

# TILOTTAMA S.S

## ENTRANCE EXAM-2076

Time: 2 hrs

Stream: Science

F.M.: 100

### Maths

1. What is the average of  $2^{10}$  and  $2^{20}$  :  
a.  $2^5 + 2^{10}$       b.  $2^9 + 2^{19}$       c.  $2^{20}$       d.  $2^{15}$
2. If the area of square is  $25x^2 - 10x + 1$ , then perimeter is :  
a.  $(5x+1)^2$       b.  $2(5x+1)$       c.  $20x - 4$       d.  $4(5x+3)$
3. If  $A = \begin{pmatrix} 1 & -2 \\ 0 & 3 \end{pmatrix}$  then  $A^{-1} =$   
a.  $\begin{pmatrix} 1 & 2/3 \\ 0 & 1/3 \end{pmatrix}$       b.  $\begin{pmatrix} 3 & 2 \\ 0 & 1 \end{pmatrix}$       c.  $\begin{pmatrix} 1/3 & -2/3 \\ 0 & 1 \end{pmatrix}$       d.  $\begin{pmatrix} 1 & 0 \\ -2 & 3 \end{pmatrix}$
4. If the  $n^{\text{th}}$  term of A.P. is  $4n+1$ . Then common difference is :  
a. 3      b. 5      c. 6      d. 4
5. If  $\frac{3a-5b}{3a+5b} = \frac{1}{4}$ , value of a:b is :  
a. 9:25      b. 5:16      c. 25:9      d. 16:5
6.  $\sin^6 A + \cos^6 A$  is equal to  
a.  $1 - 3\sin^2 A \cos^2 A$       b.  $1 + 3\sin^2 A \cos^2 A$   
c. 1      d.  $\sin A + \cos A$
7. If  $\bar{x} = 50$  and  $\sum fx = 1000$  the number of terms equal to:  
a. 5      b. 10      c. 15      d. 20
8. A dice is rolled once, then the probability that the outcome is either a prime number or an odd number is :  
a.  $2/3$       b.  $1/3$       c.  $3/5$       d. None
9. If  $f(x) = \frac{4x-3}{2x+1}$  then  $f^{-1}$  is :  
a.  $\frac{x+3}{2x-4}$       b.  $\frac{x+5}{2x-4}$       c.  $\frac{2x-4}{x-5}$       d. None
10. The value of  $x$  for which :  $\sqrt{x+8} - \sqrt{x} = 2$   
a. 1      b. 8      c. 4      d. 2

11. The acute angle between the lines  $x - 3y - 6 = 0$  and  $y = 2x + 5$  is :  
a.  $30^\circ$       b.  $45^\circ$       c.  $60^\circ$       d.  $75^\circ$
12. The area of triangle whose sides are along the lines  $x = 0, y = 0$  and  $4x + 5y = 20$  is  
a. 20      b. 10      c. 15      d. 5
13. The centre of circle  $x^2 + y^2 - 4x - 6y + 3 = 0$  is  
a. (1,2)      b. (2,3)      c. (3,4)      d. (4,5)
14. The remainder when  $4x^3 - 3x^2 + 2 = 0$  divided by  $(x - 2)$  is:  
a. 20      b. 22      c. 16      d. 24
15. If a cone hemisphere have same base and equal volumes then the ratio of their heights is :  
a. 2:1      b. 3:1      c. 2:3      d. 3:4
16.  $\lim_{x \rightarrow 5} \frac{x^2-25}{x-5} = \dots\dots\dots$   
a. 5      b. 20      c. 15      d. 10
17. What is the area of triangle whose sides are 6 cm & 8 cm & included angle is  $30^\circ$  ?  
a.  $12 \text{ cm}^2$       b.  $20 \text{ cm}^2$       c.  $6 \text{ cm}^2$       d.  $24 \text{ cm}^2$
18. If A(5,3), B(0,0) & C(-3, 5) are the vertices of the triangle, then value of  $\overrightarrow{AB} \cdot \overrightarrow{BC}$  is :  
a. 1      b. 0      c. 2      d. 3
19. An angle 'F' is said to be reflex angle if :  
a.  $0^\circ < F < 90^\circ$       b.  $90^\circ < F < 180^\circ$   
c.  $180^\circ < F < 360^\circ$       d.  $F = 180^\circ$
20. If  $n(A) = 90$  and  $n(B) = 50$ , which of the following can be minimum value of  $n(A \cup B)$  :  
a. 50      b. 90      c. 140      d. 40
21. The necessary condition for a square matrix A possesses its inverse is :  
a.  $|A| = 0$       b.  $|A| \neq 0$       c. A is skew symmetric      d. None

