

ENGINEERING

(SAMPLE PAPER)

SESSION: 2026-2027

School Project



A-33, 2nd & 3rd Floor Swasthya Vihar, New Delhi-110092

IMPORTANT INSTRUCTIONS

A. GENERAL INSTRUCTIONS

1. The Test is of **2 hours duration**.
2. The Test Paper contains 60 Questions. **The Maximum Marks are 240.**
3. The Test Paper consists of Four Parts - **Part I (Aptitude), Part II (Physics), Part III (Chemistry) and Part IV (Mathematics).**
4. Each Part contains 15 Questions. Part I (Aptitude) consists of 15 Multiple Choice Type Questions.
5. Part II (Physics), Part III (Chemistry) and Part IV (Mathematics) are further divided into Two Sections i.e. **Section A** and **Section B**. Section A consists of 10 Multiple Choice Type Questions.
6. Section B consists of 5 Integer Type Questions and an internal choice has been provided in each question. The answer to each of the question is a double digit integer ranging from 00 to 99.
7. +4 marks will be given for each correct answer and -1 mark for each wrong answer in Multiple choice type questions only. There is no negative marking for Integer type questions. In all other cases, no marks will be given.
8. There is only one correct response for each question. Filling up more than one response in each question will be treated as wrong response and marks for wrong response will be deducted accordingly as per instruction 7 above.

B. HOW TO ANSWER THE QUESTION

1. **Use HB pencil/ Ball Pen (Blue or Black) only to mark your answer in the OMR sheet.**
2. For each question in **Part I (Aptitude) and Section A of Part II (Physics), Part III (Chemistry) and Part IV (Mathematics)** there are multiple choices. One of them is the correct answer.
3. Fill appropriate bubble like this  wherever and not like this   .
4. Mark your response by filling correct option.
5. For each question in section B of each Part there are two columns in the OMR Sheet as shown in the figure 1. The answer to each of the question is a double digit integer ranging from 00 to 99. Darken the bubble for digit at ten's place of the integer in the left column and for the digit at unit's place of the integer in the right column. For example, if answer is 50, it should be marked as shown in figure 2.
6. Please ensure that you fill answer against the correct question number.
7. Use the rough area provided for rough work.

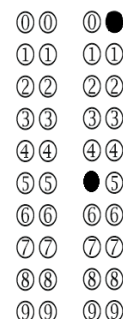


Figure 1 Figure 2

C. RESTRICTIONS DURING THE TEST

1. Calculators are not allowed in this test.
2. Use of mobile phones in the examination hall is strictly prohibited.
3. Log tables and electronic gadgets in any form are not allowed.
4. No additional sheets will be provided for rough work.

D. HELPFUL HINTS

1. Work quickly and accurately.
2. If you are not sure of an answer, mark your best choice and avoid wild guessing.

E. ON COMPLETION OF THE TEST

1. Please ensure your details are properly filled.
2. Handover the test booklet to the invigilator.
3. Ensure that your details are properly filled in the OMR sheet.

