30.01.20 EVERWIN VIDHYASHRAM
STD : IX CET-II - MATERIAL

GENERAL KNOWLEDGE

1. Maharashtra has launched 'Shiv Bhojan' scheme for the poor on January 26 2020
2. National Voter's Day is celebrated on 25th January in India.
3. The Nobel Prize was awarded to C.V Raman in Physics in 1930.
4. The Slogan " Tum Mujhe Khoon do Main tumhe azadi dunga" was said by Netaji Subhash Chandra Bose.
5. The International court of justice is located in Hague, Netherlands. It was established in June 1945.
6. Simon Commision came to India in 1928 by the British government under Stanley Baldwin.
7. The first Round Table conference was held on November 1930 – January 1931.
8. Rabindranath Tagore was the first nobel prize winner in India.
9. Chittaranjan Das was also know as Deshbandu was an Indian Bengali Politician.
10. DehraDun is the capital of Uttarakhand.
11. World Trade Organisation came into existence in January 1st 1995
12. American war of Independence took place in 1776
13. The literacy rate of India is 65.38%
14. SAARC was found in 8th December 1985, Dhaka, Bangladesh
15. Cauvery is also called as the Ganges of the South India.
16. G.J. Mendel gave 'The Laws of Heridity' in 1865 and 1866 and popularized by William Bateson.
17. Geet Govind is a famous creation of Jayadev, an Indian poet in 12th century.
18. Aravli Range is the oldest mountain range in India
19. American multinational technology company 'Microsoft' was founded in 4th April 1975.
20. Howrah Junction Railway Station with 23 platforms has the largest number of plat forms in Indian Railways.
21. 'Dandi March' was launched by Mohandas karamchand Gandhi on 12 March 1930 to 6th April 1930
22. Vallabhbhai Patel was the first Deputy prime minister of India.
23. The term 'fourth estate' is used in reference to The Press and Newspaper.
24. US open 2019 Men's title was won by Rafael Nadal. He defeated Daniil Medvedev.
25. The Maratha and The Kesri were the two main newspapes started by Bal Gangadhar Tilak.

APTITUDE

26. A man sold his book for 891, there by gaining 1/10 of its cost price. Find its cost price.

Let C.P = x

Profit = S.P – C.P

$= 1/10 \text{ X } x = 891\text{-x}$

$=11x/10 = 891$

$x = \frac{891\ X\ 10}{11} = 810$

Ans: Cost Price = ₹810

27. A man sold 10 eggs for 5 rupees and gained 20%. How many eggs did he buy for 5 rupees?

S.P for 1 egg = $\frac{5}{10} = ₹\frac{1}{2}$

C.P for 1 egg = $\frac{100}{(100+20)} X \frac{1}{2} = \frac{5}{12}$

Ans: He bought 12 eggs for 5 rupees.

28. A single discount equal to a discount series of 10% and 20% is -------

Equivalent discount = $10 + 20 - \frac{10X20}{100}$

$= 30 - 2 = 28\%$

29. By selling 66 meters of cloth a person gains the cost price of 22 metres. Find the gain percent.

C.P of one metre of cloth = 1

C.P of 66 metres of cloth = 66

Grain = C.P of 22m =22

Gain % = $\frac{22}{66} X 100 = 33\frac{1}{3}\%$

Ans: Gain = $33\frac{1}{3}$ %

30. Ram bought a T.V with 20% discount on the labelled price. Had he bought it with 30% discount he would have saved ₹800. The value of the T.V set that he bought is ----------

Let labelled price of T.V be x

Price after 20% discount $x-\frac{20}{100}x = 0.8x$

price after 30% discount $x-\frac{30}{100}x = 0.7x$

According to question,

0.8x -0.7x = 800

x = 800 X 10 = 8000

Ans: ₹ 8000.

