1. Nikhil solves 5 questions per minute and starts solving at 2 pm. Shreyash solves 6 questions per minute and starts solving at 2.15 pm, the same day. When would they have solved same number of questions?

a) 3:40pm
b) 3:35pm
c) 3:45pm
d) 3:30pm

2. Select one of the following four options that will make the 2nd pair analogous to the 1st pair given:- BAR : RAB :: CAR :?

a) ARC
b) CAR
c) RAC
d) RCA

3. Which one is the power house of the cell?

a) Mitochondria
b) Endoplasmic reticulum
c) Lysosome
d) Golgi apparatus

4. The salary of Abhilash is half of that of Nishant. If Abhilash's salary increases by ₹ 3,000 and Nishant's salary decreases by 20%, then Abhilash's salary would be 68.75% of Nishant's salary. What is the salary of Nishant?

a) Rs. 1,20,000
b) Rs. 45,000
c) Rs. 90,000
d) Rs. 60,000

5. The backbone of DNA is made up of

a) Sugar and phosphates
b) Nitrogenous bases
c) Hydrogen bonds
d) Only sugar

6. Sugar dissolves in water because

a) Sugar is nonpolar
b) Water is polar
c) It forms hydrogen bonding with water
d) Sugar and water are both polar

7. A person throws a pair of fair dice. If the sum of the numbers on the dice is a perfect square, then the probability that the number 3 appeared on at least one of the dice is

a) 1/9
b) 4/7
c) 1/18
d) 7/36

8. Suppose the correlation between height and weight for adults is +0.80. What proportion of the variability in weight can be explained by the relationship with height?

a) 64%
b) 30%
c) 90%
d) 38%

9. The value of $\left(1+\frac{1}{x}\right)\left(1+\frac{1}{x+1}\right)\left(1+\frac{1}{x+2}\right)\left(1+\frac{1}{x+3}\right)$ is

a) $\frac{1}{x}$
b) $x+4$
c) $1+\frac{1}{x+1}$
d) $\frac{x+4}{x}$

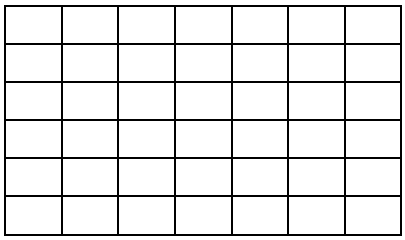
10. If the mid points of the classes are 16, 24, 32, 40, and so on, then the magnitude of the class interval is:

a) 6
b) 7
c) 8
d) 9

11. If n is a prime number, (n>2), then

a) n^3-n must be divisible by 4 but may not be divisible by 8
b) n^3-n must be divisible by 8 but may not be divisible by 24
c) n^3-n must be divisible by 12 but may not be divisible by 24
d) n^3-n must be divisible by 24

12. How many squares are there in the following figure?



a) 112 b) 128 c) 144 d) 168

13. Which phase of the cell cycle does theta replication occur in?

a) G1
b) G2
c) S
d) M

14. Which of the following is described by the fluid mosaic model?

a) Ribosome
b) Nucleus
c) Plasma membrane
d) Endoplasmic reticulum

15. a, b and c are three numbers such that $b = (a+c)/2$. Then, b is

a) the mean as well as the median of the numbers a, b and c.
b) the mean but not the median of the numbers a, b and c.
c) the median but not the mean of the numbers a, b and c.
d) neither the mean nor the median of the numbers a, b and c.

16. In a row of students, Aritra is sitting 3rd to the left of Subrata. If Subrata is 10th from the leftmost end and 6th from the rightmost end, then what is the position of Aritra from the rightmost end?

a) 8^{th}
b) 9^{th}
c) 7^{th}
d) 6^{th}

17. The two strands of a DNA are joined by

a) Hydrogen bond
b) Covalent bond
c) Ionic bond
d) None of the above

18. The six most common atoms in organic molecules

a) C, H, O, He, Ca & S
b) C, H, O, N, P & S
c) C, H, O, Mg, Mn & S
d) C, H, O, N, P & K

19. The SI unit of potential energy is:

a) Pascal
b) Dyne
c) Joule
d) pound

20. If the percent of T (Thymine) in a 300 bases long double stranded DNA sequence is 30, what is the percent of G (Guanine)?

a) 20 b) 30 c) 40 d) Cannot be determined

21. Manu covered a distance of 30 km at a speed of 40 km/hr. He further travelled 60 km in 1 hour and 15 minutes. For how much time did he travel in total?

a) 120 minutes
b) 105 minutes
c) 155 minutes
d) 100 minutes

22. In a class of 120 students, 40% are females and rest are males. 50% of the female students passed an entrance exam. If the total number of students who passed the exam is 72, then what percentage of the male students passed the exam?

a) 33.33%
b) 66.66%
c) 16.66%
d) 52.25%

23. Endoplasmic reticulum membrane which is associated with ribosomes is called

a) Rough endoplasmic reticulum
b) Smooth endoplasmic reticulum
c) Endosome
d) None of the above

24. In nucleic acid, the bases are attached to the pentose sugar by

a) Covalent bond
b) Ionic bond
c) Hydrogen bond
d) None of the above

25. A student measured mass of three different objects as 425.21 gm, 32.9 gm and 1.224 gm. According to the rules of arithmetic operations with significant figures, the sum of these three objects will be

a) 459.334 gm
b) 459.3 gm
c) 459.33 gm
d) 459 gm

26. What is the average of first five perfect squares ending in 6?

a) 368
b) 332
c) 216
d) 426

27. If a fair coin is tossed three times, the probability of obtaining at most one head is

a) 1/8 b) 3/8 c) 1/3 d) ½

28. A daughter cell receives a copy of chromosome from the parent cell. This type of cell division is known as

a) Meiosis
b) Mitosis
c) Binary fission
d) Amitosis

29. A solution containing 3 g of solute A (M=60 g/mol) in 1L solution is isotonic with a solution containing 8.55 g of solute B in 500 mL solution. What is the molar mass of B (g/mol)?

a) 342
b) 340
c) 341
d) 348

30. If the perimeter of a square is the same as that of an equilateral triangle of side 24 cm, then what is the area of the square in cm^2?

a) 324
b) 225
c) 289
d) 400