महत्वपूर्ण निर्देश

A. सामान्य निर्देश

1. परीक्षा 2 घंटे की अवधि की है।
2. परीक्षण पत्र 60 प्रश्नों का है। अधिकतम अंक 240 हैं।
3. परीक्षण पत्र में चार भाग हैं—भाग-1 (योग्यता), भाग-2 (भौतिकी), भाग-3 (रसायन विज्ञान) और भाग-4 (गणित)।
4. प्रत्येक भाग में 15 प्रश्न हैं। भाग-1 (योग्यता) में 15 बहुविकल्पीय प्रकार के प्रश्न हैं।
5. भाग-2 (भौतिकी), भाग-3 (रसायन विज्ञान) और भाग-4 (गणित) को आगे दो खंडों में विभाजित किया गया है अर्थात् खंड-ए और खंड-बी, खंड-ए में 10 बहुविकल्पीय प्रकार के प्रश्न हैं।
6. खंड-बी में 5 पूर्णांक प्रकार के प्रश्न हैं और प्रत्येक प्रश्न में एक आंतरिक विकल्प प्रदान किया गया है। प्रत्येक प्रश्न का उत्तर 00 से 99 तक के दोहरे अंकों का पूर्णांक है।
7. प्रत्येक सही उत्तर के लिए 4 अंक दिए जाएंगे और केवल बहुविकल्पीय प्रकार के प्रश्नों में प्रत्येक गलत उत्तर के लिए -1 अंक दिए जाएंगे। पूर्णांक प्रकार के प्रश्नों के लिए कोई नकारात्मक अंकन नहीं है। अन्य सभी मामलों में कोई अंक नहीं दिए जाएंगे।
8. प्रत्येक प्रश्न के लिए केवल एक सही उत्तर है। प्रत्येक प्रश्न में एक से अधिक उत्तर भरने को गलत उत्तर माना जाएगा और गलत उत्तर के लिए अंक उपरोक्त निर्देश 7 के अनुसार काट लिए जाएंगे।

B. प्रश्न का उत्तर कैसे दें

1. OMR शीट में अपना उत्तर अंकित करने के लिए केवल एचबी पेंसिल अथवा बॉल पेन (नीला या काला) का प्रयोग करें।
2. भाग-1 (योग्यता) और भाग-2 (भौतिकी), भाग-3 (रसायन विज्ञान) और भाग-4 (गणित) के खण्ड-ए के प्रत्येक प्रश्न के लिए कई विकल्प हैं। उनमें से एक सही उत्तर है।
3. उपयुक्त बबल को ऐसे ही भरें ● और इस तरह नहीं ○ ⊗ ⊙ ।
4. सही विकल्प भरकर अपनी प्रतिक्रिया चिह्नित करें।
5. प्रत्येक भाग के खंड बी में प्रत्येक प्रश्न के लिए OMR शीट में दो कॉलम हैं जैसा कि चित्र 1 में दिखाया गया है। प्रत्येक प्रश्न का उत्तर 00 से 99 तक का एक दो अंकों का पूर्णांक है। बाएँ कॉलम में पूर्णांक के दस के स्थान वाले अंक के लिए और दाएँ कॉलम में पूर्णांक के इकाई के स्थान वाले अंक के लिए बुलबुले को गहरा करें। उदाहरण के लिए, यदि उत्तर 50 है, तो इसे चित्र 2 में दर्शाए अनुसार चिह्नित किया जाना चाहिए।
6. कृपया सुनिश्चित करें कि आप सही प्रश्न संख्या के सामने उत्तर भरते हैं।
7. रफ काम के लिए दिए गए रफ एरिया का इस्तेमाल करें।

00	0●
11	11
22	22
33	33
44	44
55	●5
66	66
77	77
88	88
99	99

चित्र 1 चित्र 2

C. परीक्षण के दौरान प्रतिबंध

1. इस परीक्षण में कैलकुलेटर की अनुमति नहीं है।
2. परीक्षा हॉल में मोबाइल फोन का प्रयोग पूर्णतः प्रतिबंधित है।
3. किसी भी रूप में लॉग टेबल और इलेक्ट्रॉनिक गैजेट्स की अनुमति नहीं है।
4. रफ कार्य के लिए कोई अतिरिक्त शीट उपलब्ध नहीं कराई जाएगी।

D. सहायक संकेत

1. जल्दी और सही तरीके से काम करें।
2. यदि आप किसी उत्तर के बारे में सुनिश्चित नहीं हैं, तो अपने सर्वोत्तम विकल्प को चिह्नित करें और बेतहाशा अनुमान लगाने से बचें।

E. परीक्षण के पूरा होने पर

1. कृपया सुनिश्चित करें कि आपका विवरण ठीक से भरा गया है।
2. परीक्षण पुस्तिका निरीक्षक को सौंप दें।
3. सुनिश्चित करें कि आपका विवरण OMR शीट में ठीक से भरा गया है।

