Roll Number

STATE COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

STATE LEVEL NATIONAL TALENT SEARCH EXAMINATION – 2016

Class – X

Part – I

SCHOLASTIC APTITUDE TEST (SAT)

Time : 90 Minutes **Maximum Marks : 100**

INSTRUCTIONS TO CANDIDATES :

Read the following instructions before you answer the questions. Answers are to be given in a SEPARATE OMR ANSWER SHEET provided inside this booklet. Break the seal and start answering the questions once asked to do so.

1. Please write your ROLL NUMBER very clearly (only one digit in one block) as given in your Admission Card.
2. There are **100** questions in this test. The questions are arranged in the following order :
   - Questions **1 to 40** belong to Science Subjects.
   - Questions **41 to 60** are on Mathematics Subjects.
   - Questions **61 to 100** are on Social Science.
3. Select the most suitable answer for each question and completely darken the circle corresponding to the correct alternative as shown below.

Correct Method	Wrong Method
① ② ● ④	① ⊗ ⊘ ◒

4. All questions carry ONE MARK each.
5. There is no negative mark. Every correct answer will be awarded one mark.
6. Do not write your name on any part of the question booklet or on the answer sheet.

പരീക്ഷാർത്ഥികൾക്കുള്ള നിർദ്ദേശങ്ങൾ :

ചോദ്യങ്ങൾക്ക് ഉത്തരം എഴുതാൻ തുടങ്ങുന്നതിന് മുമ്പ് താഴെ കൊടുത്തിരിക്കുന്ന നിർദ്ദേശങ്ങൾ സശ്രദ്ധം വായിക്കുക. ഉത്തരം നൽകേണ്ടത് ഒരു **പ്രത്യേക ഉത്തരക്കടലാസിൽ** ആണ്. നിർദ്ദേശത്തിനു ശേഷം മാത്രമേ സീൽ തുറക്കുവാനും, ഉത്തരം എഴുതുവാനും പാടുള്ളൂ.

1. നിങ്ങളുടെ റോൾ നമ്പർ (ഒരു കള്ളിയിൽ ഒരു അക്കം മാത്രം) വ്യക്തമായി നിങ്ങളുടെ പ്രവേശന പത്രത്തിൽ തന്നിരിക്കുന്നതു പോലെ എഴുതുക.
2. ഈ പരീക്ഷാപുസ്തകത്തിൽ **100** ചോദ്യങ്ങളുണ്ട്. ചോദ്യങ്ങൾ താഴെ കൊടുത്തിരിക്കുന്ന പ്രകാരം ക്രമപ്പെടുത്തിയിരിക്കുന്നു
   - **1** മുതൽ **40** വരെയുള്ള ചോദ്യങ്ങൾ ശാസ്ത്രത്തിൽ നിന്ന്.
   - **41** മുതൽ **60** വരെയുള്ള ചോദ്യങ്ങൾ ഗണിതത്തിൽ നിന്ന്.
   - **61** മുതൽ **100** വരെയുള്ള ചോദ്യങ്ങൾ സാമൂഹ്യ ശാസ്ത്രത്തിൽ നിന്ന്.
3. ഓരോ ചോദ്യത്തിനും ഉചിതമായ ഉത്തരം തിരഞ്ഞെടുത്ത് ശരിയായ ഉത്തരത്തെ സൂചിപ്പിക്കുന്ന വൃത്തം മാത്രം താഴെ കൊടുത്തിരിക്കുന്ന വിധത്തിൽ പൂർണ്ണമായി കറുപ്പിക്കുക.

ശരിയായ രീതി	തെറ്റായ രീതി
① ② ● ④	① ⊗ ⊘ ◒

4. എല്ലാ ചോദ്യങ്ങൾക്കും **ഒരു** മാർക്ക് വീതം.
5. നെഗറ്റീവ് മാർക്ക് ഇല്ല. ഓരോ ശരി ഉത്തരത്തിനും ഒരു മാർക്ക് വീതം ലഭിക്കും.
6. നിങ്ങളുടെ പേര് ചോദ്യ പുസ്തകത്തിന്റെയോ ഉത്തരക്കടലാസിന്റെയോ ഒരു ഭാഗത്തും എഴുതുവാൻ പാടില്ല.

