CTS ACADEMY
COMPETE TO SUCCEED

CTS - SAT 2022

CTS ACADEMY SCHOLARSHIP – CUM – ADMISSION TEST

MOCK TEST PAPER

Time: 60 Minutes **Class: 10th Moving to 11th** **Max. Marks: 160**

INSTRUCTIONS

- ***PLEASE READ THE INSTRUCTIONS CAREFULLY :***

A. General:

1. This Booklet is your Question Paper. Answers have to be marked on a separate sheet. Write your **NAME, ROLL NO.** and **CONTACT NUMBER** clearly on the Answer Sheet.
2. **Darken t**he appropriate bubbles with **Blue/Black Ball Point only**. Use of Pencil is strictly prohibited.
3. No additional sheets will be provided for rough work.
4. Blank paper, Clipboards, Calculators, Cellular Phones and Electronic Gadgets in any form are not allowed.
5. Do not tamper/spoil the test sheet.

B. Question Paper Format & Marking Scheme:

1. The Question Paper consists of total **40 questions**.
2. Each question carries **4 marks.**
3. There will be three Sections: A, B and C.
4. Section A consists of 20 questions of Science.
5. Section B consists of 12 questions of Maths.
6. Section C consists of 8 questions of MAT.
7. There will be **no negative marking**.

COMPETE TO SUCCEED

Best of Luck !!!

SECTION – A (SCIENCE)

Q.1. Velocity of light in Glass whose Refractive index w.r.t. air is 1.5 is 2×10^8 m/sec. In a certain liquid the velocity of light is found to be 2.5×10^8 m/sec. The Refractive index of liquid w.r.t. air is

(a) 0.64 (b) 0.80 (c) 1.20 (d) 1.44

Q.2. A man cannot see clearly the objects beyond a distance of 20 cm from his eyes. To see distant objects clearly he must use

(a) A convex lens of focal length 10 cm
(b) A concave lens of focal length 10 cm
(c) A convex lens of focal length 20 cm
(d) A concave lens of focal length 20 cm

Q.3. A convex mirror has radius of curvature of 22 cm. If an object is placed 14 cm away from mirror then its image is formed at

(a) 6.2 cm on front side of mirror (b) 6.2 cm on back side of mirror
(c) 51.3 cm on front side of mirror (d) 51.3 cm on back side of mirror

Q.4. In a convex lens of focal length F the minimum distance between an object and its real image must be

(a) 3F (b) 4F (c) $\frac{3}{2}$F (d) 2F

Q.5. Which of the following is not due to Total Internal Reflection?

(a) Working of optical Fibre
(b) Brilliance of Diamond
(c) Mirage on hot summer days
(d) Difference between apparent and real depth of a pond

Q.6. An object is placed at a distance of 1.5 m from a screen and a convex lens placed in between produces a magnified image which is four times as that of object on the screen. The focal length of lens is

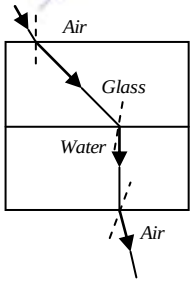
(a) 0.24 m (b) 0.48 m (c) 2.4 m (d) 4.8 m

Q.7. The bending of an object placed in a liquid is due to

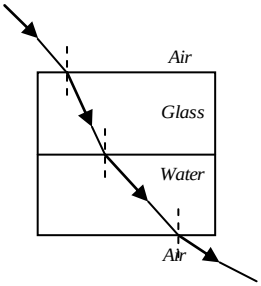
(a) Reflection of light (b) Refraction of light
(c) Dispersion of light (d) None of these

Q.8. Which of the following represents correct Refraction pathway:

(a)



(b)



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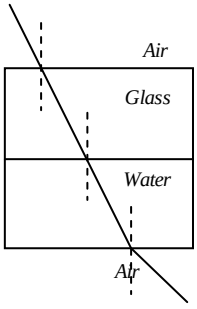
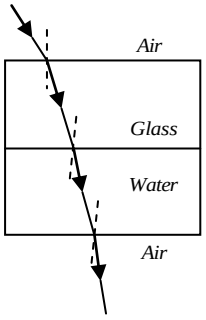


(d)



