



NARAYANA
IIT-JEE / NEET / FOUNDATIONS
(A Unit of NSPIRA Management Services Pvt. Ltd.)



NSAT-2024

CLASS – X (Mental Ability, Biology, Physics & Chemistry)
(Class X Moving to XI-PCB)

NARAYANA SCHOLASTIC APTITUDE TEST (NSAT)

SAMPLE PAPER

Time: 1:00 Hr.

Maximum marks: 160

IMPORTANT INSTRUCTIONS:

1. The test Booklet consists of 40 questions. The maximum marks are 160.
2. There are five parts in the question paper of MAT (Q. No. 1 to 8) Biology (Q. No. 9 to 20), Physics (Q. No. 21 to 30) & Chemistry (Q. No. 31 to 40) having 40 questions. Each question is allotted +4 (four) marks for each correct response & -1 for each incorrect answer
3. Mark only one correct answer out of four alternatives.
4. Use Blue/Black Ball Point Pen only for writing particulars/markings.
5. Use of Calculator is not allowed.
6. Dark the circle in the space provided only.
7. Use of white fluid or any other material which damage the answer sheet, is not permissible on the Answer Sheet.

TO BE FILLED IN CAPITAL LETTERS

NAME OF THE STUDENT : _____

FATHER'S NAME : _____

CONTACT NUMBERS: _____ SCHOOL NAME : _____

ROLL NO. : _____ TEST CENTRE : _____

I have read all the instructions and shall abide by them

.....

Signature of the Candidate

I have verified all the information filled in by the Candidate

.....

Signature of the Invigilator



EDUCATION IS INTEGRAL FOR GROWTH AND DEVELOPMENT

Education is integral for the growth and development of an individual. The expectation from an educational institute is always about making the society better for all and to bring out one's true Potential in the service of mankind.

At Narayana, we believe that a student's education is complete only when we are able to contribute towards his/her overall development besides imparting knowledge based and career oriented training.

With an aim to provide top of the league training to students to excel in every sphere of their lives, Narayana Group has been focusing on result oriented inputs.

Narayana's courses have been designed to cater to all the needs of the aspirants to help them excel in various competitive as well as Board examinations. Innovative strategies and techniques adopted in our centres keep our students abreast of the ever-changing pattern of top level Engineering/Medical Entrance Exams. As a result, Narayana's time-tested learning formulae are percolating to far-flung corners of India to benefit students from all backgrounds.

"Footprints on the sands of time are not made by sitting down". Today we rededicate the last 4 decades of our success to your dreams. I wish all our students a very successful academic year ahead.

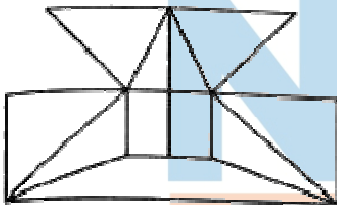
Dr. P. NARAYANA

Founder, Narayana Group

MENTAL ABILITY

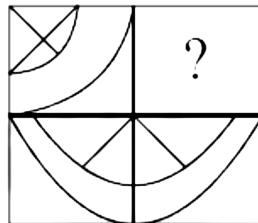
1. In a certain code, REFRIGERATOR is coded as ROTAREGIRFER, which would be coded as NOITINUMMA?
 (A) ANMOMIUTNI (B) AMNTOMUIIN
 (C) AMMUNITION (D) NMMUNITION
2. Choose the correct analogous word for:
 Anaemia : Blood :: Anarchy : ?
 (A) Lawlessness (B) Government (C) Monarchy (D) Disorder
3. Choose the correct analogous pair of number.
 10 : 500 :: ?
 (A) 8 : 256 (B) 7 : 374 (C) 9 : 243 (D) 5 : 75

4. The minimum number of straight lines required to make the given figure is/are

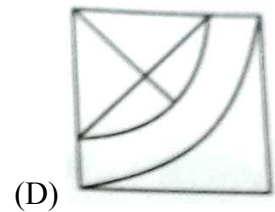
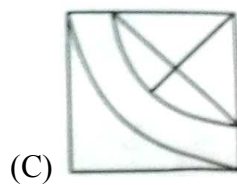
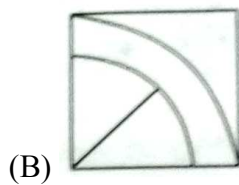
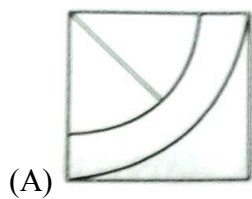


- (A) 16 (B) 17 (C) 18 (D) 19

5. Complete the missing portion of the given pattern by selecting from the given alternatives (A), (B), (C), (D).



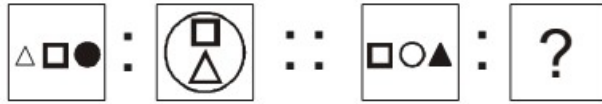
(X)