SEAL

State Level National Talent Search Examination – 2016
Scholastic Aptitude Test

1. The enzymes commonly called 'Genetic Scissors' are
(1) Ligases (2) Lipases (3) Restriction endonucleases (4) Proteases
Answer (3)
Solution
The enzymes commonly called genetic scissor's are

2. Chooses the group that contains fungi only
(1) Euglena, lichen (2) Yeast, mushroom (3) Anabaena, Amoeba (4) Paramecium, mycoplasma
Answer (2)
Solution
Choose the group that contains fungi only

3. Climbers grow towards and around a support is an example of
(1) Hydrotropism (2) Haptotropism (3) Geotropism (4) Phototropism
Answer (2)
Solution
Climbers grow to wards and around a support is an example of

4. Select the correct statement regarding the arrangement of aminoacidds in beta $(\ )$ chain of haemoglobin
(1) Same in man and rat (2) Same in man and chimpanzee
(3) Different in man and chimpanzee (4) same in man and gorilla
Answer (3)
Solution
Select the correct statement regarding the arrangement of amino ad in beta chain of hemoglobin

5. The gas responsible for ozone depletion is
(1) Nitrogen and argon (2) Carbon dioxide (3) Carbon monoxide (4) Chlorofluorocarbons
Answer (4)
Solution
The gas responsible for O_3 depletion

6. Chromosomes are composed of
(1) DNA and protein (2) RNA and lipids (3) Ribosomes and lipids (4) DNA and lipids
Answer (1)
Solution
Chromosomes are composed of

7. Choose the immune response of basophil
(1) Engulfs and destroys the bacteria
(2) Produces chemical substances that destroy foreign bodies
(3) Dilates the blood vessels
(4) Produces chemical substances needed for inflammatory response
Answer (1)
Solution
Choose the immure response of basophil

8. Decreases in the production of dopamine causes
(1) Parkinson's (2) Meningitis (3) Alzheimer's (4) Epilepsy
Answer (1)
Solution
Decrease in the production of dopamine causes

9. The excretory organ in cockroach is
(1) Kidney (2) Malpighian tubules (3) Contractile vacuoles (4) Nephridia
Answer (2)
Solution
Excretory organ in cockroach is

10. The three R's to save the environment represent
(1) Repeat, Reduce, Resale (2) Reuse, Reduce, Resale
(3) Recycle, Reuse, Repeat (4) Reduce, Recycle, Reuse

Answer (4)

Solution

The three R's to save environment represent

11. Gland are modified from of
(1) Epithelial tissue (2) Cardiac tissue (3) Muscular tissue (4) Connective tissue

Answer (1)

Solution

Glands are modified from of

12. Movement of water molecules from a region of its higher concentration to a region of its lower concentration through a semi permeable membrane is called
(1) Plasmolysis (2) Endocytosis (3) Osmosis (4) Diffusion

Answer (3)

Solution

Movement of water molecules from a region of its higher none to a region of its lower conc. through a semi permeable membrard is called

13. Which of the following statement is correct about tendons?
(1) Connect bones to bones (2) Connect bones to muscles
(3) Smoothen bound surfaces (4) Fibrous tissue with high flexibility

Answer (2)

Solution

Which of the following statement is correct about tendons?

14. Select the process that occurs in dark reaction
(1) Light energy is converted into chemical energy (2) Water splits into hydrogen and oxygen
(3) Hydrogen is added to carbon dioxide (4) Oxygen is evolved

Answer (3)

Solution

Select the process that occurs in dark reaction

15. Which of the following statements DO NOT match which the postulates of Bohr's mode of atom?
(a) Electrons are revolving around the nucleus in specified paths called orbits/shells
(b) Each shell is associated with definite amount of energy
(c)Electron, while revolving through a particular shell can increases or decreases its energy
(d) Energy of the shells decreases as their distance form nucleus increases

Select the correct alternative
(1) C and (d) (2) (b) and (c) (3) (a) and (c) (4) (b) and (d)

Answer (1)

Solution

The energy of electron in a particular cell is quantized
Energy of shells 1/Distance b/w nucleus & shell

16. Which of the following statements are NOT CORRECT?
(1) Isobars are atoms of same elements (2) Isotopes are atoms of different elements
(3) Isotones are atoms of same elements (4) Isotones are atoms of different elements

Answer (3)

Solution

Eg: Isobars - $^{40}_{18}Ar$ $^{40}_{20}Ca$

Isotopes - $^{1}_{1}H$ $^{2}_{1}H$

Isotones - $^{13}_{6}C$ $^{14}_{7}N$

17. Which of the following represents the sequence in which the given compounds are arranged in the increasing order of the electronegative difference of their component elements? $CH_4, NaCl, CO, Na_2O, MgCl_2$

(1) $CH_4 < MgCl_2 < CO < NaCl < Na_2O$ (2) $Na_2O < CO < MgCl_2 < NaCl < CH_4$

(3) $MgCl_2 < Na_2O < CO < CH_4 < NaCl$ (4) $CH_4 < CO < MgCl_2 < NaCl < Na_2O$

Answer (4)

Solution

e.n: O > Cl > C > H > Mg > Na

3.5 3 2.5 2.1

18. Water is a compound with relatively low molecular mass (18g mol^{-1}). But it exists as a liquid at room temperature. This is because

(1) Water molecules have angular geometry

(2) Elect negatively difference between hydrogen and oxygen is less

(3) Water hydrogen and oxygen is less

(4) Water is a universal solvent

Answer (3)