31. Which digits should come in place of * and $ if the number 62684 *$ is divisible by both 8 and 5?

Ans: 4 and 0

Since the given number is divisible by 5. So O ro 5 must once in place of $, But a number ending with 5 is never divisible by 8. So 0 will replace $, Now the number formed by the last three digits is 4*O which becomes divisible by 8. if * is replaced by 4, Hence digits in place of * and $ are 4 and O

32. A number was divided successively in order by 4,5 and 6. The remainders were respectively 2,3 and 4. The number is

Soln: 214

	x	Remainder
4	y	-2
5	z	-3
6	1	-4

z= 6x1 + 4 =10

y = 5x10 + 3 = 53

x = 4x53 + 2 =214

33. A Boy wanted to write the numbers from the smallest number to the greatest number of 3 digits. How many times he needs to press the keys of the computer to do this job?

Ans: 2889

He wants to write from 1 to 999. He has to write 9 numbers of one digit. 90 number of two digits and 900 numbers of 3 digits.

Total No. of times = 1x9 +2 x 90+3 x 900 = 2889

34. A number A4571203B is divisible by 18. Find the value of A and B.

Ans: 6,8

The number is divisible by 18 i.e it has to be divisible by 2 and 9

B may be 0,2,4,6,8

A+4+5+7+1+2+0+3+B = A+B+22

A+B could be 5,14 (as the sum can't exceed 18, since A and B are less than 10)

So A and B are each less than 6,8

35. Evaluate: $\frac{\sqrt{24}+\sqrt{6}}{\sqrt{24}-\sqrt{6}}$

Ans: 3

$= \frac{\sqrt{24}+\sqrt{6}}{\sqrt{24}-\sqrt{6}} = \frac{2\sqrt{6}+\sqrt{6}}{2\sqrt{6}-\sqrt{6}} = \frac{3\sqrt{6}}{\sqrt{6}} = 3$

36. A sum of money lent out at simple Interest amounts to 1008 in 2 years and 1164 in $3\frac{1}{2}$ years. Find the rate % P.a.

Soln: S.I for 1½yrs = (1164 – 1008) = 156

S.I for 2 yrs = $(\frac{156X2X2}{3})$ = 208

Principal = Rs. (1008 – 208) = 800

Now, P= 800, T=2, S.I = 208

Rate =$(\frac{100X208}{800X2})$% = 13%

37. A sum was put at simple interest at a certain rate for 4 years. Had it been put at 2% higher rate, it would have fetched 56 more. Find the sum.

Soln: Difference in S.I = $\frac{PXT}{100}$ $(R_1 - R_2)$

$56 = \frac{pX4X2}{100}$ (∴ $R_1 - R_2 = {}^{5}/_{10}$)

$P = \frac{56X100}{4X2} = 700$

38. A sum amounts double in 8 years by S.I Then the rate of simple Interest P.a is ----------

Soln: Let P be the principle amount and R be rate of interest.

$2P = P + \frac{PXRX8}{100}$

$R = \frac{100}{8} = 12.5\%$

39. Out of a certain Sum 1/3rd is invested at 3%, 1/6th at 6% and the rest at 8%. If the simple interest for 2 years from all these investments amounts to 600, find the original sum.

Soln: Rest Part = 1- $(\frac{1}{3} + \frac{1}{6}) = 1/2$

Rate % per annum on total sum.

= (1/3 X 3) + (1/6 X 6) + (1/2 X 8) = 6%

P= $\frac{600X100}{6X2}$ = 5000

40. A sum of money lent out at simple interest amounts to 720 after 2 years and to 1020 after a further period of 5 years. Find the sum and the rate %

Soln: S.I for 5 yrs = (1020 – 720) = 300

S.I for 2yrs = $\frac{10300}{5}$X2X2 =120

Principal = (720 -120) = 600

Now, P= 600, T=2, S.I =120

R = $\frac{120X100}{600X2}$ = 10%

41. Ten years ago, P was half of Q's age. If the ratio of their present ages is 3:4. What will be the total of their present ages?

Soln: Let present ages of P and Q be 3x and 4x respectively.

Ten years ago, P was half of Q's age.