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Space for Rough Work

APTITUDE

PART - I

- X introduces Y saying "He is the husband of the granddaughter of the father of my father". How is Y related to X?
 (a) Brother (b) Son
 (c) Brother-in-law (d) Nephew
- Walking at 5 km/hr a student reaches his school from his house 15 minutes early and walking at 3 km/hr he is late by 9 minutes. What is the distance his school and his house?
 (a) 5 km (b) 8 km
 (c) 3 km (d) 2 km
- A shopkeeper sells an article at a profit of 20%. If the CP is Rs. 100, then the SP is Rs.?
 (a) 120 (b) 110
 (c) 100 (d) 90
- A bag contains 3 red balls, 4 blue balls, and 5 green balls. What is the probability of drawing a red ball from the bag?
 (a) $\frac{1}{3}$ (b) $\frac{1}{2}$
 (c) $\frac{1}{4}$ (d) $\frac{1}{5}$
- Which of the following is the correct order of the fractions from smallest to largest?
 (a) $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ (b) $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}$
 (c) $\frac{1}{2}, \frac{1}{4}, \frac{1}{3}$ (d) $\frac{1}{3}, \frac{1}{4}, \frac{1}{2}$
- If the word LIGHT is coded as GHIJK, how is the word BRIGHT coded?
 (a) ABCDEF (b) CDEFGH
 (c) CDEFGI (d) DEFGHI

- Three statements are given, followed by three conclusions numbered I, II and III. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

Statements:

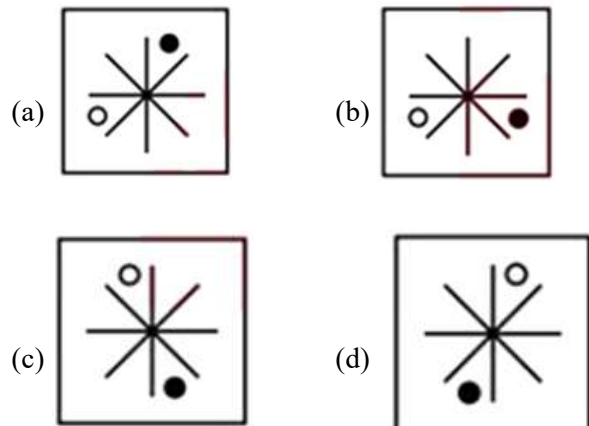
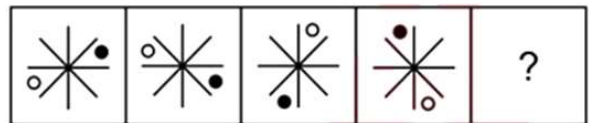
Some hexagons are rectangles.
 Some rectangles are decagons.
 All decagons are rhombuses.

Conclusions:

- I. Some rhombuses are rectangles.
 II. Some rhombuses are hexagons.
 III. Some decagons are hexagons.

- (a) Only conclusions I and II follow
 (b) Only conclusion I follows
 (c) Only conclusions I and III follow
 (d) Only conclusion II follows

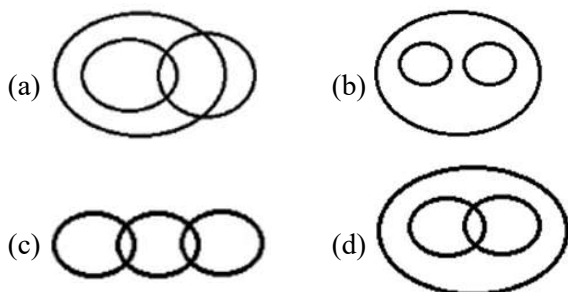
- Select the figure that will come next in the following figure series.