Conceptual

19. Which of the following represents pairs of metalloids?

(a) Si & Sb (b) Pb & Sb (c) Ru & Rh (d) Ge & As

(1) (b) and (d) (b) (a) and (c) (c) (b) and (c) (d) (a) and (d)

Answer (4)

Solution

Metalloids: Si

Ge As

Sb Tc

Po

20. Which of the following reactions requires the highest temperature to occur?

(1) $N_2 + O_2 \rightarrow 2NO$ (2) $2NO + O_2 \rightarrow 2NO_2$

(3) $NH_4NO_2 \rightarrow N_2 + 2H_2O$ (4) $4NO_2 + 2H_2O + O_2 \rightarrow 4HNO_3$

Answer (1)

Solution

Conceptual

21. The total number of elections in 1kg glucose $\left(C_6H_{12}O_6\right)$ is [Molecular mass of glucose is 18 u]

(1) 6.022×10^{23} (2) 1.8×10^{5} (3) 3.346×10^{21} (4) 3.2×10^{26}

Answer (4)

Solution

Glucose= $\frac{1000}{180}$

Molecules = $\frac{1000}{180}\times na$

No of electrons = $\frac{1000}{180}\times na\times 96 = 3.2\times10^{26}$

22. Which of the following are NOT CORECT for a gaseous reversible reaction when pressure is increased?

(a) Distance between gaseous molecules decreases

(b) Number of molecules per unit volume decreases

(c) Reaction proceeds in the direction in which there is increases in number of moles

(d) Reaction proceeds in the direction in which there is decrease in number of moles

Selection the correct alternative

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

Answer (4)

Solution

It is explained bases on lee chatelier principle conceptual

23. In which of the following solutions irons gets oxidized?
(a) Sliver nitrate (b) Zinc sulphate (c) Magnesium sulphate (d) Copper sulphate
(1) (b) and (d) (2) (a) and (c) (3) (b) and (c) (4) (a) and (d)

Answer (4)

Solution

Electron chemical series: $Li > Na > a > Mg > Al > Zm > Fe > Sn > Pb > M > Cu > Hg > Ag > Au$

24. When the reaction $Pb(NO_3)_2 \rightarrow 2PbO + NO_2 + O_2$ is balanced the coefficients of the reactants and products in the balanced reaction will be
(2) 4, 2, 1, 2 (2) 2, 2, 4, 1 (3) 2, 4, 1, 2 (4) 4, 2, 2, 2, 1

Answer (2)

Solution

$2Pb(No_3)_2 \rightarrow 2PbO + 4NO_2 + O_2$

25. What is the volume of N_2 gas formed at STP when 63g of $(NH_4)_2 Cr_2O_7$ is thermally decomposed according to the equation given below? (Atomic mass of Cr = 52, H = 1, N = 14, O = 16) $(NH_4)_2 Cr_2O_7 \rightarrow N_2 + 4H_2O + Cr_2O_3$
(1) 5.6L (2) 11.2L (3) 22.4L (4) 44.8L

Answer (1)

Solution

$(NH_4)_2 Cr_2O_7 \rightarrow N_2 + 4H_2O + Cr_2O_3$

$m = \frac{63}{252} = 0.25$

1 mole of N_2 at STP = 22.4 ℓ

0.25 mole of N_2 at STP = 5.6 ℓ

26. What is the number of s – electrons present in a chromium atom? (Atomic number of Cr – 24)
(1) 7 (2) 1 (3) 8 (4) 5

Answer (1)

Solution

$(r = 1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^1, 3d^5)$

27. The two elements X and Y have 5 and 7 valance electrons respectively. What will be the most probable formula of the compound formed between them?
(1) X_7Y_5 (2) X_5Y_7 (3) X_3Y (4) XY_3

Answer (4)

Solution

	No of valence electrons	Valency
X	5	+ 3
Y	7	- 1

x^{+3}, y^{-1}

xy_3

28. The average acceleration of a body during a time interval 't' is given by the slope of its
(1) Velocity – speed graph (2) Velocity – time graph
(3) Speed – time graph (4) Velocity – displacement graph

Answer (2)

Conceptual

29. An object moving at a constant speed in a circular path experiences a force which is
(1) In the direction of motion
(2) Outwards and at $45°$ to the direction of motion
(3) Inwards and at right angles to the direction of motion
(4) Opposite to the direction of motion

Answer (3)

Solution

Inwards and at right angles to the direction of motion

30. A vehicle will acceleration as long as
(1) Air resistance is greater than the thrust
(2) Air resistance is greater then the inertia
(3) Thrust is greater than the sum of air resistance and friction
(4) Friction is greater then the thrust

Answer (3)