22. The formula for :  $1^2 + 2^2 + 3^2 + \dots + n^2$  is :

- a.  $\frac{n}{2}(n+1)$       b.  $\frac{n(n+1)(2n+1)}{6}$       c.  $\left[\frac{n(n+1)}{2}\right]^2$       d.  $n^2$

23. The angle between vector  $\vec{a} = \vec{i} + 3\vec{j}$ ,  $\vec{b} = 2\vec{i} + \vec{j}$

- a.  $\frac{\pi}{4}$       b.  $\frac{\pi}{3}$       c.  $\frac{\pi}{2}$       d.  $\pi$

24. Compute mean deviation from mean from following data :

weight lbs :      90      100      125      115      110

- a. 10.1      b. 10.2      c. 10.3      d. 10.4

25. Diameter of circle subtends angle at a point on circumference is :

- a.  $30^\circ$       b.  $60^\circ$       c.  $90^\circ$       d.  $120^\circ$

26. If  $f(x) = 2x + 3$  &  $g(x) = x^2$  then value of  $(gof)(1)$  is

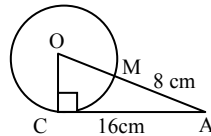
- a. 25      b. 30      c. 35      d. None

27. When  $x^3 + 3x^2 - kx + 4$  is divided by  $x - 2$ , remainder is k then value of k is :

- a. 5      b. 6      c. 7      d. 8

28. Find radius of circle in the following figure. CA=16cm, MA=8cm

- a. 11 cm      b. 12 cm  
c. 13 cm      d. 14 cm



29. If  $\sin x = \frac{1}{2}$ , then value of x are :

- a.  $\frac{\pi}{6}, \frac{\pi}{3}$       b.  $\frac{\pi}{3}, \frac{\pi}{4}$   
c.  $\frac{\pi}{6}, \frac{5\pi}{6}$       d.  $\frac{\pi}{6}, \frac{\pi}{8}$

30. If  $\sqrt{5 - \sqrt{x}} = 1$ , the value of x is :

- a. 10      b. 16      c. 22      d. 28

31. If  $\left(x + \frac{1}{x}\right)^2 = 10000$ , then  $x^2 + \frac{1}{x^2} =$

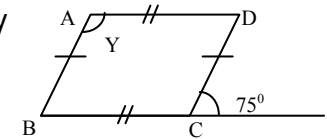
- a. 9999      b. 9996      c. 9997      d. 9998

32. Formula of volume of hemisphere having radius r is :

- a.  $\frac{1}{2}\pi r^3$       b.  $\frac{2}{3}\pi r^3$       c.  $\frac{4}{3}\pi r^3$       d.  $\frac{5}{6}\pi r^3$

33. In the following figure, find value of y

- a.  $60^\circ$       b.  $75^\circ$   
c.  $105^\circ$       d.  $110^\circ$



34.  $\tan 3A$  is equal to :

- a.  $3\tan A - \tan^2 A$       b.  $3\tan^3 A - 4\tan A$   
c.  $\frac{1-3\tan^2 A}{3\tan A - \tan^3 A}$       d.  $\frac{3\tan A - \tan^3 A}{1-3\tan^2 A}$

35. The value of  $\sin 40^\circ + \sin 20^\circ$  is :

- a.  $\sin 30^\circ$       b.  $\sin 50^\circ$       c.  $\sin 80^\circ$       d.  $\sin 100^\circ$

### English

36. The parents were completely in the dark concerning their daughter's plans. The meaning of underlined phrase is

- a. Ignorant about      b. ashamed of  
c. Pretending to be unaware of      d. unhappy about

37. I have been living in Butwal .....

- a. since ten years      b. for ten years  
c. ten years ago      d. ten years

38. This is the ..... thing I have ever done.

- a. harder      b. hard      c. more hard      d. hardest

39. Ramesh is ..... his sister.

- a. not so clever than      b. not as clever than  
c. not as clever as      d. not so clever as

40. He hasn't got..... time for a coffee.

- a. much      b. many      c. a lot      d. few

41. Have you finished with the newspaper ..... ?

- a. still      b. already      c. now      d. yet

42. I wish .....

- a. you haven't said that      b. you didn't said that  
c. you had not said that      d. you don't say that