Space for rough work

9. Select the Venn diagram that best represents the relationship between the following classes.

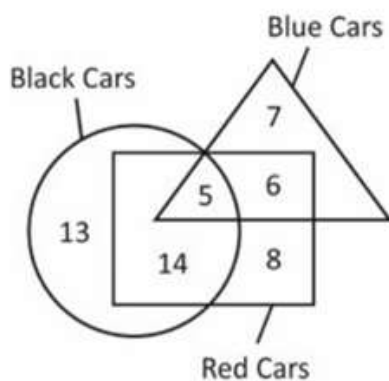
Women, Professors, Windows



10. M's wife is N's daughter-in-law. P is the husband of O, who is the sister of M. How is P related to N?

- (a) Son-in-law (b) Brother
(c) Nephew (d) Cousin

11. How many red cars are there?



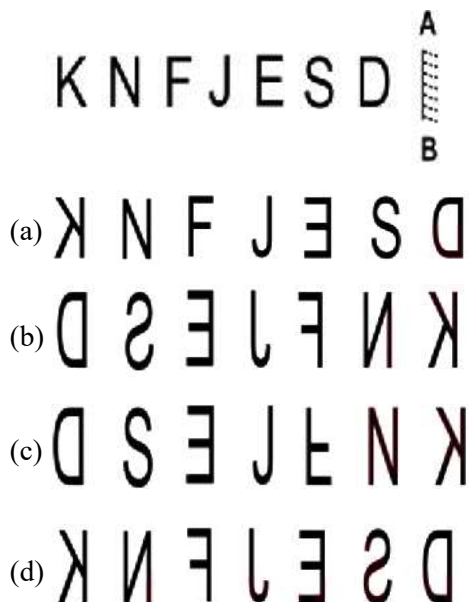
- (a) 28 (b) 22
(c) 31 (d) 33

12. Words given on the left side of (::) are related with each other by some Logic/Rule/Relation. Selection the missing word/word pair on the right side of (::) from the given alternatives based on the same Logic/Rule/Relation.

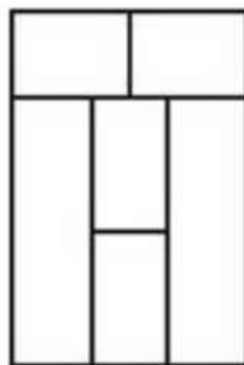
Tea : Cup :: ?

- (a) Paper : Pulp (b) Food : Plate
(c) Milk : Drink (d) Glass : Water

13. Select the correct mirror image of the combination when the mirror is line AB as shown.



14. How many quadrilaterals are there in the given figure?



- (a) 14 (b) 13
(c) 12 (d) 11

15. In the following question, select the missing number from the given series.

20, 22, 26, 32, 40, ?

