



SCIENCE INSTITUTE

SCHOLARSHIP EXAMINATION FOR 10th STANDARD STUDENTS MARCH - 2016

VERSION CODE	D
SUBJECTS	PCMB

No. of total questions: 80

Maximum Marks : 320

Time : 2.00 Hours

OMR ഷീറ്റിലെ ഇടതുഭാഗം പൂരിപ്പിക്കേണ്ട വിധം:

METHOD OF FILLING THE LEFT HAND SIDE OF THE OMR

1. VERSION CODE: Version code is given on the top of the right side of the question paper. Darken the bubbles corresponding to the version code (VERSION CODE: ഈ പേജിന്റെ മുകളിൽ വലതുഭാഗത്ത് കൊടുത്ത Version code നെ സൂചിപ്പിക്കുന്ന കുമിള കറുപ്പിക്കുക).
2. ROLL NUMBER: Write your roll number in the specific column and darken the corresponding bubbles (ROLL NUMBER: നിങ്ങളുടെ റോൾ നമ്പർ കോളത്തിൽ എഴുതുകയും, താഴെയുള്ള കുമിളകൾ അതിനനുസരിച്ച് കറുപ്പിക്കുകയും ചെയ്യുക).
3. DATE: തീയതി

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0	3
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1	6
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4. SUBJECT CODE: Darken the bubbles corresponding to the subject code PCMB (SUBJECT CODE: PCMB എന്ന് മുദ്രണം ചെയ്തതിന് നേരെയുള്ള കുമിള കറുപ്പിക്കുക).

വിദ്യാർത്ഥികൾക്കുള്ള നിർദ്ദേശങ്ങൾ INSTRUCTIONS TO THE STUDENTS

1. This question booklet will be sealed at the middle of the right margin. candidates should not open the question booklet until the long bell is rung at 10.30 am to start answering. (10.30 am ന് Long Bell കേട്ടതിന് ശേഷം മാത്രമേ Question paper seal പൊട്ടിക്കാൻ പാടുള്ളൂ)
2. Write your name and roll number in the specific column given under the first page of question paper (നിങ്ങളുടെ പേരും റോൾ നമ്പറും താഴെ അതിനായി തന്നിട്ടുള്ള സ്ഥലത്ത് എഴുതുക).
3. The question paper contain 80 questions which are based on the SSLC level. Out of 80 objective type questions 60 questions from Mathematics and the rest will be from general science (Physics, Chemistry, Biology). Very difficulty questions and questions which are needed more time to answer should be attended considering the allotted time for the examination. Wrong answers carry minus mark. (60 ചോദ്യങ്ങൾ Mathamatics വിഷയത്തെയും 20 ചോദ്യങ്ങൾ ജനറൽ സയൻസിനെ ആസ്പദമാക്കിയും ആകെ 80 ചോദ്യങ്ങളുൾപ്പെട്ടതായിരിക്കും ചോദ്യപേപ്പർ . കൂടുതൽ സമയമെടുത്ത് ചെയ്യേണ്ടതോ പ്രയാസമേറിയതോ ആയ ചോദ്യങ്ങൾ അവസാനഘട്ടത്തിലേക്ക് മാറ്റിവെച്ച് സമയബന്ധിതമായി പരീക്ഷയെഴു തുവാൻ ശ്രമിക്കുക. തെറ്റായ ഉത്തരത്തിന് നെഗറ്റീവ് മാർക്ക് വരുന്നതാണ്.)
4. White paper, Logarithm Table, Slide ruler, Calculator, Mobile Phone & other Electronic devices etc.. will not be allowed to bring in the examination hall (പേപ്പർ, ലോഗരിതം ടേബിൾ, സ്ലൈഡ് റൂളർ, കാൽക്കുലേറ്റർ, മൊബൈൽ ഫോൺ, ഇലക്ട്രോണിക്സ് സംവിധാനങ്ങളുടെ മറ്റു രൂപങ്ങൾ എന്നിവ പരീക്ഷാ ഹാളിൽ അനുവദനീയമല്ല).
5. Each correct answer carries 4 marks. 1 mark will be deducted for each wrong answer (ഇതിൽ ഓരോ ശരിയുത്തരത്തിനും 4 മാർക്ക് ആയിരിക്കും. ഓരോ തെറ്റായ ഉത്തരത്തിനും 1 മാർക്ക് (negative mark) വീതം കുറയ്ക്കുന്നതാണ്)
6. Mark for unattended questions will be zero (ഉത്തരമെഴുതാത്ത ഓരോ ചോദ്യത്തിനും 0 (പൂജ്യം) മാർക്ക് ആയിരിക്കും).
7. Each question is provided with 5 choices (A) (B) (C) (D) & (E) having one correct answer. (എല്ലാ ചോദ്യങ്ങൾക്കും (A) (B) (C) (D) (E) എന്നിങ്ങനെ 5 ഉത്തരങ്ങൾ കൊടുത്തിരിക്കും. ഇവയിൽ ഒന്നു മാത്രമാണ് ശരിയായ ഉത്തരം).
8. Choose the correct answer and darken the bubble corresponding to the question number. (തന്നിരിക്കുന്ന ഉത്തരങ്ങളിൽ ശരിയായ ഉത്തരം ഒന്നു മാത്രമായിരിക്കും. അത് തിരഞ്ഞെടുത്തു നിശ്ചിത നമ്പറിനു നേരെയുള്ള നിശ്ചിത കുമിള മാത്രം കറുപ്പിക്കുക).