Space for rough work

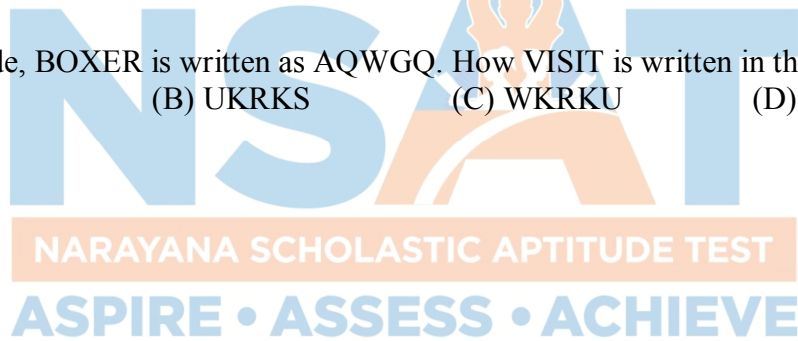
6. In the following question, a number series is given with one term missing. Choose the correct alternative that will continue the same pattern and replace the question mark in the given series.
 9, 27, 31, 155, 161, 1127, ?
 (A) 316 (B) 1135 (C) 1288 (D) 2254

7. There are two pairs of figures. In the first pair, one figure is related to the other in a certain manner. If the same relation have to exist in the second pair, which answer choice should come in place of?



- (A) (B) (C) (D)

8. In certain code, BOXER is written as AQWGQ. How VISIT is written in that code?
 (A) UKRKU (B) UKRKS (C) WKRKU (D) WKRKS



Space for rough work

BIOLOGY

9. Vegetative propagation refers to formation of new plants from
(A) Stem, flowers and fruits (B) Stem, leaves and flowers
(C) Stem, roots and flowers (D) Stem, roots and leaves
10. Which among the following diseases is not sexually transmitted?
(A) Syphilis (B) Hepatitis-A
(C) AIDS (D) Gonorrhoea
11. The part of seed that contains the future plant is called the
(A) Cotyledons (B) Seed coat
(C) Germ cells (D) Embryo
12. Glycolysis occurs in which part of the cell?
(A) Cytoplasm (B) Nucleus
(C) Mitochondria (D) Chloroplast
13. Which of the following statements about autotrophs is incorrect?
(A) They synthesize carbohydrates by using carbon dioxide, water in the presence of sunlight and chlorophyll.
(B) They store carbohydrates in form of starch.
(C) They convert carbon dioxide and water into carbohydrates in the absence of sunlight.
(D) They form the first trophic level in the food chain.
14. Along the path of the vas deferens the secretions of which gland provide nutrition to the sperms?
(A) Bulbourethral gland (B) Seminal vesicles
(C) Scrotum (D) Urinary bladder
15. The process by which blood is cleared of metabolic wastes in case of kidney failure is called
(A) Immunisation (B) Dialysis
(C) Transplantation (D) Filtration

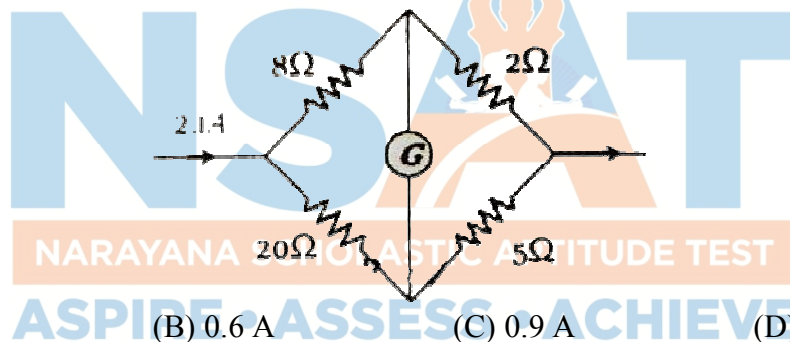
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16. Movement of sunflower in accordance with the path of the sun is due to
(A) Chemotropism (B) Geotropism
(C) Phototropism (D) Hydrotropism
17. Breathing is controlled by which part of the brain.
(A) Cerebrum (B) Cerebellum
(C) Hypothalamus (D) Medulla oblongata
18. Which of the following endocrine glands does not exist in pairs?
(A) Testes (B) Adrenal
(C) Pituitary (D) Ovary
19. Length of pollen tube depends on the distance between
(A) Pollen grain and upper surface of stigma.
(B) Pollen grain on upper surface of stigma and ovule.
(C) Pollen grain in anther and upper surface of stigma.
(D) Upper surface of stigma and lower part of style.
20. Offspring formed as a result of sexual reproduction exhibit more variations because
(A) Sexual reproduction is a lengthy process.
(B) Genetic material comes from two parents of the same species.
(C) Genetic material comes from two parents of different species.
(D) Genetic material comes from many parents.