43. When they lived in Paris, they ..... to work everyday.

- a. walk      b. would walk  
c. would have walked      d. had walked

44. The government is planning to ..... taxes again soon.  
a. impose                      b. raise                      c. rise                      d. promote
45. I told him .....  
a. don't go there                      b. not to go there  
c. don't go to there                      d. that he doesn't go there
46. I asked my sister if ..... a bottle of perfume for me at the airport.  
a. she had buy                      b. she would bought  
c. she had bought                      d. she bought
47. You can exchange the gift ..... it is returned within seven days.  
a. so long that                      b. as long as  
c. while                      d. meanwhile
48. We'll ..... my sister to babysit on Friday.  
a. get                      b. have                      c. getting                      d. be having
49. I blame the Government ..... the increase in crime.  
a. for                      b. on                      c. about                      d. over
50. He used to be married to an actress, .....?  
a. wasn't he                      b. didn't he  
c. wasn't it                      d. didn't it

### Biology

51. Which is the smallest bone of our body?  
a. Stapes                      b. Malleus                      c. Incus                      d. Vomer
52. Retina is found in .....  
a. Nose                      b. Eye                      c. Ear                      d. Tongue
53. The normal blood pressure in human being is  
a. 120/80mm of Hg                      b. 80/120 mm of Hg  
c. 130/90 mm of Hg                      d. 90/130 mm of Hg
54. All mammalian RBC lack nucleus except  
a. Dog                      b. Cat                      c. Tiger                      d. Camel
55. Which is the element that hardens the tooth enamel?  
a. Calcium                      b. Fluorine                      c. Iodine                      d. Sodium
56. A vitamin formed in skin upon exposure to uv-rays is vitamin.  
a. A                      b. B                      c. C                      d. D
57. The metal related with haemoglobin is :  
a. Sodium                      b. Iron                      c. Magnesium                      d. Potassium

58. Horse has  
a. Two chambered heart                      b. Three chambered heart  
c. Four chambered heart                      d. None
59. Plants are similar to animals because.  
a. They respire during night  
b. They respire during the day and night  
c. They respire when it is required.  
d. They respire during the day only.
60. What is the genotypic ratio of Mendel's monohybrid cross ?  
a. 3:1                      b. 2:1:1                      c. 1:2:1                      d. 1:3
61. The branch of biology dealing with heredity and variation is called  
a. Evolution                      b. Genetics                      c. Microbiology                      d. Geobotany
62. Double fertilization and triple fusion is characteristics of  
a. all plants                      b. Angiosperms  
c. Gymnosperms                      d. Pteridophytes
63. A Gymnosperm is plant which  
a. Bears flowers                      b. Produces seeds in cones  
c. Does not produce seeds                      d. Exhibits no vascular tissues.
64. The full form of DNA is  
a. Double nitrogen acid                      b. Deoxyribonucleic acid  
c. Ribo nucleic acid                      d. Deoxy nucleic Acid
65. The pyramid of biomass of aquatic ecosystem is  
a. Erected                      b. Inverted  
c. Horizontal                      d. Vertical

### physics

66. Total internal reflection can occur when light passes from:  
(a) a denser to rarer medium                      (b) a rarer to denser medium  
(c) one medium to another of equal refractive index  
(d) one medium to another of equal absorption coefficient
67. The mass of a particle at the centre of the earth is:  
(a) zero                      (b) slightly more than at the poles  
(c) infinite                      (d) same as at the poles

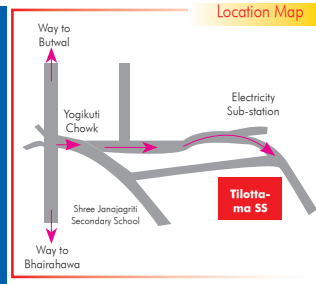
68. A convex mirror gives an image which is:  
 (a) real and inverted (b) virtual and inverted  
 (c) virtual and erected (d) virtual and magnified
69. An object is projected upward with a velocity of 100 m/s. It will strike the ground in about:  
 (a) 5s (b) 10s (c) 20s (d) 15s
70. The velocity of sound is largest in:  
 (a) air (b) water (c) steel rod (d) kerosene oil
71. A Lamp is marked 110W-220V. The resistance of the filament is:  
 (a) 110 ohm (b) 220 ohm (c) 440 ohm (d) 2 ohm
72. Of the following, which is not a scalar quantity?  
 (a) time (b) momentum (c) volume (d) density
73. Atmospheric pressure is measured by using:  
 (a) hydrometer (b) thermometer  
 (c) calorimeter (d) barometer
74. Ozone layer is present in  
 (a) troposphere (b) stratosphere  
 (c) mesosphere (d) exosphere
75. When 20 gm of water is heated from 10 °C to 15 °C , the required energy in joule is:  
 (a) 420 (b) 22 (c) 44 (d) 1000
76. In an A.C., which one of these holds true ?  
 (a) Potential in the circuit is high  
 (b) Polarity changes continuously at a constant rate  
 (c) Polarity does not change continuously  
 (d) Resistance in the circuit is very low
77. Ball pen functions on the principle of :  
 (a) Viscosity (b) Boyle's law  
 (c) Gravitational force (d) Surface tension
78. The focal length of a lens is +5mm. Its power should be  
 (a) 100D (b) 200D (c) 300D (d) 400D
79. The milky way galaxy is;  
 (a) A circular galaxy (b) An elliptical galaxy  
 (c) A spiral galaxy (d) An irregular galaxy
80. The work done on bringing a unit positive test charge from one end of a resistor to another is called .....  
 (a) Resistance (b) Potential difference (c) Emf (d) Power