Name:.....

Roll No.

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1. Which factor is against Mendel's Theory?
[a] Linkage [b] Dominance [c] Segregation
[d] Law of independent assortment [e] Law of purity of genes
2. The only hominid which exists today
[a] Orangutan [b] Gorilla [c] Man
[d] Chimpanzee [e] Gibbon
3. The most stable molecule in organic world
[a] CO₂ [b] DNA [c] RNA
[d] Oxygen [e] Hydrogen
4. Largest endocrine gland in human body
[a] Adrenal [b] Thyroid [c] Thymus
[d] Parathyroid [e] Pineal
5. Stomata: Plant ; contractile vacuole:-----
[a] Earthworm [b] Fish [c] Amoeba
[d] Frog [e] Cockroach
6. Chlorophyll contains
[a] Potassium [b] Iron [c] Manganese
[d] Magnesium [e] Sulphur
7. Which among the following compounds show partial ionic character?
[a] NaCl [b] CCl₄ [c] NH₃
[d] CH₄ [e] CaCl₂
8. P is a d block element of 4th period. The atomic number is not 24 and 29. This element combines with another element Q in the 16th group. If one electron is lost from the d subshell of the element P, the formula of the compound formed is :
[a] P₂Q [b] PQ₂ [c] PQ
[d] P₂Q₃ [e] PQ₃

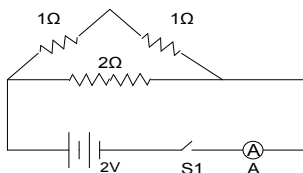
SPACE FOR ROUGH WORK

9. A, B, C and D are four metals in the reactivity series. A can displace B from its salt solution. But B can't displace C and at the same time, C can displace A from its salt solution. When a rod of D is placed in a salt solution of C, the rod of D is seen coated by traces of C. Then the most reactive metal among these is
- [a] D [b] C [c] A
[d] B [e] None of these
10. The ore of copper contains FeO as the main impurity. The most suitable flux that can be used during the extraction of copper is :
- [a] CaO [b] SiO₂ [c] Coke
[d] CaSiO₃ [e] CuSO₄
11. When a salt X is heated with conc. H₂SO₄ a product which turns wet blue litmus red is formed. When silver nitrate is added to it, a curdy white precipitate is formed. The salt X is likely to be
- [a] NaNO₃ [b] NaCl [c] HCl
[d] HNO₃ [e] Na₂SO₄
12. $\text{CH}_3\text{-CH}_2\text{-CH-CH}_2\text{-CH}_3$
 $\quad \quad \quad \text{CH}_2\text{-CH}_2\text{-CH}_3$
The IUPAC name of the compound is
- [a] 3-propylpentane [b] 4-ethylpentane [c] 4-ethylhexane
[d] 3-methylhexane [e] 3-ethylhexane
13. The equation for the decomposition of hydrogen peroxide is given below. $2\text{H}_2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{O}_2$
The mass of Oxygen obtained when 17g of hydrogen peroxide decomposes is
- [a] 64g [b] 32g [c] 16g
[d] 8g [e] 4g
14. A heater is labelled 800W, 400V. What is the power of the instrument when it is given a potential difference of 200V
- [a] 200W [b] 400W [c] 800W
[d] 600W [e] 100W