Conceptual
Thrust is greater than sum of air resistance and friction

31. Which of the following statement is correct? The force acting on an object is equivalent to
(1) Its change in momentum
(2) The impulse it receives per second
(3) The energy it gains per second
(4) Its acceleration per meter

Answer (2)

Conceptual
The impulse it receives per second

32. Work done by the force of gravity on a satellite of 500kg at a height of 36000km is
(1) 0 J
(2) 10^{31} J
(3) 10^{21} J
(4) $10^{9.8}$ J

Answer (1)

Conceptual
Satellite is in circular orbit. So displacement is perpendicular to force

33. Up thrust of water acting on a wooden cube of side 10cm immersed completely in water is (density of water = 1000 kgm^{-3} and g = 10 ms^{-2})
(1) 5 N
(2) 10N
(3) 3 N
(4) 2N

Answer (2)

Conceptual

Up thrust (or) Buoyant force = $V_{in} \rho_f g$
$= (10cm)^3 (1000kg/m^3)(10m/s)$
$= 10N$

34. Energy transferred to a stone of weight 10N, falling freely form the top of a tower of 250m height is about
(1) 25000J
(2) 250000J
(3) 2500J
(4) 250J

Answer (3)

Conceptual
Weight = mg = 10N
Height (H) = 250m
Potential energy U = mgH = (10) (250)
= 2500J

35. The factor on which the speed of sound through air doesn't depend is
(1) Humidity
(2) Density
(3) Temperature
(4) Frequency of sound

Answer (4)

Conceptual
Frequency of sound

36. The waves that required a material medium for their propagation are called
(1) Matter waves
(2) Electromagnetic waves
(3) Carrier waves
(4) Mechanical waves

Answer (4)

Conceptual
Mechanical waves

37. How much heat does a 40W bulb generate in 1 hour?
(1) 144000J
(2) 144J
(3) 1.44J
(4) 14J

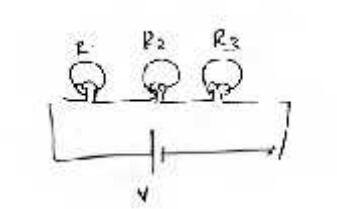
Answer (1)

Conceptual
Power = 40W
Time = 1 hour = 3600sec
Energy = 40(3600)
= 144000J

38. Three bulbs are rated 40W, 60W and 100W. Which bulb will glow brightly if they are connected in series across a 220V source?
(1) 40W (2) 60W (3) 100W (4) All will glow equally bright

Answer (1)

Conceptual



Rater power

$P_1 = 40W, R_1 = \frac{V^2}{40}$

$P_2 = 60W, R_2 = \frac{V^2}{60}$

$P_3 = 100W, R_3 = \frac{V^2}{100}$

Voltage is divided in the ratio of resistance

$$P'_1 : P'_2 : P'_3 = i^2R_1 : i^2R_2 : i^2R_3$$

Power generated $= R_1 : R_2 : R_3$

$$= \frac{1}{40} : \frac{1}{60} : \frac{1}{100} = 15 : 10 : 6$$

$\therefore$ Bulb of 40w glows brighter

39. A device which uses the phenomenon of mutual induction is
(1) AC generator (2) DC generator (3) Induction coil (4) Transformer

Answer (4)

Conceptual

Transformer

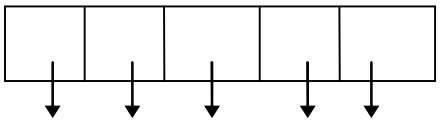
40. Indian Regional Navigation Satellite System (IRNSS) has a group of _____ satellites
(1) 3 (2) 5 (3) 7 (4) 9

Answer (3)

41. Using the digits 1, 2, 3, 4, 5 without repetition, 120 five – digit numbers can be made. How many five – digit numbers can be made using the digits 0, 1, 2, 3, 4 without repletion?
(1) 120 (2) 100 (3) 96 (4) 24

Answer (3)

Solution



4 x 4 x 3 x 2 x 1 = 96

Zero can't come at 1st place, so 4 choices

42. In the arithmetic sequence $\frac{3}{4}, 1\frac{1}{2}, 2\frac{1}{4}, \ldots$ at which position does a perfect square appear first?
(1) 192 (2) 108 (3) 48 (4) 12

Answer (2)

Solution

$\frac{3}{4}, \frac{6}{4}, \frac{9}{4}, \frac{12}{4} \ldots \frac{36}{4}$ 12th term

43. How much more is the sum of the first 40 terms of the arithmetic sequence 11, 21, 31 … then the sum of the first 40 terms of the arithmetic sequence 12, 23, 34…?