(3x-10) = $\frac{1}{2}$ (4x-10)

3x – 10 = 2x – 5

3x – 2x = -5 + 10

x = 5

Total of their present ages = 3x + 4x

= 7x = 7x5 = 35

42. If the length of a rectangle is halved and its breadth is tripled, what is the percentage change in its area?

Soln: Length is halved

(ie) Length is decreased by 50%

Breadth is tripled

(ie) Breadth is increased by 200%

Formula: (x+y+$\frac{xy}{100}$)%

Change in area = (-50 + 200 - $\frac{50X200}{100}$) %

∴ area is increased by 50%

43. The average of 20 numbers is zero . How many of them may be greater than zero, at the most?

Soln: Average of 20 numbers = 0.

sum of 20 numbers = 0x20 =0

Hence at the most, there can be 19 positive numbers. For example, if the sum of these 19 positive numbers is x, 20th number can be (-x) such that net sum will be zero. [(ie) x-x =0]

44. The banker's discount on a bill due 4 months hence at 15% is ₹420. What is the true discount?

Soln: TD = $\frac{BD}{1+\frac{RT}{100}}$

= $\frac{420}{1+15X\frac{4}{12}X\frac{1}{100}}$ [BD = Banker's discount

TD= True discount, RT= Rate of time]

TD = ₹400

45. In one hour, a boat goes 14km/hr along the stream and 8km/hr against the stream. Then speed of the boat in still water (in km/hr)

Soln: Let speed of downstream be 'a' km/hr.

and speed of upstream be 'b' km/hr, then

speed in still water = $\frac{1}{2}$ (a+b) km/hr

= $\frac{1}{2}$ (14+8) = 11 km/hr

46. Today is Monday. After 61 days, it will be

Soln: 61 days = 8 weeks 5 days = 5 odd days.

Hence if today is Monday, After 61 days, it will be

= (Monday + 5 odd days)

= Saturday

47. If 7 spiders make 7 webs in 7 days, then how many days are needed for one spider to make one web.

Soln: Let, 1 spider make 1 web in x days.

More spiders, Less days (Indirect proportion)

More webs, more days (Direct proportion)

Hence we can write as.

Spider 7:1 } : : x :7

Webs 1:7 }

= 7x1x7 = 1x7xx

x = 7

48. A clock is started at noon. By 10 minutes past 5, the hour hand has turned through. how many degrees?

Soln: We know that angle traced by hour hand in 12 hrs =360^0.

Time duration from noon to 10 minutes

past 5 = 5 hours 10 minutess

$= 5\frac{10}{60}$ hr $= \frac{31}{6}$ hrs.

Hence the angle traced by hour hand from noon to 10 minutes past

$= \frac{31}{6} X \frac{360}{12} = \frac{31}{6} X 30 = 31 X 5 = 155^0$

49. A train is running at a speed of 40km/hr and it crosses a post in 18 seconds. What is the length of the train?

Soln: Speed = 40 km/hr = 40 X $\frac{5}{18} = \frac{100}{9}$ m/s

Time: 18 seconds

Distance covered $= \frac{100}{9} X18 = 200m$

∴ Length of the train = 200m

50. Find the odd man out:

1,8,27,64,125,196,216,343

Soln: Pattern is 1^3, 2^3, 3^3, 4^3, 5^3, 6^3, 7^3.

= 196 is not a perfect cube.

LOGICAL AND REASONING

51. According to sir Issac Newton, the force of an entity equals its mass, multiplied by acceleration. This basic principle is what is used to calculate the load force which is the force that opposes the entity. Any time one does work such as lifting a coffee mug off a table or pushing a ball up a hill. The energy is transferred from the entity to the object causing a desired effect. The objects mass is the resistnce acted upon its load force. The force of an object at rest has a force of O Newtons. However it still has potential energy.

52. The sun is the heart of the solar system. Earth orbits the sun at an average of 92, 955, 807 miles. The distance from the Earth to the sun is called on Astronomical Unit or "AU". Earth makes a complete revolution around the sun was the Greak Astronomes calculated the distance from Earth to sun using the phases of venus. Doubling the distance from the sun reduces gravitational pull and increases the orbital period. Using Newton's model gravity the force or pull "F" is given by F= GM m/r^2. Also we can use kepler's third law which relates the semi major axis distance "a" in "AU" to the orbital period "P" in years $p^2 = a^3$.