SPACE FOR ROUGH WORK

- 15 Commercial unit of electric energy is kilowatt hour (kwh) convert 1 kwh in to joule?
 [a] 360 J [b] 36000J [c] 3600J
 [d] 3600000 J [e] None of these

16.



What is the effective resistance in this circuit?

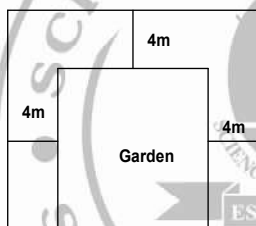
- [a] $2\ \Omega$ [b] $1\ \Omega$ [c] $3\ \Omega$
 [d] $4\ \Omega$ [e] $5\ \Omega$
17. Incomplete burning of fuel is due to the lack of availability of
- [a] Heat [b] Carbon di oxide [c] Oxygen
 [d] Hydrogen [e] Nitrogen
18. You know fuse wire is an alloy. What are the component metals present in it?
- [a] Tin, Aluminium [b] Tin, Lead [c] Tin, Silver
 [d] Tin, Tungsten [e] Tin, Iron
19. What phenomina of light is the reason behind the blue appearance of sky and the reddishness at sun rise and sunset ?
- [a] Defraction [b] Scattering [c] Reflection
 [d] Interference [e] None of these
20. To determine the approximate value of the focal length of a given concave mirror, you focus the image of a distance object formed by the mirror on a screen. The image obtained on the screen , as compared to the object is always :
- [a] Laterally inverted and diminished [b] Inverted and diminished
 [c] Erect and diminished [d] Erect and highly diminished
 [e] None of these

SPACE FOR ROUGH WORK

21. If the line joining the points $(a, 4)$, $(0, 5)$ and the line joining the points $(2, 0)$, $(7, b)$ are parallel. Then the value of $ab = \dots\dots\dots$
- [a] 1 [b] 5 [c] -5
[d] -1 [e] 0
22. $P(x) = ax^3 + bx^2 + cx + d$, and $(b + d) - (a + c) = 0$ then which of the following is a factor of $P(x)$?
- [a] $x + 1$ [b] $x - 1$ [c] $x + 2$
[d] $x - 2$ [e] $x - 3$
23. $P(x) = x^6 + px^5 + qx^4 - x^2 - x - 3$ is divisible by $x^4 - 1$ then the value of $p^2 + q^2$ is
- [a] 1 [b] 9 [c] 10
[d] 13 [e] 11
24. If $x - 2$ is a common factor of $x^3 - 4x^2 + ax + b$ and $x^3 - ax^2 + bx + 8$ then the value of a and b are :-
- [a] $(3, 5)$ [b] $(2, -4)$ [c] $(4, 0)$
[d] $(0, 4)$ [e] $(-3, 5)$
25. If $a - 7 = 0, b + 10 = 0$ and $x^2 = ax + b$ then one of the value of x is : -----
- [a] 7 [b] -10 [c] -3
[d] 4 [e] 2
26. The sides of the square ABCD is parallel to axes. What is the slope of the diagonal AC ?
- [a] ∞ [b] 1 [c] 0
[d] 2 [e] -2
27. If the lines $ax + by - c = 0$ and $mx + ny - p = 0$ are perpendicular then the value of $\frac{am}{bn}$ is : -----
- [a] -1 [b] 1 [c] 0
[d] 2 [e] -2

SPACE FOR ROUGH WORK

28. In $\triangle ABC$, $A(3,5)$, $B(7,8)$, $C(1,-10)$ Find the equation of the median through A ?
 [a] $6x + y = 23$ [b] $6x - y = 23$ [c] $x + 6y = 23$
 [d] $x - 6y = 23$ [e] $x + 23y = 6$
29. 'A' working alone would take 9 hrs to complete a job while 'B' working alone would take 3 hours more to finish the job. What is the time taken for completing the work by A and B working together
 [a] $\frac{7}{36}$ [b] $\frac{36}{7}$ [c] 12
 [d] 21 [e] $\frac{2}{15}$
30. If 'A' and 'B' can do a job in 24 days 'B' and 'C' in 18 days and 'C' and 'A' in 36 days. If they all working together the job will be over in
 [a] 8 days [b] 6 days [c] 16 days
 [d] 15 days [e] 12 days



31.

