`) 1H3	io ati oli i		d) 2He4
u) 1112		U,	, 1115			u) 21104
Q39. The ascending order of $\frac{e}{m}$	(charge/mass) value for ele n	ectron (e	e), proton	(p), neutro	on (n) and	alpha (α) particle is
a) e, p, n, α	b) n, p, e, α	c) n, α, p, e	e		d) n, p, α, e
Q40. Number of molecules in 1	14 g of carbon monoxide is					
a) $12.044 \times 10_{23}$	b) $6.022 \times 10_{23}$	c) 3.011 ×	1023		d) $1.5050 \times 10_{23}$
Q41. Which of these is the sma	llest in size?					
a) Ribosome	b) Lysosome	c) Mitocho	ondria		d) Chloroplast
Q42. Which of the following of	rganelles does not have mem	brane?		_		
a) Ribosome	b) Nucleus	c) Chlorop	last		d) Mitochondria
Q43. Thickness of plasma men	hbrane (unit membrane) is –					
a) 75 A	b) 175 A	c) 125 A			d) 150 A
Q44. The Golgi bodies are rela	ted to					
a) respiration	b) excretion	c) secretion	n		d) circulation
Q45. The most abundant comp	ound in cytoplasm is:					
a) fat	b) water	c) protein			d) carbohydrates
Q46. Which of the following st	atements is not true?					
a) Both mitochondria and chl	loroplasts provide energy to	cells in	the same	way.		
b) Both mitochondria and ch	loroplasts have more than on	e memł	orane.			
c) Only chloroplasts contain	the pigment chlorophyll.					
d) Both animal and plant cell	s contain mitochondria.					
Q47. Which of the following be	est describes the structure the	e plasm	a membra	ane?		
a) Phospholipids sandwiched	between two layers of prote	ins b) Proteins	s embedde	d in two la	yers of phospholipid
c) a layer of protein coating a	a layer of phospholipid	d) phospho	olipids em	bedded in	two layers of protein
Q48. Cyanobacteria have:						
a) a well – defined nucleus an	nd chloroplast	b) a well-d	lefined nuc	cleus but n	o chloroplast
c) incipient nucleus and vesion	cles containing chlorophyll	d) incipien	t nucleus	but no chlo	proplast or pigment
Q49. Which of the following st	ructures has 9 + 2 arrangeme	ent?				
a) Flagella	b) Ribosome	c) Mitocho	ondria		d) Golgi apparatus

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Q50. A segment of DNA contain present in the segment of DNA	ns 1200 nucleotides, of which 20 A?	00 have adenine base. How many	cytosine bases are
a) 100	b) 200	c) 400	d) 800
Q51. Pigment tissue are present	in		
a) skin	b) liver	c) heart	d) ear
Q52. The trunks of trees increase	se in girth because of mitotic acti	vity in the	
a) vascular tissue	b) epidermis	c) meristematic tissue	d) pith
Q53. The mesophyll of a leaf co	onsists of		
a) spongy parenchyma cells		b) palisade parenchyma cells	
c) both spongy and palisade p	arenchyma cells	d) pith cells	
Q54. Which type of tissue form	s glands?		
a) Epithelial	b) Connective	c) Muscular	d) Nervous
Q55. Pores of sieve plates			
a) connect cytoplasmic stands	s of adjacent sieve cells	b) connect companion cell with	adjacent sieve cell
c) connect parenchyma cells v	with adjacent sieve tube cells	d) all of the above	
Q56. Which of the following ar	e characteristic feature of cells of	f meristematic tissue?	
a) Actively dividing cells with	h dense cytoplasm, thick cell wal	l and prominent nuclei	
b) Actively dividing cells with	h dense cytoplasm, thin cell wall	and no vacuoles	
c) Actively dividing cells with	h little cytoplasm, thin cell wall a	nd prominent nuclei	
d) Actively dividing cells with	h thin cytoplasm, thin cell wall a	nd no vacuoles.	
Q57. Epidermal cells of roots ha	ave long hair like parts which hel	lp to:	
a) Increase the total absorptiv	e surface	b) Decrease the total absorptive	surface
c) Protect against diseases		d) Provide strength to the roots	
Q58. Which one of the following	g human cells lacks a nucleus?		
a) Neutrophil	b) Neuron	c) Mature erythrocyte	d) Keratinocyte
Q59. In the following, which be	ody part does not have voluntary	muscle?	
a) Leg	b) Mouth	c) Heart	d) Hand
Q60. In which of the following	plant tissues, 'Intercellular space	s' are absent?	
a) Parenchyma	b) Chlorenchyma	c) Sclerenchyma	d) Aerenchyma
Q61. If $x + \frac{1}{x} = 2$ then which o	f the following is correct.		
a) $x^2 + \frac{1}{x^2} = 4$	b) $x^2 + \frac{1}{x^2} = 2$	c) $x^3 + \frac{1}{x^3} = 2$	d) Both b and c
Q62. If P (-x, y) lies in the 4rth	n quadrant, then		
a) $x > 0, y > 0$	b) $x > 0, y < 0$	c) $x < 0, y < 0$	d) $x < 0, y > 0$
Q63. The degree of the polynom	nial $7x^2 + 6^4$		
a) 0	b) 1	c) 2	d) 4
O64 What is the conjugate of 2	$2 + \sqrt{3}$?		