53. Kinetic energy is the energy an object has due to its motion. As long as an object is moving at the same velocity it will maintain the same kinetic energy. the kinetic energy of an object is calculated from the velocity and the mass of an object. The equation for calculating kinetic energy is KE = 1/2mv^2. The standard unit for kinetic energy is Joule (J) which includes the newton –meter (Nm) for other units. Kinetic energy is a scalar quantity which means it only has magnitude and not a direction.

54. One of the most powerful laws in physics is the law of conservation of momentum. It can be stated as " For a collision Occuring between object 1 and object 2 in an isolated system, the total momentum of the two objects before the collision is equal to the total momentum of the two objects after the collision. That is the momentum lost by object 1 is equal to the momentum gained by object 2, and the total amount is constant. In most collisous between two objects one object slows down and loses momentum and the other object speeds up and gains momentum. The force between the two objects an equal in magnitude and opposite in direction. it can be stated as $F_1 = F_2$.

55. Issac Newtons law of universal gravitation proposed that the gravitational attraction between any two objects is directly proportional to the product of their masses.

$F_{grav} = \frac{G*m_1 Xm_2}{d^2}$. In this equation G – is the universal gravitation constant. Cavendish's measurements for G resulted in an experimentally determined value of 6.75 X 10^{-11} –N m^2/kg^2. Today the currently accepted value is 6.67259 X 10^{-11} N m^2/kg^2. The value of G is an extremely small numerical value. The equation to determine the value of g on earth's surface is G = $\frac{GM}{R^2}$, and it is also used to determine the acceleration of gravity on the surface of other planets.

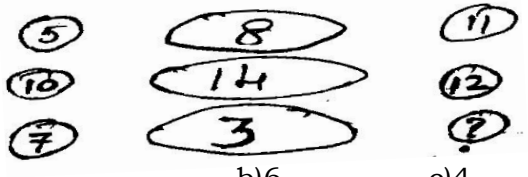
56.The planets are much closer to the earth, and are thus seen as extended sources. If we consider a planet as a collection of a large number of point-sized sources of light, the total variation in the amount of light entering our eye from all the individual point-sized sources will average out to zero, thereby nullifying the twinkling effect

57.You might have observed the apparent random wavering or flickering of objects seen through a turbulent stream of hot air rising above a fire or a radiator. The air just above the fire becomes hotter than the air further up. The hotter air is lighter (less dense) than the cooler air above it, and has a refractive index slightly less than that of the cooler air. Since the physical conditions of the refracting medium (air) are not stationary, the apparent position of the object,

as seen through the hot air, fluctuates. This wavering thus an effect of atmospheric refraction (refraction of light by the earth's atmosphere) on a small scale in our local environment. The twinkling of stars is a similar phenomenon on a much larger scale.
58.The molecules of air and other fine particles in the atmosphere have size Smaller than the wavelength of visible light. These are more effective in Scattering light of shorter wavelengths at the blue end than light of longer wave length at the red end The red light has a wavelength about 1.8 times greater than blue light. Thus, when sunlight passes through the atmosphere, the fine particles in air scatter the blue colour (shorter wavelengths) more strongly than red. The scattered blue light enters Our eyes. If the earth had no atmosphere. there would not have been any scattering. Then, the sky would have looked dark. The sky appears dark to passengers flying at very high altitudes, as scattering is not prominent at such heights,You might have observed that 'danger' signal lights are red in colour.
59.SCATTERING OF LIGHT
The interplay of light with objects around us gives rise to several spectacular phenomena in nature. The blue colour of the sky. colour of water in deep sea, the reddening of the sun at sunrise and the sunset are some of the wonderful phenomena we are familiar with. You have learnt about the scattering of light by colloidal particles. The path of a beam of light passing through a true solution is not visible. However. its path becomes visible through a colloidal solution Where the of the particles is relatively larger.
60.Tyndall Effect
the earn atmosphere is a heterogeneous mixture of minute particle hence particles include smoke, tiny water droplets, suspended particles of dust and molecules of air. When a beam of light strikes such line particles. the path of the beam becomes visible. The light reaches us diffusely by these particles. The phenomenon of scattering of light by the colloidal particles gives rise to Tyndall effect This phenomenon is seen when a beam sunlight enters a smoke-filled room through a small hole. Thus. scattering of light makes the particles visible. Tyndall effect can also be oberved when sunlight passes through a canopy of a dense forest. Here, tiny water droplets in the mist scatter light. The colour of the scattered light depends on the size of the scattering particles. Very tine particles scatter mainly blue light while particles of larger size scatter light of longer wavelengths. the size of the scattering particles is large enough. then, the scattered light may even appear white.