A square garden is bounded on three sides by a path 4m wide. If the area of the path is $\frac{7}{8}$ that of the garden. Find the length of the side of the garden ?

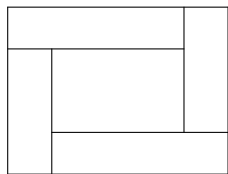
- [a] 4m [b] 8m [c] 10m
 [d] 12m [e] 16m

SPACE FOR ROUGH WORK

32. The points $(k, 3)$, $(2, -4)$ and $(-k + 1, -2)$ are collinear then find k ?
[a] $\frac{-1}{3}$ [b] $\frac{1}{3}$ [c] $\frac{1}{9}$
[d] $\frac{-1}{9}$ [e] 1
33. Sum of first $n + 1$ terms of an arithmetic sequence is $3n^2 + 11n + 8$ then its algebraic form [n^{th} term] is
[a] $3n + 11$ [b] $11n + 8$ [c] $6n + 2$
[d] $6n - 2$ [e] $2n + 1$
34. First term and common difference of an arithmetic sequence are equal. If the sum of first two terms is 10. What is its third term
[a] 10 [b] 12 [c] 15
[d] 20 [e] 5
35. 10th term of an arithmetic sequence is $\frac{1}{15}$ and 15th term is $\frac{1}{10}$ what is its 150th term?
[a] 1 [b] $-\frac{1}{15}$ [c] $\frac{1}{25}$
[d] $\frac{1}{5}$ [e] $-\frac{1}{15}$
36. Lateral faces of a square pyramid are equilateral triangles and its lateral height is $5\sqrt{3}\text{cm}$. What is its height?
[a] 5 cm [b] $6\sqrt{3}\text{ cm}$ [c] $5\sqrt{3}\text{ cm}$
[d] 15cm [e] $5\sqrt{2}\text{ cm}$

SPACE FOR ROUGH WORK

37.



A large square is divided into a small square surrounded by 4 congruent rectangles. The perimeter of each rectangles are 14 cm . What is the area of large square ?

[a] 14 cm^2
[d] 49 cm^2

[b] 7 cm^2
[e] 35 cm^2

[c] 196 cm^2

38. In $\triangle ABC$, $AB = 9 \text{ cm}$, $AC = 15 \text{ cm}$, $BC = 12 \text{ cm}$. What is its inradius

[a] 3 cm
[d] 15 cm

[b] 7.5 cm
[e] 9 cm

[c] 6 cm

39. What is the maximum value of k, If the polynomial $2x^2 + kx + 16$. can be written as the product of two first degree polynomials?

[a] $8\sqrt{2}$
[d] $6\sqrt{3}$

[b] $3\sqrt{4}$
[e] $2\sqrt{3}$

[c] $6\sqrt{2}$

40. A line cuts x- axis at '5' and y- axis at '6'. What is its slope ?

[a] $\frac{6}{5}$

[b] $\frac{5}{6}$

[c] 1

[d] $-\frac{6}{5}$

[e] $-\frac{3}{2}$

41. If the sides of a right angled triangle are the terms of arithmetic sequence with common difference 6, what is the hypotenuse ?

