

**ENTRANCE MODEL QUESTION – 2077**

**SCIENCE**

Time: 2 hrs.

F.M.: 100

**Subject: English**

**F. M.: 20**

**P.M.: 10**

*Read the passage given below and tick the correct answer.*

In North America, there is a tendency to associate afternoon naps with laziness and non-productivity. Latin Americans and some in European cultures take a different view. In Mexico and Greece, for example it is customary to close businesses between noon and about 4:00 pm siesta time. Recent studies are showing that if you can take fifteen to thirty minute nap while at work in the afternoon, you'll be more alert, more energetic, happier doing what you do.

Sleep researcher William Anthony, a professor of psychology at Boston University, says fatigue is a significant problem in modern society. He says sleepiness is a leading cause of auto accidents, second only to drunkenness. Some companies are encouraging sleep at work, primarily for safety. The Metropolitan transit Authority which runs the New York subway system and two suburban railroads, is considering power naps for its train operators and bus drivers. Another railway has started letting its train operators take nap-breaks of up to 45 minutes but only when trains are stopped at designated spots off the main lines and dispatchers have been notified. Some overseas air carriers permit airline pilots, when not on duty, to nap in the cockpit. Airlines in the United States have not accepted this practice yet.

1. **North Americans associate siesta with**  
a. sickness    b. laziness    c. fatigue    d. drunkenness
2. **Recent research shows that ..... minute sleep will increase energy and happiness**  
a. 15 to 30    b. 15 minute to half an hour    c. 12 to 4 pm    d. 45
3. **According to William Anthony, the major cause of road accident is**  
a. Fatigue    b. drunkenness    c. train operators    d. bus drivers

4. **In transportation industry napping is a matter of .....**  
a. laziness    b. fatigue    c. sickness    d. safety
5. **Which country has not followed the practice of siesta:**  
a. Mexico    b. Greece    c. United States    d. Europe

**Tick the correct answers:**

6. **My father \_\_\_\_\_ to the Golf Club for the past 25 years.**  
a. as belonging    b. has belonged    c. has been belonged    d. has belonging
7. **Portuguese is quite \_\_\_\_\_ Spanish.**  
a. similar    b. similar from    c. similar to    d. similar with
8. **My youngest sister \_\_\_\_\_ last summer.**  
a. married    b. got married    c. got married    d. was married to
9. **Paper is \_\_\_\_\_ wood.**  
a. made by    b. made of    c. made from    d. made with
10. **He \_\_\_\_\_ take off his shoes before he entered the room.**  
a. must    b. has to    c. have to    d. had to
11. **Ricky Martin .....of the band menudo, attained great popularity in the late 1990s.**  
a. formerly member    b. a former member  
c. a formerly member    d. being former member
12. **.....a successful rock star, a singer must have stage presence and charisma in addition to mere musical talent.**  
a. to become    b. becomes  
c. in order becoming    d. for becoming
13. **My doctor has a private.....**  
a. practice    b. practise    c. practised    d. Practiced
14. **Sarita must ..... her music for the exam**  
a. practice    b. practise    c. practised    d. practiced
15. **I'm going to buy a ruler from the.....**  
a. stationery    b. stationary    c. both a & b    d. All
16. **Mary was greatly..... by her father death.**  
a. affected    b. effected    c. affects    d. effects
17. **She was .....enough to carry**  
a. sensible    b. sensitive    c. scenery    d. senses
18. **He was.....in the earthquake last year.**  
a. died    b. killed    c. murdered    d. had murdered

19. Could you.....me some tea please?  
 a. bring      b. take      c. makes      d. brought
20. Please could you .....me your book?  
 a. borrow      b. lend      c. borrowing      d. leading