(1) 1600 (2) 820 (3) 780 (4) 40

Answer (2)

Solution

$$S_{40} = \frac{40}{2}\left(2\times 11 + 39\times 10\right)$$

$$S_{40} = \frac{40}{2}\left(2\times 12 + 39\times 11\right)$$

$$S_{40} - S_{40} = \frac{40}{2}\left(2\times 1 + 39\times 1\right) = 820$$

44. The difference of the squares of two natural numbers is 101. What is the sum of their squares?

(1) 5000 (2) 5100 (3) 5101 (4) 5102

Answer (3)

Solution

$$a^2 - b^2 = \left(a-b\right)\left(a+b\right) = 101\times 1$$

$$a+b = 101$$

$$a-b = 1$$

$$\Rightarrow a = 51, b = 50$$

45. Each three – digit numbers is written in a paper slip and put in a box. If one slip is drawn form it, what is the probability of its being a multiple of 9 which ends in 5?

(1) $\frac{1}{9}$ (2) $\frac{1}{18}$ (3) $\frac{1}{90}$ (4) $\frac{1}{100}$

Answer (3)

Solution

Multiple of ends in s mean add multiple of 45

$$a = 135, d = 90; an = 945$$

$$945 = 135 + \left(n-1\right)d; d = 90$$

$$\Rightarrow n = 10$$

$$\therefore \text{Probability} = \frac{10}{900} = \frac{1}{90}$$

46. What number added to the polynomial $3x^2 + 5x$ gives the square of a first degree polynomial?

(1) $\frac{25}{12}$ (2) $\frac{25}{24}$ (3) $\frac{25}{36}$ (4) $\frac{25}{48}$

Answer (1)

Solution

$$3\left(x^2 + \frac{5x}{3}\right) = 3\left(x^2 + \frac{5x}{36} + \frac{25}{2}\right) - 3x\frac{25}{36}$$

$$\therefore Ans = \frac{25}{12}$$

47. In the polynomial $p\left(x\right) = x^2 - 10x + 2$ what number should be taken as x to get the least possible number at p(x)?

(1) 10 (2) 5 (3) 0 (4) – 5

Answer (2)

Solution

$x^2 - 10x + 2 = x^2 - 10x + 25 - 23 = \left(x-5\right)^2 - 23$ Minimum at x = 5

48. If all real numbers are taken as x, what is the smallest number got as $|x-1|+|x-2|+|x-4|$?

(1) 1 (2) 2 (3) 3 (4) 4

Answer (2)

Solution

$|x-1|+|x-2|+|x-4|$ is minimum at x = s

$\therefore$ Smallest value = 3

49. The areas of two squares are in the ratio a: b and their perimeters are in the ration b: 8a. What is the ratio of their sides?

(1) 1: 8 (2) 1: 4 (3) 1: 2 (4) 1: $\sqrt{2}$

Answer (3)

Solution

$$\frac{A_1}{A_2}=\frac{a}{b}\ \&\ \frac{P_1}{P_2}=\frac{b}{8a}$$

$$\Rightarrow \frac{a^2}{a^2}=\frac{a}{b}$$

$$\Rightarrow \frac{a}{b}=\left(\frac{b}{8a}\right)^2$$

$$\Rightarrow \frac{a}{b}=\frac{1}{4}$$

50. The sum of a number and its reciprocal is 4. What is their difference?

(1) $\sqrt{2}$ (2) $\sqrt{3}$ (3) $2\sqrt{2}$ (4) $2\sqrt{3}$

Answer (4)

Solution

$$x+\frac{1}{x}=4$$

$$x-\frac{1}{x}=\sqrt{\left(x+\frac{1}{x}\right)^2-4}$$

51. Which of the polygons given below cannot be drown by joining the numbers on a clock?

(1) Equilateral triangle (2) Square (3) Regular pentagon (4) Regular hexagon

Answer (2)

Solution

12 is divisible by 2, 3, & 6 but net by 5 regular pentagon

52. The angles of a cyclic quadrilateral are in one of the ratios given below. Which is it?

(1) 1: 2: 3: 4 (2) 2: 1: 3: 4 (3) 1: 3: 2: 4 (4) 1: 4: 3: 2

Answer (2)

Solution

If ratio of angle are a: b: C: d then a+c must equal to b+d so 2: 1: 3: 4

53. The angles of a 15 –sided polygon are in arithmetic sequence. Which of those given below is an angle of this polygon?

(1) 128° (2) 130° (3) 132° (4) 156°

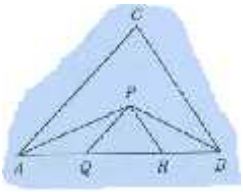
Answer (4)

Solution

$$\frac{15}{2}(2a+14d)=180\times 13$$

$$\Rightarrow a+7d=156$$

54. The bisectors of $\angle A$ and $\angle B$ of the triangle ABC meet at P and PQ, PR are parallel to AC and BC



The perimeter of triangle PQR is 30 centimeters. What is the length of AB?