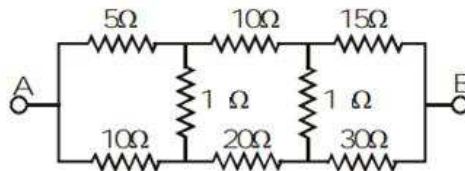
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PHYSICS

21. A person has near point 60 cm. What power should corrective lens have to allow to see an object clearly at a distance of 20 cm.
 (A) +3.33D (B) -3.33D (C) +2.2D (D) -2.2D
22. A battery of EMF 2V and internal resistance 0.5Ω is connected across a resistance of 9.5Ω . How many electrons cross through cross-section of resistance per second?
 (A) 2×10^{-18} (B) 3×10^{-18} (C) 1.25×10^{18} (D) 1.75×10^{15}
23. In the given figure, when galvanometer shows no deflection, the current (in ampere) flowing through 5Ω resistance will be



- (A) 0.5 A (B) 0.6 A (C) 0.9 A (D) 1.5 A
24. In the arrangement of resistances shown below, the effective resistance between point A and B is



- (A) 20Ω (B) 30Ω (C) 90Ω (D) 110Ω

25. If f is the focal length for mirror, u is the distance of the object from mirror & v is the distance of the image from the mirror, then which of the following relation is true
 (A) $f = \frac{uv}{u+v}$ (B) $u = \frac{f+v}{fv}$ (C) $v = \frac{f+v}{fu}$ (D) None of these

Space for rough work

26. A ray of light incident normally on a plane mirror. The angle of reflection will be
(A) 0° (B) 90°
(C) Will not be reflected (D) None of these
27. The position and nature of image formed when an object of size 1 cm is placed at a distance of 15 cm from a concave mirror of focal length 10 cm is
(A) – 30 cm, real and inverted (B) – 20 cm virtual and inverted
(C) – 40 cm, real and inverted (D) – 25 cm virtual and enlarged
28. An object placed 10 cm in front of a lens has an image 20 cm behind the lens. What is the power of the lens (in diopters)
(A) 1.5 (B) 3.0 (C) – 15.0 (D) + 15.0
29. A bird is flying at a height of 3.6 m above the surface of water and a fish is in the water at a depth of 1.2 m. The apparent height of bird to the fish is $\left(\mu_{\text{water}} = \frac{4}{3}\right)$
(A) 3.9 m (B) 4.8 m (C) 5.2 m (D) 6.0 m
30. A concave lens of suitable focal length is used for correcting a –
(A) Myopic eye (B) Hypermetropic eye
(C) Both (A) & (B) (D) Neither (A) nor (B)

Space for rough work

CHEMISTRY

31. If H^+ ion concentration of a solution is increased 10 times its pH will
(A) increases by 1 (B) remains unchanged
(C) decreases by 1 (D) increases by 10
32. Identify true and false statement ?
(1) The relationship between pH and hydrogen ion concentration is inverse one.
(2) By the dilution of an acidic solution concentration of H^+ ion increases continuously
(A) TF (B) FT (C) FF (D) TT
33. A metal compound 'A' react with dilute hydrochloric acid to produce effervescence. The gas evolved extinguishes a burning candle. The balanced chemical equation for the above reaction is:
(A) $NaHCO_3 + HCl \text{ (dilute)} \rightarrow NaCl + H_2O + CO_2$
(B) $NaOH + HCl \text{ (dilute)} \rightarrow NaCl + H_2O$
(C) $CuSO_4 + 2HCl \rightarrow CuCl_2 + H_2SO_4$
(D) None of these
34. An oxide of a non-metal has the following properties:
(i) It acts both as proton donor or acceptor
(ii) It readily reacts with basic and acidic oxides
(iii) It oxidises iron at its boiling point
The oxide is
(A) H_2O (B) SO_2 (C) NO_2 (D) CO_2
35. When sodium bisulphite reacts with hydrochloric acid, the products formed are :
(A) $NaCl$, H_2O and SO_2 (B) Na_2SO_4 and $NaCl$
(C) $NaCl$ and H_2S (D) No reaction takes place
36. Which of the following statements is INCORRECT ?
(A) The conjugate base of $H_2PO_4^-$ is HPO_4^{2-} .
(B) The pH of 1 M HCl is 0.
(C) H_3PO_3 is a tribasic acid.
(D) The concentration of H^+ ions in pure water is $10^{-7} \text{ mol L}^{-1}$ at 298 K.
37. $Pb(NO_3)_2 + 2KI \rightarrow PbI_2 + 2KNO_3$.
Above reaction is example of:
(A) displacement reaction (B) double displacement reaction
(C) combination (D) decomposition

Space for rough work

38. Which one of the following acids has two replaceable hydrogen atoms?
(A) Formic acid (B) Acetic acid (C) Sulphuric acid (D) Phosphoric acid
39. Which of the following metals is present in the anode mud during the electrolytic refining of copper?
(A) Sodium (B) Aluminium (C) Gold (D) Iron
40. An aluminium strip is kept immersed in freshly prepared ferrous sulphate solution taken in a test tube, the change observed is that
(A) Green solution slowly turns brown
(B) Lower end of test tube become slightly warm
(C) A colourless gas with the smell of burning sulphur is observed
(D) Light green solution changes to blue.



Space for rough work