**Subject: Science**

**F. M.: 40**

**P.M.: 20**

21. Which of the following quantity is a vector:  
 a. Speed      b. Force      c. Heat      d. Current
22. The value of gravitational constant is:  
 a.  $6.67 \times 10^{-11} \text{ Ncm}^2/\text{Kg}^2$       b.  $6.67 \times 10^{-8} \text{ dyne cm}^2/\text{gm}^2$   
 c.  $6.67 \times 10^{-11} \text{ Nm}^2/\text{gm}^2$       d. None
23. The half-filled water tank having height 10m gives pressure at bottom of the tank (density =  $1000\text{kg/m}^3$ ,  $g = 10\text{ms}^{-2}$ )  
 a.  $2 \times 10^4 \text{ N}$       b.  $3 \times 10^4 \text{ N}$       c.  $4 \times 10^4 \text{ N}$       d.  $5 \times 10^4 \text{ N}$
24. A transformer has 500 turns in the primary coil. What should be the number of turns in the secondary coil so that the transformer produces the voltage half of the supplied one?  
 a. 1000      b. 500      c. 250      d. 750
25. The acceleration due to gravity of the earth would be constant everywhere on the surface if  
 a. the mass of earth were constant      b. the earth had same density  
 c. the earth were not flattened at the poles      d. the radius of earth were constant
26. Hydraulic break is based on the principle:  
 a. Archimedes'      b. Newton's      c. Pascal's      d. None
27. Density of water is maximum at:  
 a.  $4^\circ\text{C}$       b.  $0^\circ\text{C}$       c.  $1^\circ\text{C}$       d.  $-1^\circ\text{C}$
28. When the object is placed at  $2f$  in front of convex lens the image is formed at:  
 a. between  $f$  &  $2f$       b. beyond  $2f$       c. at  $2f$       d. None
29. What type of reaction takes place inside the sun?  
 a. Chemical reaction      b. Nuclear fission      c. Nuclear fusion      d. None
30. The weight of object during free fall is:  
 a.  $9.8\text{N}$       b.  $0\text{N}$       c.  $80\text{N}$       d. None
31. The value of acceleration due to gravity is maximum:  
 a. on the surface of the earth      b. Equator
- c. Space      d. Top of the Mount Everest
32. At what temperature the reading in Celsius scale is half of the reading in Fahrenheit?  
 a.  $165^\circ$       b.  $-82^\circ$       c.  $160^\circ$       d.  $73^\circ$
33. The shape of our galaxy is  
 a. spiral      b. elliptical      c. irregular      d. circular
34. Which of the elements have the electronic configuration?  $1s^2 2s^2 2p^6 3s^2 3p^6$   
 a. Ne      b. Ar      c. Cr      d. Cu
35. Haemetite is an ore of  
 a. Al      b. Au      c. Fe      d. Ag
36. Which one is general formula of alkene?  
 a.  $C_nH_{2n+2}$       b.  $C_nH_{2n}$       c.  $C_nH_{2n-2}$       d.  $C_nH_{4n-2}$
37. The molecular weight of  $(COOH)_2 \cdot 2H_2O$  is  
 a. 90      b. 126      c. 136      d. 63
38. Which of the following is not an alkali metal?  
 a. Na      b. K      c. Ca      d. Li
39. 1 mole of  $CO_2$  contains ..... number of  $CO_2$  molecules  
 a.  $6.023 \times 10^{23}$       b.  $6.023 \times 10^{22}$       c.  $1.6 \times 10^{-19}$       d.  $9.1 \times 10^{-31}$
40. The color of blue litmus paper in alkaline solution is  
 a. Pink      b. Red      c. Blue      d. No change
41. The  $P^H$  value of acid in  $P^H$  scale is  
 a. More than 7      b. Less than 7      c. 7      d. None
42. The valency of Nitrogen in Ammonia is  
 a. 3      b. 5      c. 7      d. 2
43. The chemical name of  $Na_2CO_3$  is  
 a. Caustic Soda      b. Baking Soda      c. Washing soda      d. None
44. The name of acid found in body of ant is  
 a. Ascorbic acid      b. Citric acid      c. Formic acid      d. Sulphuric acid
45. The isobar have same  
 a. atomic number      b. mass number and atomic mass  
 c. mass number      d. Number of neutrons
46. The gas that can't be collected over water is  
 a.  $N_2$       b.  $O_2$       c.  $SO_2$       d.  $PH_3$
47. If we go from left to right in periodic table the acidic characters of element  
 a. Increases      b. Decreases      c. No any change      d. None

48. What is the normal heart beat rate is adult man?  
a. 60-70 times    b. 50-62 times    c. 72-80 times    d. 90-95 times
49. Total numbers of haploid cells formed is meiosis cell division is:  
a. 3    b. 4    c. 5    d. 6
50. Bryophyllum gives vegetative propagation by:  
a. Leaf    b. Root    c. Steam    d. None
51. The genotypic ration in monohybrid cross is:  
a. 3:1    b. 1:3:1    c. 1:2:1    d. 2:1:3
52. Which arthropod possess more legs:  
a. Prawn    b. Centipede    c. Millipede    d. Spider
53. Which one of the following is not fruit?  
a. Pumpkin    b. Melon    c. Potato    d. Tomato
54. Which glands acts as both endocrine and exocrine glands?  
a. Pituitary gland    b. Pancreas    c. Thyroid gland    d. Adrenal gland
55. In which era were hills and mountains formed?  
a. Proterozoic era    b. Cenozoic era    c. Mesozoic era    d. Paleozoic era
56. Which one is not an asteroid?  
a. Semans    b. Eros    c. Ceres    d. Juna
57. What is the contraction & relaxation of muscles of alimentary canal called?  
a. Convolution    b. Peristalsis    c. Tanis    d. Troplism
58. Anther and filament are related to:  
a. Ovary    b. Gynoecium    c. Androecium    d. Style
59. Seeds develops from:  
a. Ovule    b. Ovary    c. Calyx    d. Cordila
60. .... is called 'suicidal bag'?  
a. Lysosome    b. Mitochondria    c. Ribosome    d. Nucleus