[a] 30
[d] 20

[b] 8
[e] 4

[c] 10

SPACE FOR ROUGH WORK

42. What is the minimum value of the polynomial $11 + 20x - 4x^2$?
[a] 11 [b] 36 [c] 25
[d] 4 [e] 18
43. If $4\sin^2 x - 4\sin x + 1 = 0$ then what is $\cos x$?
[a] $\frac{1}{2}$ [b] $\frac{1}{3}$ [c] $\frac{1}{\sqrt{2}}$
[d] $\frac{1}{\sqrt{3}}$ [e] $\frac{\sqrt{3}}{2}$
44. If $x^2 + \frac{1}{x^2} = 7$ then value of $x + \frac{1}{x}$ is
[a] 4 [b] 5 [c] 3
[d] 6 [e] 1
45. If the hypotenuse of a right angled triangle is 41 cm and the area of the triangle is 180 cm^2 , then the difference between the lengths of the perpendicular sides of the triangle must be
[a] 20 [b] 21 [c] 30
[d] 31 [e] 24
46. If $x = \sqrt{6 + \sqrt{6 + \sqrt{6}}} + \dots$ then the value of x is
[a] 0 [b] 2 [c] 6
[d] 1 [e] 3

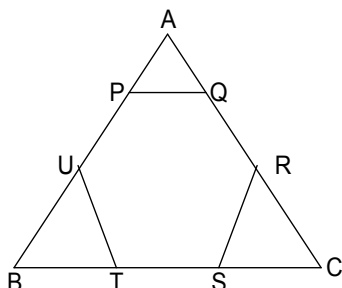
SPACE FOR ROUGH WORK

47. If $\sin A = \frac{3}{5}$ then what is $\cos A$?
- [a] $\frac{3}{4}$ [b] $\frac{1}{3}$ [c] $\frac{1}{4}$
[d] $\frac{4}{5}$ [e] $\frac{2}{3}$
48. The angle of elevation of the top of a vertical tower from points at distance 16m and 9 m from the foot of the tower and in the same line with it are 35° and 65° . Then the height of the tower is
- [a] 16m [b] 9m [c] 25m
[d] 12m [e] 13 m
49. A man standing some distance away from the foot of a tree sees the top at an angle of elevation 60° , and after stepping back 10 m he sees the top at an angle of 30° . What is the height of the tree ?
- [a] $8\sqrt{3}$ m [b] $2\sqrt{3}$ m [c] $10\sqrt{3}$ m
[d] $4\sqrt{3}$ m [e] $5\sqrt{3}$ m
50. The ratio of areas of the circum circle and in circle of an equilateral triangle is
- [a] 2 : 1 [b] 4 : 1 [c] 3 : 1
[d] 9 : 1 [e] 8 : 1
51. Two poles are 'x' metre apart. At the middle point of the line joining their feet a man finds the angle of elevation of their tops to be 60° and 30° respectively, then the ratio of the heights of poles is
- [a] $\sqrt{3} : 1$ [b] $\sqrt{2} : \sqrt{3}$ [c] $1 : \sqrt{2}$
[d] 3 : 1 [e] 2 : 1

SPACE FOR ROUGH WORK

52. If the smallest side of a right angle triangle is 13cm, then which of the following can be its hypotenuse?
 [a] 84 [b] 85 [c] 83
 [d] 82 [e] 80

53.

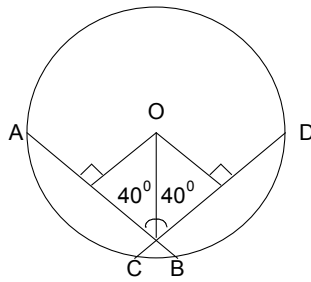


In the figure ABC is an equilateral triangle and PQRSTU is a regular hexagon. If a point is marked without looking the figure. What is the probability that in side the regular hexagon ?

- [a] $\frac{1}{2}$ [b] $\frac{2}{3}$ [c] $\frac{3}{2}$
 [d] $\frac{1}{3}$ [e] $\frac{1}{6}$
54. Mean of 11 observations is 19. If the mean of first 5 observations is 17 and that of last 5 observations is 18 then what is the 6th observation ?
 [a] 35 [b] 36 [c] 33
 [d] 32 [e] 34
55. In a school, average score of girls is 78 and that of boys is 72, the average for the school is 75. The ratio of number of boys to the number of girls is
 [a] 1 : 2 [b] 2 : 1 [c] 1 : 1
 [d] 75 : 78 [e] 6 : 1

SPACE FOR ROUGH WORK

56.