(1) 20 (2) 25 (3) 30 (4) 45

Answer (3)

Solution

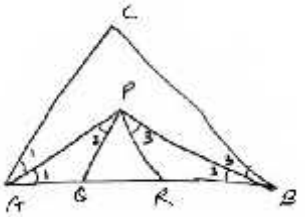
$PQ \parallel AC$

$\Rightarrow \angle 1 = \angle 2$

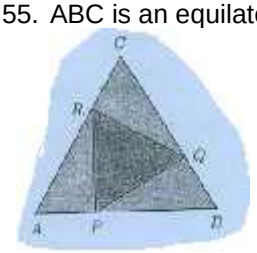
$\Rightarrow PQ = AQ$

Similarly, PR = BR

$\therefore$ AB = 30



55. ABC is an equilateral triangle and the points P, Q, R divided to sides AB, BC, CA in the ratio 1: 2



If the area of triangle PQR is 60 square centimeters, what is the area of triangle ABC?

(1) 180 (2) 150 (3) 120 (4) 90

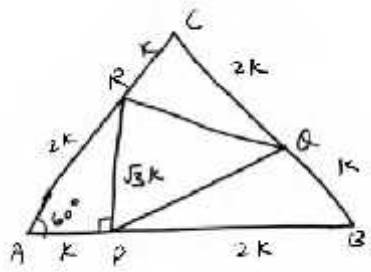
Answer (1)

Solution

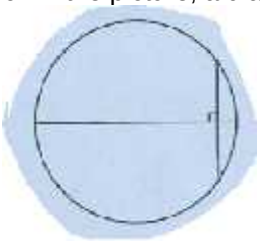
$$\frac{ar\Delta ABC}{ar\Delta PQR} = \left(\frac{AC}{PR}\right)^2$$

$$= \left(\frac{3K}{\sqrt{3}K}\right)^2 = 3$$

$\therefore ar\Delta ABC = 180$



56. In the picture, a diameter of the circle and a chord perpendicular to it are drawn



The length of the chord is 24 centimeters and it cuts the diameter in the ratio 9: 1. What is the diameter in counters?

(1) 20 (2) 30 (3) 40 (4) 60

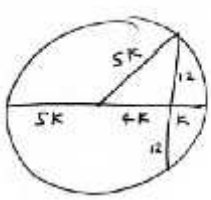
Answer (3)

Solution

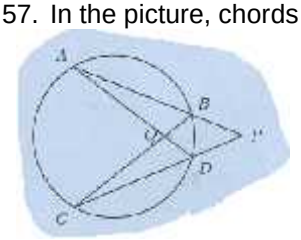
3k = 12

⇨ k = 4

⇨ $\therefore$ d = 10k = 40



57. In the picture, chords AB and CD of the circle are extended to meet at P and the chords AD and BC intersect at Q



The central angle of the smaller arc AC is $120°$ and the central angle of the smaller arc BC is $30°$ what are $\angle APC$ and $\angle AQC$?

(1) $15°, 60°$ (2) $45°, 75°$ (3) $40°, 80°$ (4) $50°, 80°$

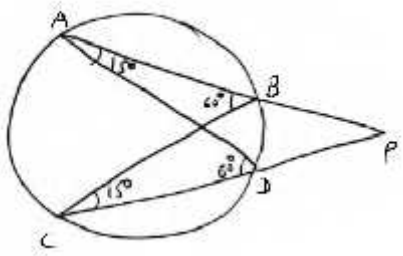
Answer (2)

Solution

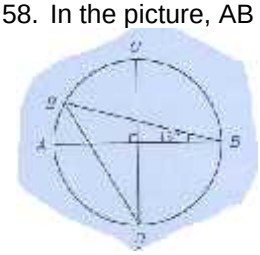
Angle made by AC at circumference

$\frac{120°}{2} = 60°$

$\therefore 45° and 75°$



58. In the picture, AB and CD are diameters of the circle and E is a point on the circle



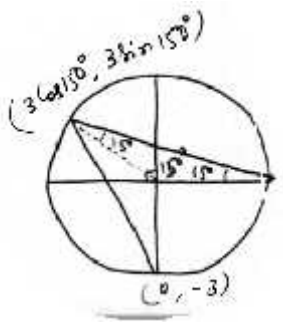
The diameter of the circle is 6 centimeters. What is the length of DE?

(1) $2\sqrt{3}$ (2) $3\sqrt{3}$ (3) $4\sqrt{3}$ (4) $6\sqrt{3}$

Answer (2)

Solution

DE = distance between $(0,-3)$ and $\left(\frac{-3\sqrt{3}}{2}, \frac{3}{2}\right)$



59. An exterior angle of a regular polygon is $36°$ and one of its longest diagonals is 10centimeters what is its perimeter?