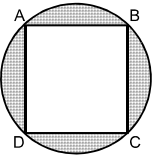
**Subject: Mathematics**

**F. M.: 40**

**P.M.: 20**

61. Two lines  $a_1x + b_1y + c_1 = 0$  &  $a_2x + b_2y + c_2 = 0$  will be at  $180^\circ$  if  
a.  $a_1/a_2 = b_1/b_2$     b.  $a_1b_1 = a_2b_2$     c.  $a_1a_2 = -b_1b_2$     d. none
62. What is meant by 1%?  
a. 101    b. 1    c. 1/100    d. 100
63. If  $x = \infty$  then what is the value of  $e^{\frac{1}{x}}$ ?  
a. 0    b.  $\infty$     c. 1    d. None
64. If A & G denote the Arithmetic and geometric means between two positive numbers P & Q then

- a.  $A \leq G$     b.  $G \leq A$     c.  $A = G$     d. none
65. Find the average value of the roots of the quadratic equation  $2x^2 - 3x = 0$  is  
a. 0    b.  $\frac{2}{3}$     c.  $\frac{3}{4}$     d. 3
66. If  $2 = 5$ ,  $4 = 18$ ,  $6 = 39$  then  $10 = ?$   
a. 103    b. 104    c. 105    d. 106
67. If  $a^2 + b^2 = 8$ ,  $ab = 4$ , what is the average value a & b?  
a. 2    b. 4    c. 6    d. none
68. What is the perimeter of a rhombus having its diagonals 6cm and 8cm  
a. 20cm    b. 25 cm    c. 14 cm    d. 28cm
69. Two numbers are in the ratio of 3:4. If 4 is added to both the numbers the ratio becomes 31:40. What are they?  
a. 27&36    b. 37&44    c. -27&36    d. both a & c
70. If  $x^a = y^b = z^c$  and x,y,z are in GP then a, b, c will be  
a. A.P    b. G.P.    c. H.P.    d. none
71. A jar contains 10 red marbles and 30 green ones. How many red marbles should be added to the jar so that 60% of the marbles will be red?  
a. 45    b. 35    c. 50    d. 70
72. Find the circular measure of  $60^\circ$   
a.  $\frac{\pi}{3}$     b.  $\frac{\pi}{4}$     c.  $\frac{3\pi}{4}$     d.  $\frac{2\pi}{5}$
73. If the radius of a sphere is doubled, its volume becomes ..... the original volume.  
a. 16 times    b. 4 times    c. 8 times    d. double
74. The L.C.M. and H.C.F. of the two numbers are 840 and 14 respectively and if one of the numbers is 42 then the other number is  
a. 84    b. 280    c. 868    d. 42
75. In a triangle ABC, a = 3 cm, b = 4 cm and c = 5 cm then the area of the triangle is  
a.  $12 \text{ cm}^2$     b.  $6 \text{ cm}^2$     c.  $10 \text{ cm}^2$     d.  $15 \text{ cm}^2$
76. The tangent in the curve touches in  
a. Only one point    b. Two points  
c. Many points    d. Depends upon the tangents
77. Which of the following is equal to  $(7^8 \times 7^9)^{10}$ ?  
a.  $7^{27}$     b.  $8^{82}$     c.  $7^{170}$     d.  $49^{170}$
78. If  $x:y:z = 3:4:5$ , then the value of  $\frac{3x - 4z}{2x - y + 4z}$  is