Q.9. The reaction given below shows the example of
$2H_2O \rightarrow H_2 + O_2$
(a) Photolytic Decomposition
(b) Thermal Decomposition
(c) Electrolytic Decomposition
(d) Double Decomposition

Q.10. Chemical name of K_2SO_3 is
(a) Potassium sulphite
(b) Potassium sulphate
(c) Potassium sulphide
(d) None of these

Q.11. Which of the statement given below for the reaction is correct?
$Al + Cr_2O_3(s) \rightarrow Cr(s) + Al_2O_3(s)$
(a) Al is oxidizing agent
(b) Al is reducing agent
(c) Cr_2O_3 is reducing agent
(d) Cr is reducing agent

Q.12. The product of the reaction is
$NaCl(aq) + H_2O(\ell) + NH_3(g) + CO_2(g) \rightarrow$
(a) $NH_4Cl + Na_2CO_3$
(b) $Na_2CO_3 + NaCl$
(c) $NH_3 + Na_2CO_3 + NH_4Cl$
(d) $NH_4Cl + NaHCO_3$

Q.13. X is used as an oxidizing agent and also a disinfectant for drinking water. X is
(a) Calcium oxychloride
(b) Sodium bicarbonate
(c) Calcium hydroxide
(d) Sodium carbonate decahydrate

Q.14. The process in which ore is heated in limited supply of air at a temperature below melting point is
(a) Metallurgy
(b) Calcination
(c) Roasting
(d) Chemical reaction

Q.15. Salt of strong acid and strong base will have pH close to
(a) 5
(b) 7
(c) 11
(d) 14

Q.16. When KI solution is added to a solution of lead (II) nitrate in a test tube, a precipitate formed is
(a) Lead Iodide
(b) Lead
(c) Potassium-nitrate
(d) Lead nitrate

Q.17. The product of photosynthesis is transported from source of production to the storage organs through
(a) Palisade tissue
(b) Phloem tissue
(c) Spongy tissue
(d) Xylem tissue

Q.18. Organisms capable of synthesizing their own food are called
(a) Heterotrophs
(b) Autotrophs
(c) Decomposers
(d) Parasites

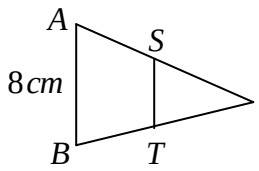
Q.19. Which of the following enzyme is present in saliva?
(a) Pepsin
(b) Chymotrypsin
(c) Trypsin
(d) Ptyalin

Q.20. Formation of oxyhaemoglobin inside RBCs is a
(1) Physical process
(2) Chemical process
(3) Enzyme catalyzed reaction
(4) Partial pressure influenced process

Find out the correct answer
(a) (1), (2) and (3)
(b) (1) and (2)
(c) (2) and (4)
(d) (3) and (4)

SECTION – B (MATHS)

Q.21. In figure if AB || ST and BT : CT = 7.3. If AB = 8 cm, then ST equals



(a) 2.4 cm (b) 3.2 cm (c) 3.6 cm (d) 4 cm

Q.22. The mid points of sides AB and AC of ΔABC are (3, 5) and (-3, -3) respectively, the side length of BC is
(a) 10 (b) 20 (c) 15 (d) 30

Q.23. The point of trisection of line joining the points (-2, -19) and (5, 4)
(a) (2, -3) (b) (1, 2) (c) $\left(\frac{1}{3}, -\frac{34}{3}\right)$ (d) $\left(\frac{8}{3}, -\frac{11}{3}\right)$

Q.24. If $\sqrt{3}\tan\theta = 3\sin\theta$ then $\sin^2\theta - \cos^2\theta$ equals
(a) $\frac{1}{3}$ (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

Q.25. If $\cos(\alpha + \beta) = 0$ then $\sin(\alpha - \beta)$ equals
(a) $\cos\beta$ (b) $\cos 2\beta$ (c) $\sin\alpha$ (d) $\sin 2\alpha$

Q.26. If pair of equations 3x + 4y = K and 9x + 12y = 6 has more than one solution then K equals
(a) 4 (b) 6 (c) 2 (d) 12