	$\langle - \rangle^2$	_	_
a) $2 - \sqrt{3}$	b) $(2+\sqrt{3})^{-1}$	c) $2 + \sqrt{3}$	d) √3
Q65. If $x = \sqrt{6} + \sqrt{5}$ then find	$x^2 + \frac{1}{x^2} + 2$		
$\sim 2 \overline{6}$	r	-) 24	4) 20
a) $2\sqrt{0}$	$(1) 2\sqrt{3}$	c) 24	
Q66. An edge of a cube measur	$e^{-\gamma}$ cm if the largest possible r	ight circular cone is cut out from	the cube, then the
volume of the cone is			
$1 - x^3$	$\frac{2}{2}$	$1 - x^{3}$	$1 - \frac{1}{3}$
a) $\frac{-\pi\gamma}{3}$	$\frac{1}{3}$	$c) = \pi \gamma$	a) $\frac{12}{12}$ $n\gamma$
O67 The ratio between the volu	me of a sphere and volume of a	circumscribing right circular cyli	nder is
a) 2.1	b) 1.1	c) 2.3	d) 1.2
O68 A cone and a hemisphere	have equal bases and equal volur	nes the ratio of their heights is	u) 1.2
a) 1.2	b) 2.1	c) 4.1	d) 3·1
069. The ordinate of any points	s lving on v-axis –	-,	.,
a) 0	b) 1	c) Any natural number	d) Any real number
070. The locus of the points the	at are equidistant from a fixed po	int is	<i>_,,</i> nonoor
a) centre	b) Radius	c) Circle	d) Circum Centre
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Q71. Two parallel chords AB a	and CD in a circle are of lengths	8 cm and 12 cm, respectively and	the distance	
between them is 6 cm. The c	hord EF, parallel to AB and CD a	and midway between them is of lo	ength \sqrt{k} ,	
where k is equal to	-	-	-	
a) 100	b) 140	c) 144	d) 150	
$\sqrt{28-10\sqrt{3}} + \sqrt{7+4}$	$\overline{\sqrt{3}}$			
Q72. If $\frac{1}{\sqrt{1-\frac{1}{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{\sqrt{1-\frac{1}{1}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}$	$a = a + b\sqrt{7}$, then what is the	value of $(2a + b)$?		
$\sqrt{16+6\sqrt{7}}$				
a) 7	b) 14	c) $15\frac{1}{2}$	d) $17\frac{1}{2}$	
Q73. If $ax^3 + bx + c$ is divisible	e by $x^{2} + dx + 1$, then:			
a) $a^2 + b^2 = ac$	b) $a^2 - c^2 = ac$	c) $a^2 - b^2 = ac$	d) $a^2 + c^2 = ab$	
Q74. $x^2 - 3x + 1 = 0$, then what	t is the value of $(x^5 + x^{-5})$?			
a) 119	b) 122	c) 123	d) 125	
Q75. If $\sqrt{x^2 \sqrt[3]{x^4 y^2}} + \sqrt{y^2 + \sqrt[3]{x^2 y^4}} = k$, then which of the following is true?				
a) $x^2 + y^2 = k^2$	b) $x^{3/2} + y^{3/2} = k^{3/2}$	c) $x^{2/3} + y^{2/3} = k^{2/3}$	d) $x^{1/3} + y^{1/3} = k^{1/3}$	
Q76. According to the Euclid's	s Geometry: Greek's emphasized	on		
a) Inductive reasoning	b) Deductive reasoning	c) Both a and b	d) None of these	
Q77. If a right circular cone with slant height l and a right circular cylinder have the same radius r, same total				
surface area and heights h and h ¹ respectively then $\sqrt{\frac{l-r}{l+r}} =$				
h	2h	h	$2h^1$	
a) $\frac{1}{h^1}$	b) $\frac{1}{h^1}$	c) $\frac{1}{2h^1}$	d) $\frac{1}{h}$	
Q78. A number N^2 has 15 factors. What could be the number of factors of N				
a) 6	b) 8	c) both a and b	d) None of these	
Q79. Numbers a, b, c and d have	ve 16, 28, 30 and 27 factors respe	ectively. Which of these could be	a perfect cube	
a) a	b) b	c) c and d	d) both (a) and (b)	
Q80. In a group of goats and he number of goats is	ens, the total number of legs is 12	2 more than twice the total number	er of heads. The	
a) 8	b) 6	c) 2	d) None of these	

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