- a.  $-1/2$       b.  $-1$       c.  $-2$       d.  $-1/2.5$
79. A man has Rs. 480 in the denominations of one-rupee notes, five- rupee notes and ten-rupee notes. The number of notes of each denomination is equal. What is the total number of notes that he has ?  
a. 16      b. 60      c. 30      d. 90
80. What is the area of rectangle whose length is twice its breadth and whose perimeter is equal to that of a square whose area is 1?  
a. 6      b.  $\frac{2}{3}$       c.  $\frac{4}{3}$       d.  $\frac{8}{9}$
81. In the figure below, square ABCD is inscribed in a circle. If the perimeter of ABCD is 24, what is the area of the shaded region?
- 
- a.  $18\pi - 24$       b.  $9\pi - 24$       c.  $18\pi - 36$       d.  $12\pi - 36$
82. If a is equal to the sum of b and c, which of the following is equal to the difference of b and c?  
a.  $a-b-c$       b.  $a-b+c$       c.  $a-c$       d.  $a-2c$
83. Suman will be x years old y years from now. How old was he z years ago?  
a.  $x+y+z$       b.  $x+y-z$       c.  $x-y-z$       d.  $y-x-z$
84. If  $\frac{2x+3y}{x-2y} = \frac{1}{2}$  then the duplicate ratio of x : y is  
a.  $\frac{-8}{3}$       b.  $\frac{\sqrt{8}}{3}$       c.  $\frac{64}{9}$       d.  $\frac{-64}{9}$
85. If  $A = \{1,2\}$ ,  $B = \{4,5\}$  then  $A \times B$  is  
a.  $\{(1,2), (1,4), (1,5), (1,1)\}$       b.  $\{1,4\}, \{1,5\}, \{2,4\}, \{2,5\}$   
c.  $\{(1,2), (2,4), (2,2), (2,5)\}$       d.  $\{(1,1), (2,2), (4,4), (5,5)\}$
86. If  $A \times B = \{1,2\}, \{2,5\}, \{2,3\}$  then A is  
a.  $\{1,3\}$       b.  $\{3,5\}$       c.  $\{1,2\}$       d.  $\{2,3\}$
87. If  $19-4x \leq 10$  find the smallest value of x when x is integer  
a. 3      b. 4      c. 5      d. 2
88. If P and Q be the solution sets of  $2x+5 > 10$  and  $3x-1 \leq 10$  and  $x \in \mathbb{N}$ . Find the set  $P \cap Q$ .  
a.  $\{4\}$       b.  $\{3\}$       c.  $\{3,4\}$       d.  $\{3,4,5\}$

88. Solve:  $\frac{3}{x} + \frac{5}{y} = 1$  and  $\frac{4}{x} + \frac{3}{y} = \frac{29}{30}$   
a.  $(x=6, y=10)$       b.  $(x=3, y=5)$       c.  $(x=10, y=6)$       d.  $(x=6, y=8)$
89. If  $x = \frac{1+\sin\theta}{\cos\theta}$  then  $\sin\theta$  equal to  
a.  $\frac{1-x^2}{1+x^2}$       b.  $\frac{x^2-1}{x^2+1}$       c.  $\frac{1+x}{1-x}$       d.  $\frac{1-x}{1+x}$
90. If the radius of the top of a cone is 7 and the height is 21, what is its volume?  
a. 1070      b. 1080      c. 1078      d. 1068
91. What do you call the equation of the type  $2^{x+1} + 2^x = 48$ ?  
a. Quadratic      b. Linear      c. Exponential      d. Powerful
92. Solve the equations  $a+b = 8$  and  $4^{a-b} = 1$   
a.  $a=4, b=-4$       b.  $a=-4, b=4$       c.  $a=-4, b=-4$       d.  $a=4, b=4$
93. Which of the following is the greatest in magnitude?  
a.  $\sqrt{2}$       b.  $\sqrt[3]{5}$       c.  $\sqrt[4]{7}$       d.  $\sqrt[6]{10}$
94.  $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = ?$   
a.  $\frac{a^2+c^2+e^2}{b^2+d^2+f^2}$       b.  $\frac{a-c-e}{b-d-f}$       c.  $\frac{\sqrt{a^2+c^2+e^2}}{\sqrt{b^2+d^2+f^2}}$       d.  $\frac{a^3+c^3+e^3}{b^3+d^3+f^3}$
95. If we divide 270 into three parts such that they bear the ratio  $\frac{1}{2} : \frac{1}{3} : \frac{2}{3}$ , what is the value of the second part?  
a. 180      b. 90      c. 60      d. 120
96. Which of the following is a quadratic equation?  
a.  $\sqrt{3-x} = 2x^2$       b.  $11x + \sqrt{x} + 2 = 0$       c.  $3x^2 + 8x - 3x^2 + 7 = 0$       d.  $[\sqrt[3]{3x+7}]^2 = 4x$
97. Vector  $3\vec{i} + 3\vec{j}$  is perpendicular to the vector  $\vec{i} + \lambda\vec{j}$  if  $\lambda =$   
a. 0      b. 2      c. -2      d. -1
98. Find the rate of interest of a sum which doubles itself in 20 years?  
a. 12%      b. 20%      c. 16%      d. 5%
99. If  $\frac{3^{\text{th}}}{5}$  of the income of Karuna is Rs.1200, find the  $\frac{4^{\text{th}}}{5}$  of her income.  
a. Rs.1400      b. Rs.1500      c. Rs.1600      d. Rs.1800
100. If  $\frac{1}{r} = 3$  and  $s=3$ , what is r in terms of s?  
a.  $\frac{s}{9}$       b.  $\frac{1}{s}$       c. a & b      d. None of a & b