SRI GURUDATTA COACHING CENTRE(SARMA INST.)

MATHEMATICS

- 1) What is the sum of all prime factors of the number 555555.
- 2) Show that the sum of the two consecutive odd integers is always divisible by 4.
- 3) Find the value of 'x' if $\frac{3x-1}{5} \frac{1+x}{2} = 3 \frac{x-1}{2}$
- 4) Match the following

Name of the point	<u>Ina triangle point of concurrence of</u>
(i) Ortho centre	(A) Medians
(ii) Centroid	(B) Altitudes
(iii) Incentre	(C) Perpendicular bisectors of sides
(iv) Circum centre	(D) Bisectors of two external angles and bisector of third internal angle
(v) Ex-centre	(E) Bisectors of internal angles

5) If a, b, c are real and $b \neq 0$, can $2b^2 - (b+c-a)(a+b-c)$ be negative, if so give an example.

6) If 'n' is an odd positive integer $\mathbf{a}^{n} + \mathbf{b}^{n}$ is divisible by $\mathbf{a} + \mathbf{b}$. Find the remainder when $20^{13} + 14^{13}$ is divided by 17.

- 7) ABC is an equilateral triangle, D and E are points on AB and AC. Such that DE || BC, If AB = 10cm, BD = 7cm, find the area of quadrilateral BCED.
- 8) If $x + \frac{1}{x} = 2$. Find the value of $\left(x \frac{1}{x}\right)^{14}$
- 9) ABCD is a parallelogram. AB is produced to E such that CE is perpendicular to AE and
- CE = 15cm, AC = 25cm, BE = 8cm. Find the perimeter of the parallelogram ABCD.
- 10) If $a^2 + b^2 = 0$ then a=0 and b = 0. If $(3x-2y)^2 + (5y-7z)^2 = 0$, find x : y : z.
- 11) In a trapezium parallel sides are 10cm and 8cm. Find the distance between them if its area is equal to the area of a rhombus whose diagonals are 12cm and 18cm long.
- 12) If $x^2 + y = 10$ where 'x' is a prime number and 'y' is a perfect square, find $x+y^2$.
- 13) $x^m + x^n = 10$, $x^{m+n} = 16$, then find the positive value of $x^m x^n$.
- 14) The area of a circle passing through the vertices of a regular hexagon is 'x' units². Find the area of the region not occupied by hexagon. Express in terms of 'x' and ' π '. (Draw a neat sketch)
- 15) The units place of the integer formed by $5^{20} + 3^{14}$ is _____.

N14

PHYSICS

Ι	Multiple choice questions									
(1)	The stars are giant bal	lls of				()			
	(A) Hydrogen	(B) Helium		(C) Oxygen	(D) Nitrogen					
(2)	The light from Sun rea		()						
	(A) 8.3 sec.	(B) 8.3 min.		(C) 0.83 min.	(D) 83 sec.					
(3)	A train travels between two stations P and Q. It travels with a velocity 20KMPH from P to Q and returns to									
	station P with a veloci	()							
	(A) 25 KMPH	(B)24 KMPH		(C) 6.67 m/s	(D)0 m/s					
(4)	A body moves with a variable velocity when)			
	(A)magnitude of veloc	city changes		(B) direction of moti	on of the body changes					
	(C) any of A or B		(D) none of these							
(5)	The time in which a force of 2N produces a change in momentum of 0.4 Kg. m/sec in the body whose mass is 1Kg is									
	(A)0.2 sec	(B)0.02 sec		(C)0.5 sec	(D)0.05 sec	(,			
(6)	A body is floating in w	ater, its appare	nt weig	ht is equal to		()			
	(A) actual weight of th	ne body	0	(B) unity	Ċ	,	,			
	(C)weight of the body	– weight in liqu	uid	(D) none						
(7)	By increasing the temperature of a liquid its)			
	(A)volume and density decreases (B)volume increases and density decrease						,			
	(C) volume and density increases (D) volume decreases and density increase									
(8)	The maximum displacement of a vibrating particle from its mean position is called.)			
	(A)frequency	(B)amplitude	01	(C)time period	(D)none of these		-			
(9)	The speed of light is maximum in)			
	(A) glass (B) diamond (C) water (D) vacuum						-			
(10)	The surest test for the		()						
	(A)attraction	(B)repulsion	50	(C)both 'A' and 'B'	(D)none of these					
		50								
II	Match the following	50								
	Column – I	-	Colum	ın – II						
(11)	36 KMPH	А.	20000							
(12)	9.8 m/s ²	В.	Mass x acceleration							
(13)	1 Kilo Watt Hour	С.	10 ⁷ erg							
(14)	0.02 km	D.	36 x 10 ⁵ joule							
(15)	1 newton	Е.	10 m/s							
(16)	1 joule	F.	980 cm/sec ²							
(17)	Velocity	G.	10 ⁵ dynes							
(18)	Force	Н.	Frequency x Wave length							
(19)	15 cm/sec	I.	Mass x velocity							
(20)	Momentum	J.	0.54 KMPH							

III Fill in the blanks

- (21) If a bodydoesnot change its position with respect to its surroundings, the body is said to be at_____.
- (22) The equations of motion are applicable only when the body moves with ______ acceleration.