### Chemistry

81. Which does not obey octet rule?  
 (a)  $\text{NH}_3$  (b)  $\text{PF}_5$  (c)  $\text{CCl}_4$  (d)  $\text{H}_2\text{O}$
82. How many gram of quick lime is produced on heating 10gm of marble?  
 (a) 2.8gm (b) 28gm (c) 5.6gm (d) 56gm
83. Aqueous solution of sodium acetate is  
 (a) Acidic (b) Neutral (c) Basic (d) Amphoteric
84. Which of the following ore is mainly used for the extraction of copper?  
 (a) copper pyrite (b) copper glance  
 (c) silver copper glance (d) none of above
85. Propane 1, 2, 3-triol is  
 (a)  $\text{CH}_3\text{-OH}$  (b)  $\text{CH}_2(\text{OH})\text{CH}_2\text{OH}$   
 (c)  $\text{CH}_2(\text{OH})\text{CH}(\text{OH})\text{CH}_2\text{OH}$  (d)  $\text{C}_2\text{H}_5\text{OH}$
86. Pyrex glass is also called  
 (a) Boro-silicate glass (b) ordinary glass  
 (c) Lead crystal glass (d) Water glass
87. The percentage of nitrogen in urea is  
 (a) 46.66% (b) 48.5% (c) 53.56% (d) 60%
88. The chemical name of laughing gas is  
 (a) Nitric oxide (b) Nitrous oxide  
 (c) Nitric acid (d) Nitrous acid
89. Which acid is injected into our body when ants bite us?  
 (a) Oxalic acid (b) Formic acid  
 (c) Acetic acid (d) Carbonic acid
90. The atomic theory was given by  
 (a) Chadwick (b) J.J Thomson  
 (c) John Dalton (d) E. Rutherford
91. Which gas is collected in cathode during electrolysis of aqueous solution of sodium chloride ?  
 (a)  $\text{N}_2$  (b)  $\text{Cl}_2$  (c)  $\text{O}_2$  (d)  $\text{H}_2$

## Tilottama Secondary School

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Asmita Dhakal  
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Divya Pokhrel  
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Rajan Kushal  
BAWS

### IDE



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**TILOTTAMA**  
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**TILOTTAMA S.S.**  
ENTRANCE EXAM-2076

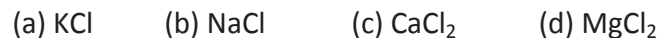
Stream: Science  
Set-A



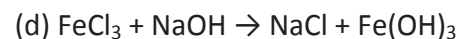
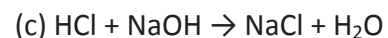
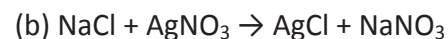
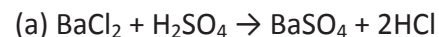
92. Hydrated iron (III) oxide, also known as rust, can be written as



93. Which of the following is called Sylvine?



94. Which of the following reaction is acid-base reaction?



95. Electronic configuration of  $\text{M}^{2+}$  ion is 2, 8, 14 and its atomic weight is 56 amu. The number of neutrons in its nucleus are

(a) 30 (b) 32 (c) 34 (d) 42

96. Write your opinion about the role of social media in education. [5]

## REMARKABLE ACHIEVEMENTS - 2075, FULL SCHOLARSHIP BEARERS

### B.Sc. Ag



Swagat Khanal  
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Entrance 2nd Topper  
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