(1) 100 sin $18°$ (2) 100 sin $36°$ (3) 100 sin $54°$ (4) 100 sin $72°$

Answer (2)

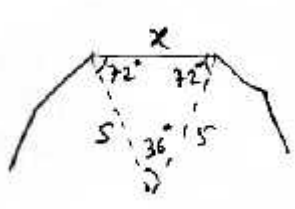
Solution

$\frac{360°}{n} = 36°$

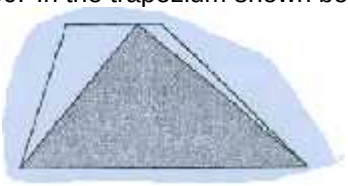
$\Rightarrow n = 10$

$\frac{x}{\sin 36°} = \frac{x}{\sin 72°}$

$\Rightarrow x = \frac{5}{2\cos 36°} = \frac{5}{2}\sin 54°$



60. In the trapezium shown below, the longer of the parallel sides is three times the shorter



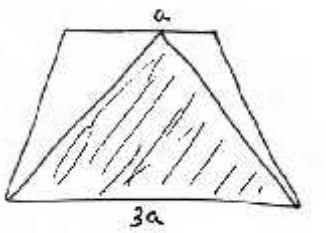
If a point is marked within the trapezium, what is the probability that it would be within the shaded triangle?

(1) $\frac{1}{2}$ (2) $\frac{2}{3}$ (3) $\frac{3}{4}$ (4) $\frac{4}{5}$

Answer (3)

Solution

$$\frac{\frac{1}{2}\times h\times 3a}{\frac{1}{2}\times h\times\left(3a+a\right)}=\frac{3}{4}$$



61. The practice of land grants in India was started by

(1) Cholas (2) Pandyas (3) Satavahanas (4) Gupatas

Answer (4)

62. Rearrange chronologically

(a) Fall of Bastille (2) Oath of Tennis court

(3) National Assembly (d) Execution of Louis X VI

(1) a b c d

(2) c a b d

(3) b c a d

(4) d a b c

Answer (3)

63. Which among the following is the holy book of Buddhism?

(1) Purvas (2) Angas (3) Tripitakas (4) Zend Avesta

Answer (3)

64. Which among the following is not correctly matched

(1) Mrichckatikam – Sudraka (2) Svapnavasavadatta – Bhasa

(3) Devichandraguptam – Bharavi (4) Dasakumaracharita – Dandi

Answer (3)

65. Who among the following was the God of 'Marutam' as recorded in old Tamil literature?

(1) Cheyon (2) Mayon (3) Kottavai (4) Ventan

Answer (4)

66. Which is the correct chronological order of the following events?

(a) Quit India Movement (b) Salt Satyagraha

(c) Jallianwala Bagh Tragedy (d) Naval Mutiny

(1) a b d c

(2) b c a d

(3) c b a d

(4) d c b a

Answer (3)

67. The term 'tithe' stands for

(1) Tax levied by the Church (2) Tax levied by the state (3) Tax levied by the feudal lord (4) Tax on animal

Answer (1)

68. Mahadandanayaka under the Gupat rule was taking car of
(1) Revenue (2) Police (3) Judiciary (4) Army
Answer (3)

69. Terms 'Zat' and 'Sawar' are related to
(1) lqta system (2) Jagirdari system (3) Ryotwari system (4) Mansabdari system
Answer (4)

70. 'The Fat Map' was
(1) An atom bomb (2) A ship (3) A code name of the Gestapo (4) Name of an autobiography
Answer (1)

71. Which among the following is connected with the idea of 'Village Automy'?
(1) Sivaji (2) Krishna Deva Raya (3) Chola administration (4) Sultanate of Delhi
Answer (3)

72. The film 'Grand Illusion' tells the story of
(1) The French Revolution (2) The Russian Revolution
(3) The First World War (4) the Second World War
Answer (3)

73. Which among the flowing water ways is considered as National water Way 1?
(1) The Brahmaputra river between Sadiya and Dhubri
(2) The West coast canal in Kerala
(3) The Ganga river between Allahabad and Haldia
(4) Buckingham canal of Andhra Pradesh
Answer (3)

74. The industries which supply their products as raw materials for other industries are called as
(1) Consumer good industries (2) Basic industries
(3) Footloose industries (4) Agro – bases industries
Answer (2)

75. The finest iron ore with more the 70% iron content is
(1) Hematite (2) Magnetite (3) Limonite (4) Siderite
Answer (2)

76. Manikaran in Himachal Pradesh is know for
(1) Geo – thermal energy project (2) Thermal power project
(3) Nuclear energy project (4) Hydel power project
Answer (1)

77. Jhumming refers to
(1) Primitive subsistence framing (2) Commercial framing
(3) Intensive subsistence farming (4) Dairy farming
Answer (1)