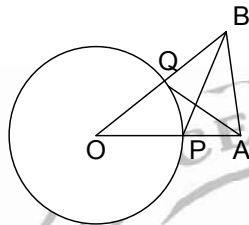
In the figure 'O' is the centre. If $AB = 12$ cm then what is the length of CD ?

- [a] 6
- [d] 10

- [b] 12
- [e] 8

[c] 18

57.



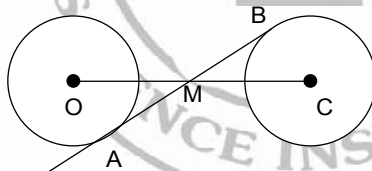
In the figure $\triangle ABO$ is the equilateral if $PB = 10$ cm, what is AQ ?

- [a] 20
- [d] 12

- [b] 5
- [e] 10

[c] 15

58.



O and C are centres of the circle. If $AB = 6$ cm $OM = 10$ cm , $BC = 4$ cm What is the length of BM ?

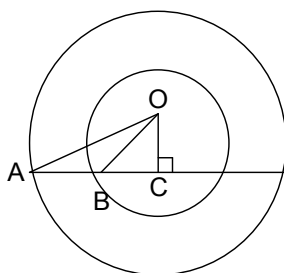
- [a] 6cm
- [d] 5cm

- [b] 4cm
- [e] 3cm

[c] 9cm

SPACE FOR ROUGH WORK

59.



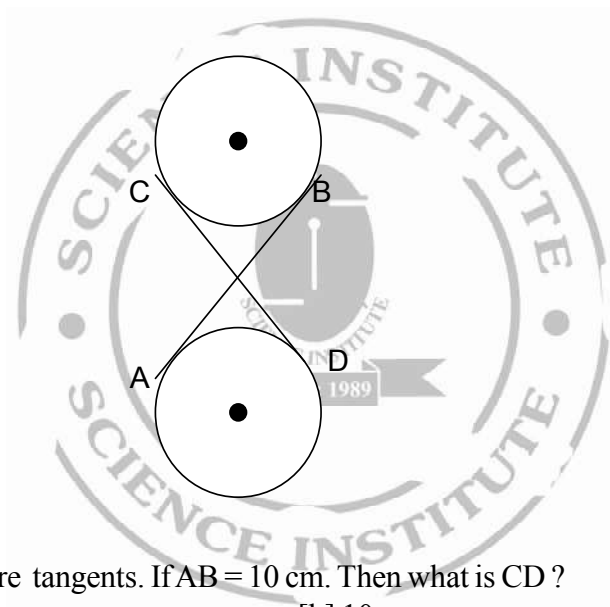
In the figure O is the common centre of both circles and $OA = 25$ cm, $OB = 24$ cm what is the length of $\sqrt{AC^2 - BC^2}$?

- [a] 7
- [d] 15

- [b] 14
- [e] 5

- [c] 34

60.



In the figure AB, CD are tangents. If $AB = 10$ cm. Then what is CD ?

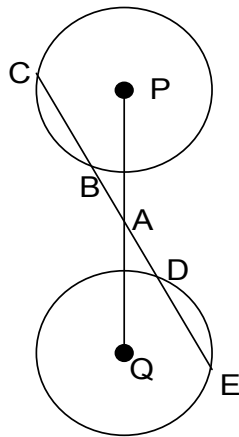
- [a] 5
- [d] 20

- [b] 10
- [e] 18

- [c] 15

SPACE FOR ROUGH WORK

61.



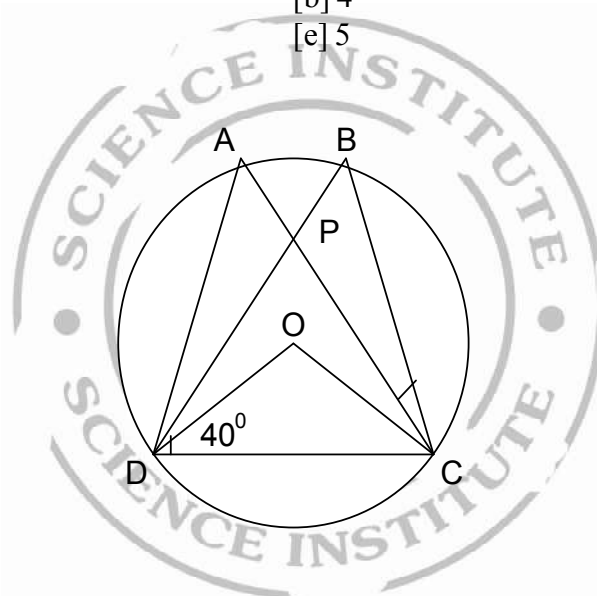
In the figure P and Q are centres of the circles and A is the mid point of PQ. If $BC = 8\text{cm}$ What is DE ?