61. When a few drops of coloured or pleasant smelling liquid is added to a large volume of water, it retains the colour or the smell. This shows that particles divide themselves into smaller and smaller particles.
62. When two different types of states of matter mix on its own, diffusion occurs.
63. Some substances in solid state donot undergo liquid state. But, it directly changes from solid to gaseous state.
64. The lighter substances come up and the heavier substances stay down. This principle is related to centrifugation which is one of the techniques used to separate mixtures.
65. Matter is divided into pure substances and mixtures. Mixtures are further divided into homogeneous and heterogeneous mixtures. Pure substances are divided into elements and compounds.
66. Sara lives in a large city on the East coast. Her younger cousin marbe lives in the mid-west in a small town with fewer than 1,000 residents. Marlee has visited sara several times during the past five years. In the same period of time, sara has visited marlee only once.
a) Marlee likes sara better than sara likes marlee.
b) Sara thinks small towns are boring
c) Sara is older than marlee
d) Marlee wants to move to the East Coast.
Ans: Option C
Explanation : since the paragraph states that Marlee is the younger cousin, sara must be older than Marlee. There is no information to support the other choices.
67. Tanya is older than Eric
Cliff is older thanTanya
Eric is older than cliff
If the first two statements are true, the third statement is
a) True b) False c) Uncertain
Ans: Option B
Explanation : B
Explanation: Because the first two statements are true Eric is the youngest of the three, so the third statement must be false.
68. FAG, GAF, HAI, IAH ----------
a) JAK b)HAL c)HAK d)JAI
Ans: Option A

Explanation: The middle letters are static, concentrate on the first and third letters.
The series involves an alphabetical order with a reversal of the letters.
The first letters are in alphabetical order F,G,H,I,J.
The second and fourth segments are reversals of the first and third segments
The missing segment begins with a new letters.

69. 

a) 8 b)6 c)4 d)2

Ans: C) 4

Explanation: In each row of the diagram, the sum of the left and right hand digits, minus the central digit is always 8.

70. Five children are sitting in a row. S is sitting next to P but not T. K is sitting next to R who is sitting on the extreme left and T is not sitting next to K. Who are sitting adjacent to S.

Explanation: S is sitting next to P. So the order S,P (or) P,S is follower, K is sitting next to R. So, the order R,K is followed because R is on the extreme left. T is not next to P and K so the arrangement will be R,K,P,S,T. Clearly, P and T are sitting adjacent to S.

71. Camillo Golgi was born at Corteno near Brescia in 1843. He studied medicine at the university of Pavia. After graduating in1865, he continued to work in Pavia. He first started his investigations into the nervous system in the little kitchen of a hospital, which he had converted into a laboratory. The work of great importance carried out by Golgi was a revolutionary method of staining individual nerve and cell structures. The method of staining is referred to as 'black reaction"

72. Carlolus Linnaeus was born in Sweden and was a doctor by profession. At the age of 22, he published his first paper on plants. He studied the diversity of plants in his employer's garden. Later he published a book named system Naturae from which all fundamental taxonomical researches have taken off.

73. magnifera indica Is the scientific name for mango and Homo sapiens is the scientific name for human beings. The scientific name of an organism is the result of the process of classification which puts it with the organism it is more related to carolus Linnaeus in the 18th century started the system of scientific naming.

74. Small pox was eradicated in the year 1980, the vaccine for small pox was made by a biologist Edward Jenner. Cowpow was a mild disease and Jenner tried to give vaccine using the cowpow. And lead to the discovery of vaccination.