- (a) 48 (b) 54
(c) 52 (d) 50

Space for rough work

PHYSICS

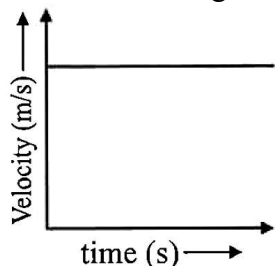
PART - II

16. A particle is moving in a circular path of radius r . The displacement after half a circle would be
- (a) zero (b) πr
(c) $2r$ (d) $2\pi r$
17. Which of the following situations involves, the Newton's second law of motion?
- (a) A force can stop a lighter vehicle as well as a heavier vehicle which are moving
(b) A force can accelerate a lighter moving vehicle more easily than a heavier moving vehicle
(c) A force exerted by a lighter vehicle on collision with a heavier vehicle results in both the vehicles coming to a standstill
(d) A force exerted by the escaping air from a balloon in the downward direction makes the balloon to go upwards
18. If the gravitational attraction of the earth suddenly disappears, then,
- (a) Weight of the body will become zero but the mass will remain unchanged.
(b) Weight of the body will remain unchanged but the mass will become zero.
(c) Both mass as well as weight will be zero.
(d) Neither mass nor weight will be zero
19. Which one of the following is not the unit of energy?
- (a) Joule (b) Newton-metre
(c) Kilowatt (d) Dyne-cm
20. Correct expression for the relation between wave velocity, wave frequency and wavelength is :
- (a) Wavelength = wave frequency $\times$ wave velocity
(b) Wavelength + wave frequency = wave velocity
(c) Wavelength / wave frequency = wave velocity
(d) Wavelength $\times$ wave frequency = wave velocity
21. Yuvika during basketball practice, thrown the ball of mass 0.3 kg vertically upwards with the velocity 4.9 m/s. It travels a straight path and just reaches the basket. The height of the basket is _____ from the point the ball is thrown.
- (a) 1.225 m
(b) 0.25 m
(c) 9.8 m
(d) 2.25 m
22. The average power required to lift a 100 kg mass through a height of 90 metres in approximately one and half minute would be
- (a) 50 J/s (b) 90 J/s
(c) 100 J/s (d) 980 J/s
23. Bowling speed of a bowler in km/h is given by for one over. What is the average distance covered by the ball in 1 hour?
- | | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|
| Ball | 1 | 2 | 3 | 4 | 5 | 6 |
| Speed | 135 | 143 | 132 | 130 | 140 | 145 |
- (a) 145 km (b) 137.5 km
(c) 825 m (d) 137.5 m

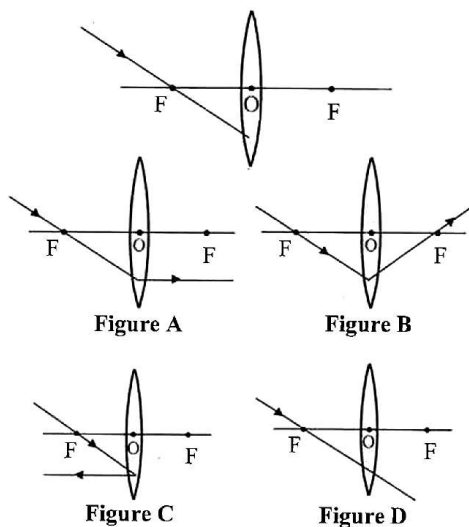


Space for rough work

24. Velocity-time graph of a moving particle of mass 2 kg is shown below. The force acting on the particle is

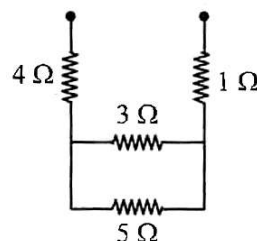


- (a) 0
(b) 4 N
(c) 8 N
(d) 10 N
25. The image formed by a convex mirror is observed to be virtual, erect and larger than the object. Where should be the position of the object?
- (a) Between the principal focus and the centre of curvature
(b) At the centre of curvature
(c) Beyond the centre of curvature
(d) Between the pole of the mirror and its principal focus
26. Which of the following ray diagrams is correct for the ray of light incident on a lens shown in figure?

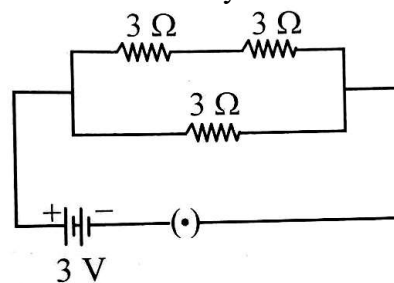


- (a) Figure A
(b) Figure B
(c) Figure C
(d) Figure D

27. In the given combination of resistors, the two resistors _____ and _____ are connected in parallel.



- (a) 4 Ω , 1 Ω
(b) 3 Ω , 5 Ω
(c) 3 Ω , 1 Ω
(d) 4 Ω , 5 Ω
28. Three resistors of 3 Ω each are connected to a battery of 3 V as shown in diagram. Calculate the current drawn from the battery.