78. Identify the terms used to denote the following and choose the correct order from those given
(i) Species which are in the danger of extinction
(ii) Species with a small population
(iii) Species with are found only in some particular areas usually isolated by Geographical barriers
(iv) Species which are not found after searches in known or likely areas where they may occur
(1) (i) Rare species (ii) Endangered species (iii) Extinct species (iv) Endemic species
(2) (i) Endangered species (ii) Rare species (iii) Endemic species (iv) Extinct species
(3) (i) Endemic species (ii) Extinct species (iii) Endangered species (iv) Rare species
(4) (i) Extinct species (ii) Endangered species (iii) Endemic species (iv) Rare species
Answer (2)

79. Which among the following are considered as international resource?
(1) Forests (2) Wildlife
(3) Oceanic resources beyond 200km form the coast of each country (4) All oceanic resources
Answer (3)

80. Identify the country which is large then India, in land area, but smaller then Brazil
(1) Canada (2) USA (3) Australia (4) China
Answer (3)

81. In the Northern Plains 'Kankar' formations are common among
(1) Khadar (2) Bhangar (3) Bhabhar (4) Tarai
Answer (2)

82. Match the following and choose the correct combination
(a) Malabar Coast (i) Paradip
(b) North Circar (ii) Chennai
(c) Coromandal Coast (iii) Kochi
(d) Konkan Coast (iv) Mumbai
(1) A – i B – ii C – iv D – iii (2) A – i B – ii C – iii D – iv
(3) A – iv B – iii C – ii D – I (4) A – iii B – i C – ii D – iv
Answer (4)

83. One among the following features is not related to river Godavari. Dignify it
(1) 1500 km in length (2) Originates from mahabaleswar
(3) Know as Dakshin Ganga (4) the largest peninsular river
Answer (1)

84. 'Loo' is a phenomenon in India during
(1) Hot weather season (2) Cold weather season
(3) South west monsoon season (4) North east monsoon season
Answer (1)

85. Fiscal deficit may leas to
(a) Increased debt (b) Interest payments obligation
(c) Current account deficit (d) Capital formation alone
(1) a, b and c are correct (2) c and d are correct (3) b and c are correct (4) only d is correct
Answer (2)

86. Mudra Yojana provides financial assistance to
(1) Exports only (2) Big industrialists only
(3) Micro and small entrepreneurs (4) Scientific experiment
Answer (3)

87. Stand – up India scheme is promoted by
(1) SIDBI (2) NABARD (3) SBI (4) RBI
Answer (1)

88. Second generation economic reforms means
(1) Commodity market reforms (2) Reforms introduced in 1991
(3) Financial sector reforms (4) Reforms in factor and input markets
Answer (2)

89. Goods and Service Tax (GST) consists of
(a) Central GST (b) State GST (c) Interstate GST
(1) a only (2) b only (3) c only (4) both a and b
Answer (4)

90. W.T.O is a
    (1) Multilateral trade negotiation system
    (2) (2) Bilateral trade negotiation system
    (3) Forum for trade agreements between LDCs
    (4) Forum for trade agreements between developed countries

Answer (1)

91. Reverse Repo rate is
    (1) Rate at which commercial banks lend to Central Bank
    (2) Rate at which central banks lend to commercial banks
    (3) Rate at which governments lands to NBFI is
    (4) Rate at which governments land to farmers

Answer (1)

92. Personal income is estimated by
    (1) Dividing national income by population
    (2) Adding all factor incomes
    (3) Adding all factor incomes and transfer payments
    (4) Adding all factor incomes minus transfer payments

Answer (3)

93. The system of power sharing by different groups is known as
    (1) Social Government (2) Community government
    (3) Local Self Government (4) Coalition Government

Answer (2)

94. The Article to the Indian Constitution which deals with the Panchayats
    (1) 246 (2) 245 (3) 244 (4) 243

Answer (4)

95. The state in which 'Kittiko – Hachchiko' Movement was started?
    (1) Andhra Pradesh (2) Karnataka (3) Telengana (4) Maharashtra

Answer (2)

96. Identify the secular states
    (1) Sri Lanka and India (2) Pakistan and Ireland (3) India and Nepal (4) Britan and Afghanistan

Answer (3)

97. Which of following is not a feature of Bureaucracy?
    (1) Permanently appointed (2) Appointed on the basis of qualification
    (3) Politically not neutral (4) Skilled in their work

Answer (3)

98. Few subjects in the Union List, State List and Concurrent List are given below. Identify the concurrent subjects
    (a) Currency (b) Education (c) Foreign Affairs (d) Forest
    (1) b and d (2) a and d (3) a and c (4) b and

Answer (1)

99. Apartheid means
    (1) Religious discrimination (2) Communal discrimination
    (3) Caste discrimination (4) Racial discrimination

Answer (4)

100. Which part of the Constitution of India contains Fundamental Duties?
    (1) Part – II (2) Part – III (3) Part – IV (4) Part – IV A

Answer (2)