75.Life an earth depends on resources like soil, water and air. The life supporting zone of the earth where the atmosphere, hydrosphere and lithosphere interacts and make life possible is known as biosphere. The activities of human beings have disturbed the environment and caused various harm to the environment. These activities also lead to the depletion of ozone layer.

CURRENT AFFAIRS

76. Assam's tableau was adjudged the best among all the 16 participating states and union territories at the Republic Day Parade 2020. The tableau was based on the theme ."Land of Unique Craftsmanship and Culture".

77. The supreme court has fixed 10 days to hear all the cases related to discrimination against women at religious places including the sabarimala temple.

78. Union Minister Nitin Gadkari has recently launched the online web portal "GAT 1". This portal allows everyone to register complaints related to the National Highway construction.

79. Prime Minister Narendra Modi has inaugurated the Global Potato Conclave 2020 in Gandhi Nagar, Gujarat on January 28, 2020. Scientists from Various Countries are participating in Global Potato Conclave. They will discuss important aspects related to the world's food and nutrition demand.

80. The Union Government has targeted to install 175 Giga Watt renewable energy by 2022 to build a healthy planet with less carbon intensive economy.

81. West Bengal has become the fourth state to pass anti-CAA resolution on January 27, 2020. The West Bengal state governments resolution demands that the controversial CAA Law be replaced and NPR, NRC be withdrawn.

82. Rajinikanth will soon feature in a Man Vs Wild episode with survivalist and popular adventurer Bear Grylls.
83. Indian Navy Launches Operation Vanilla to provide assistance to the affected population of Madagascar post devastation caused by cyclone Diane.
84. NASA chose Axiom space to setup at least one habitable commercial module that will be attached to the International space station (ISS). The module will be the first retail destination for future commercial space flight missions.
85. Indian environmental economist and UN environment program me (UNEP) Goodwill Ambassador Pavan Sukhdev won the 2020 Tyler Prize.
86. The central government will release a report card of 100 selected smart cities based on the categories such as ease of living, public Performance index and climate in June as the smart cities Mission completes it five years.
87. Britain unveils a new 50 pence coin minted to mark the country's departure from the European Union who bears the inscription peace, prosperity and friendship with all nations and the Brexit date of 31 January 2020.
88. The government has launched a central accident database management system that will help in analyzing causes of road crashes and in discussing safety interventions to reduce such accidents in the country.
89. Brazilian president Jair Bolsonaro attended Indian's 71st Republic Day parade as the chief guest for the event.
90. A coronavirus has many "regularly arranged" protrusions on its surface, because of which the entire virus particle looks like an emperor's crown, hence the name "coronavirus".
91. India's ranking in the corruption perceptions Index (CPI – 2019) has slipped from 78 to 80 compared to the year 2018.
92. The High Court of Tripura ordered the police to refrain from prosecuting the activist who was arrested over a social media post where he criticized online campaign in support of the citizenship Amendment ACT (CAA), 2019 and warned people against it.
93. On the statehood Day of Manipur, Meghalaya and Tripura (21st January), Prime Minister and other leaders praised the traditions and culture of the three northeast states.
94. Recently, Indian Navy signed a Memorandum of understanding (MOU) with the Geological survey of India (GSI) for "sharing of seabed sediments data, products and expertise for Naval Application in Meteorology and Oceanography
95. India successfully test-fired the 3,500 km range submarine – launched ballistic missile k 4.
96. On the occasion of National Girl child Day (24th Jan), the University Grants Commission (UGC) and the ministry of women and child Development (MWCD) have launched an intiative called "Establishment of Chairs" in the Universities in the name of eminent women administrations, artists, scientists and social reformers
97. Australia is witnessing its most devastating bushfire season in at least 20 years.
98. Telecom Regulatory Authority of India (TRAI), has notified the amendment to the Telecommunication Consumers education and protection Fund (TCEPF) regulations to remove any kind of ambiguity and facilitate deposit of any unclaimed money of the consumer.
99. Kerala has become the first state to move the supreme court challenging the citizenship Amendment Act – 2019.
100. The Reserve Bank of India (RBI) has planned the National Strategy for Financial Inclusion (NSFI) for the period 2019 - 2024