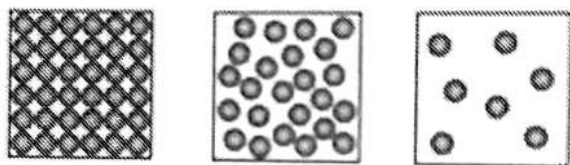
- (a) 1 A
(b) 3 A
(c) 1.5 A
(d) 2 A
29. Microphone and loudspeakers work on the principle of _____ effect of electric current
- (a) Optical
(b) Magnetic
(c) Chemical
(d) Heating
30. Which of the following terms does not represent electrical power in a circuit?
- (a) I^2R
(b) IR^2
(c) VI
(d) V^2/R

Space for rough work

CHMISTRY

PART - III

31. The states of matter (solid, liquid, gas) arise due to the variation in the characteristics of the particles of matter.



Which of the following is not the property of a solid?

- (a) Fixed volume
 - (b) Fixed boundary
 - (c) Non-rigid
 - (d) Negligible compressibility
32. Value of 25°C in kelvin will be
- (a) 273 K
 - (b) 298 K
 - (c) 398 K
 - (d) 25 K
33. Which of the following is an alloy
- (a) Gold
 - (b) Silver
 - (c) Steel
 - (d) Carbon
34. Which of the following is an element
- (a) Ice
 - (b) Air
 - (c) Lime stone
 - (d) Iron
35. The chemical symbol of mercury is :
- (a) Mu
 - (b) Hg
 - (c) Cu
 - (d) Mr

36. The valency of sulphate ion is :

- (a) 1
- (b) 2
- (c) 3
- (d) 4

37. In 1932, J. Chadwick discovered a sub-atomic particle which had no charge and a mass nearly equal to that of a proton. It was eventually named as :

- (a) Nucleon
- (b) Neutron
- (c) Alpha-particle
- (d) Electron

38. In the nucleus of ${}^{40}_{20}\text{Ca}$, there are _____

- (a) 40 protons and 20 electrons
- (b) 20 protons and 20 electrons
- (c) 20 protons and 20 neutrons
- (d) 20 protons and 20 neutrons

39. Which of the following is a chemical change

- (a) Evaporation of water
- (b) Melting of iron
- (c) Sublimation of naphthalene
- (d) Burning of wood

40. Which of the following is a balanced chemical equation?

- (a) $3\text{Fe} + \text{H}_2\text{O} \longrightarrow \text{Fe}_3\text{O}_4 + \text{H}_2$
- (b) $4\text{Al} + 3\text{O}_2 \longrightarrow 2\text{Al}_2\text{O}_3$
- (c) $\text{CO} + \text{H}_2 \longrightarrow \text{CH}_3\text{OH}$
- (d) $\text{P}_4\text{O}_{10} + \text{H}_2\text{O} \longrightarrow 4\text{H}_3\text{PO}_4$

Space for rough work

41. Which of the following is used for dissolution of gold?

- | | |
|-----------------------|--------------------|
| (a) Hydrochloric acid | (b) Sulphuric acid |
| (c) Nitric acid | (d) Aqua regia |

42. Which of the following are not ionic compounds?

- | | |
|----------------------|--------------------|
| (i) KCl | (ii) HCl |
| (iii) CCl_4 | (iv) NaCl |
| (a) (i) and (ii) | (b) (ii) and (iii) |
| (c) (iii) and (iv) | (d) (i) and (iii) |

43. Two diatomic molecules which have single covalent bond between the atoms are _____

- | | |
|----------------------------------|----------------------------------|
| (a) H_2 , N_2 | (b) O_2 , H_2 |
| (c) Cl_2 , H_2 | (d) N_2 , Cl_2 |

44. Carbon has the unique ability to form bonds with other atoms of carbon, giving rise to large molecules. This property is called _____.