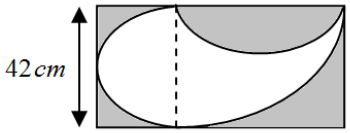
Q.27. If α, β and γ are zeroes of polynomial $6x^3 + 31x^2 - 29x + 6$ then $\alpha^2 + \beta^2 + \gamma^2$ equals
(a) $\frac{1309}{6}$ (b) $-\frac{1309}{36}$ (c) $-\frac{1309}{6}$ (d) $\frac{1309}{36}$

Q.28. If α, β are zeroes of $ax^2 + bx + c$ then $\frac{1}{\alpha}, \frac{1}{\beta}$ are zeroes of
(a) $a + bx + cx^2$ (b) $a - bx + cx^2$
(c) $-a + bx + cx^2$ (d) none of the above

Q.29. In a school, duration of period in primary classes is 40 minutes and in senior classes is 60 minutes. If first bell rings for each class at 10 AM then the two bells ring again simultaneously at
(a) 12:00 PM (b) 11:45 PM (c) 12:20 PM (d) Never

Q.30. The Area of a rectangle increases by 76 square units if length and breadth are increased by 2 units. If length is increased by 3 units and breadth decreased by 3 units the area gets reduced by 21 square units. The sum of length and breadth of Rectangle is
(a) 40 units (b) 42 units (c) 44 units (d) 36 units

Q.31. The area shaded in figure made by a Rectangle, 2 identical semicircles and a Quadrant is



(a) 1350 cm^2 (b) 1154 cm^2 (c) 1400 cm^2 (d) 1260 cm^2

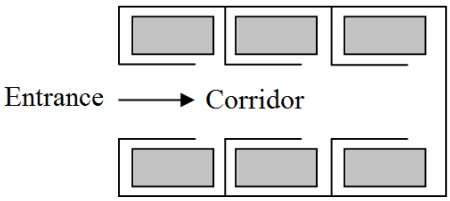
Q.32. Two dice are rolled together. Find the probability that sum on the both dice is a prime number.

(a) $\frac{5}{12}$ (b) $\frac{1}{2}$ (c) $\frac{7}{12}$ (d) $\frac{11}{12}$

SECTION – C (MAT)

Directions for Q.33 & Q.34

Answer the questions based on following information:



The plan above shows on office block for six officers A, B, C, D, E and F. Both B and C occupy offices to right of the Corridor (as one enters the office block) and A occupies an office to the left of the Corridor. E and F occupy the offices on opposite side of the Corridor but their offices do not face each other. The offices of C and D face each other. E does not have a corner office. F's office is further down the Corridor than A's office, but on the same side.

Q.33. Whose office face A's office?

(a) E (b) D (c) C (d) B

Q.34. If A sits in his office and faces the corridor, whose office is to his right

(a) B (b) C (c) D (d) E

Q.35. Identify the wrong term in the series 78, 57, 36, 19, 11

(a) 57 (b) 36 (c) 19 (d) 11

Q.36. Which one of the following is odd pair of words?

(a) White : Dirty (b) Brave : Coward (c) Easy : Difficult (d) End : Beginning

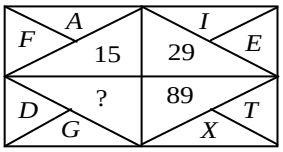
Q.37. ABCD is related to NPRT in same way as FGHI is related to _____?

(a) SUVY (b) SUWX (c) SUWY (d) SUVW

Q.38. A cube whose two adjacent faces are coloured is cut into 125 identical small cubes. How many of these small cubes are not coloured at all?

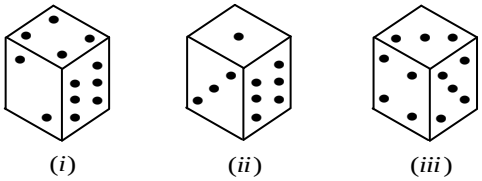
(a) 64 (b) 80 (c) 96 (d) 100

Q.39. Find the missing character from among the given alternative



(a) 12 (b) 11 (c) 23 (d) 22

Q.40. Three different positions of a dice are shown below. How many dots lie opposite two dots?



(*i*) (*ii*) (*iii*)

(a) 1 (b) 3 (c) 5 (d) 6