- (23) Newton's first law of motion gives the concept of _____.
- (24) A force of 100N acts on a body of mass 2Kg for 10sec the change in momentum of the body is_____.
- (25) _____ is an instrument used to measure the atmospheric pressure.
- (26) The S.I. unit of temperature is _____
- (27) The waves with a frequency move than 20000 Hz are called _____.
- (28) A long sighted eye can be corrected by using a _____ lens.
- (29) Opposite electric charges ______ each other.
- (30) The device used to detect static electric charges on a body is called _____.

IV Solve the following:

- (31) The length of a minute hand of a clock is 8 cm. Find the displacement and average velocity of the tip of the minute hand when it moves during a time interval from 4:15pm to 4:45pm.
- (32) A car starts from rest, attains a velocity of 36 KMPH with an acceleration of 0.2 m/s² travels
 9 km with this uniform velocity and then comes to rest with a uniform deceleration of 0.1 m/s². Find the total time of travel by the car.
- (33) Two balls of identical shape and size, but of different materials are acted upon by the same force, such that the acceleration of the first ball is only one fourth that of the second ball. Calculate the ratio of the mass of the first ball with respect to that of the second ball.
- (34) A solid floats in liquid A with half its volume immersed and liquid B with 2/3 of its volume immersed. Find the ratio of densities of the liquid A and B.
- (35) A lead bullet of mass 10 gm travelling at 300 m/s strikes against a block of wood and comes to rest. Assuming 50% of heat is absorbed by the bullet, find the increase in temperature.
 (Sp. Heat of lead = 150 J/kg/°c)
- (36) 25 waves pass through a point in 5 sec. If the distance between one crest and the adjacent trough is
 0.05 m. Calculate (a) The frequency (b) The wavelength (c) wave velocity
- (37) The refractive index of water is 4/3. If the speed of light in air is 3 x 108 m/s. Find the speed of light in water.
- (38) A cell can supply a charge of 300 coulomb. If the current drawn from the cell is 60 micro amp. Find the time in which cell discharges.

CHEMISTRY

- I. Define the following
- (1) Alloy
- (2) Reduction
- (4) Combustion (5) Thermo plastics
- II Give balanced equations for the following chemical changes
- (1) Ferric oxide is reduced with charcoal.
- (2) Sodium bicarbonate is treated with sulphuric acid.
- (3) Lead (II) nitrate is strongly heated.

- (3) Chemical bond
- (6) Ignition temperature

(4)	Reaction of Sodium metal wi	th cold wa	ter.						
(5)	Reaction of red hot carbon with Sulphur vapours.								
(6)	Sodium bicarbonate is strongly heated.								
(7)	Magnesium wire is burnt in a	air.							
(8)	Mercuric oxide is heated.								
ÌÌÍ	Classify the following into physi	cal and cher	mical cl	hanges.					
(1)	Lighting of a match stick	((2)	Magn	etization of Iron				
(3)	Ripening of fruits	((4)	Crysta	llization of salts from their solutions				
(5)	Dissolving salt in water			2					
IV	Fill up the blanks								
(1)	The temperature of Oxy acet	ylene flam	e is		°C.				
(2)	A mixture of Sulphur, Nitre and Charcoal is called								
(3)	The process of heating the concentrated ore to a very high temperature in the presence of air is called								
	of ore								
(4)	alloy	used for m	naking	barrels	of guns and bearings.				
(5)	fibre	is called ar	rtificia	l silk.					
(6)	Neutron is denoted by the symbol								
(7)	consists of 95% o	f Methane	and 5°	% mixt	are of Ethane, Propane and Ethylene.				
(8)	The LPG is mixed with a sma	ll amount	of stro	ong sme	lling liquid called				
(9)	Carbon monoxide on coming	contact w	vith blo	ood form	ns haemoglobin.				
(10)	Crystalline forms of Carbon I	naving 301	to 960	atoms	in their molecules are called				
Ϋ́	Match the following	U			, S'O				
	-	Set – A							
(1)	Sodium and Potassium	()	(a)	Protective metals				
(2)	Chromium and Nickel	())	(b)	Alkaline earth metals				
(3)	Platinum and Gold	()	(c)	Radio active metals				
(4)	Polonium and Thorium	()	(d)	Noble metals				
(5)	Magnesium and Calcium	Ì		(e)	Alkali metals				
		Set – B							
(1)	Poly propylene	()		(a)	Fake fur				
(2)	Rayon	()		(b)	More suitable for making dress material				
(3)	Polyester)	(c)	Code – 5				
(4)	Acrylic	50))	(d)	Code – 6				
(5)	Poly styrene)	(e)	Source material is wood pulp				
VI	State whether the following stat	ements are	true (T	r) / false	(F). Write only T / F duly indicating the question number				

- (1) Sulphur dioxide is an acidic oxide.
- Melamine is used for making computer and T.V. cabinets. (2)
- (3) The property of drawing metal to make fine wires is called Malleability.
- (4) Metals react with acids and liberate hydrogen gas.
- Dissociation of acetic acid is a chemical change. (5)
- Solve the following numericals. VII

- (1) Find theweight of Oxygen required for complete burning of 3.2 gm. of Calcium and how many grams of Calcium oxide is obtained.
- How many grams of calcium carbonate are required to produce Carbon dioxide that is sufficient for the (2) conversion of 10.6 gm Sodium carbonate to Sodium bicarbonate?