- | | |
|------------------|----------------|
| (a) Allotropy | (b) Catenation |
| (c) Tetravalency | (d) Isomerism |

45. Quick lime is formed by heating _____

- | | |
|---------------|----------------------|
| (a) Limestone | (b) Slaked lime |
| (c) Calcium | (d) Sodium carbonate |

Space for rough work

MATHEMATICS

PART - IV

46. $(x + a)(x + b) = x^2 + \dots\dots\dots x + ab$

- (a) $a + b$ (b) ab
(c) $a - b$ (d) $\frac{a}{b}$

47. $\sqrt{12} + \sqrt{27}$ is equal to

- (a) $2\sqrt{3}$ (b) 6
(c) $5\sqrt{3}$ (d) $5\sqrt{6}$

48. The value of $(-2)^{-4}$ is

- (a) $\frac{-1}{16}$ (b) $\frac{1}{16}$
(c) $\frac{1}{4}$ (d) $\frac{-1}{4}$

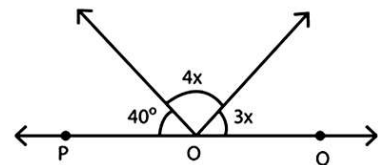
49. One of the zeroes of the polynomial $P(x) = 2x^2 + 7x - 4$ is

- (a) 2 (b) $\frac{1}{2}$
(c) $\frac{-1}{2}$ (d) -2

50. The point at which two coordinate axes meet is called the _____.

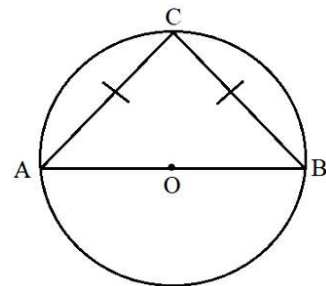
- (a) Abscissa (b) Ordinate
(c) Origin (d) Quadrant

51. In given figure, POQ is a line. The value of x is.



- (a) 20° (b) 25°
(c) 30° (d) 35°

52. In the given figure, if AOB is a diameter of the circle and $AC = BC$, then $\angle CAB$ is equal to :



- (a) 30° (b) 60°
(c) 90° (d) 45°

Space for rough work

53. A coin is tossed 100 times and Head appears 64 times. The probability of getting a tail is:

- (a) $\frac{18}{25}$ (b) $\frac{9}{25}$
(c) 0 (d) 1

54. The common difference of the A.P.

$$\frac{1}{2b}, \frac{1-6b}{2b}, \frac{1-12b}{2b}, \dots \text{ is}$$

- (a) $2b$ (b) $-2b$
(c) 3 (d) -3

55. The length of the longest pole that can be put in a room of dimensions $(10\text{ m} \times 10\text{ m} \times 5\text{ m})$ is

- (a) 15 m (b) 16 m
(c) 10 m (d) 12 m

56. $\frac{2 \tan 30^\circ}{1 + \tan^2 30^\circ} =$

- (a) $\sin 60^\circ$ (b) $\cos 60^\circ$
(c) $\tan 60^\circ$ (d) $\sin 30^\circ$

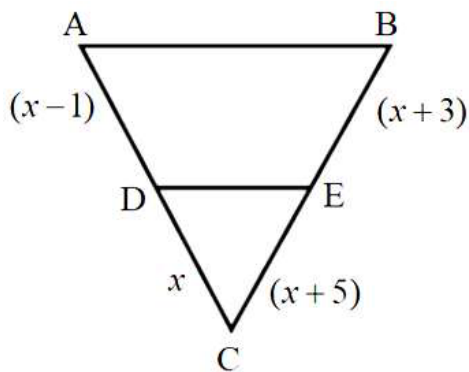
57. The angle of elevation of the top of a tower at a point on the ground 50 m away from the foot of the tower is 45° . Then the height of the tower (in metres) is

- (a) $50\sqrt{3}$ (b) 50
(c) $\frac{50}{\sqrt{2}}$ (d) $\frac{50}{\sqrt{3}}$

58. The mode = 80 and mean = 110, the median is

- (a) 110 (b) 120
(c) 100 (d) 90

59. In the given figure, if $DE \parallel AB$, the value of x is



- (a) 2 (b) 3
(c) 5 (d) 7

60. $\pi - \frac{22}{7}$ is

- (a) A rational number (b) An irrational number
(c) A prime number (d) An even number

Space for rough work