- [a] 8
- [d] 6

- [b] 4
- [e] 5

[c] 10

62.



In the figure 'O' is the centre, $\angle ODC = 40^\circ$, $\angle APD = 90^\circ$ Then what is $\angle ACB$?

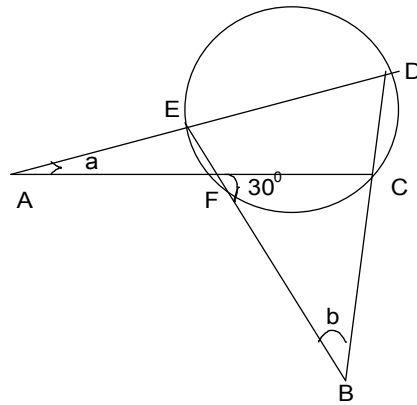
- [a] 40
- [d] 55

- [b] 50
- [e] 30

[c] 45

SPACE FOR ROUGH WORK

63.



In the figure $\angle B = b, \angle A = a$ $\angle BFC = 30^\circ$ and $2b = a$ then what is the value of b ?

[a] 30

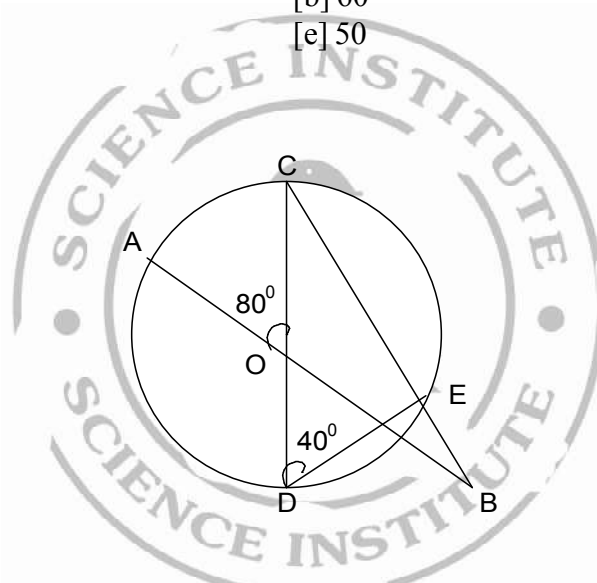
[b] 60

[c] 90

[d] 40

[e] 50

64.



In the figure 'O' is centre of the circle $\angle AOC = 80^\circ, \angle CDE = 40^\circ$ find $\angle ABC$?

[a] 40

[b] 80

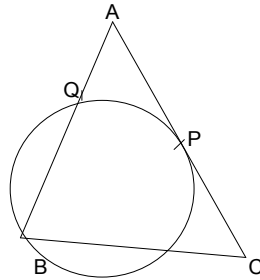
[c] 50

[d] 30

[e] 60

SPACE FOR ROUGH WORK

65.



AC is a tangent line and P is the midpoint of AC, If $AB = AC$ and $AQ = 4\text{cm}$. Then find the length of AB?

[a] 4

[b] 8

[c] 16

[d] 12

[e] 14

66. $P(x) = ax^3 + bx^2 + cx + d$ and if $\frac{d-c}{a-b} = 4$ then which of the following is a factor of $P(x)$

[a] $x+1$ [b] $x^2 - 9$ [c] $x^2 - 1$ [d] $x^2 - 4$ [e] $x - 1$

67. If the line AB is perpendicular bisector of the line PQ and slope of AB is $\frac{3}{2}$ what is the slope of PQ

[a] $\frac{3}{2}$ [b] $-\frac{2}{3}$ [c] $\frac{2}{3}$ [d] $-\frac{3}{2}$

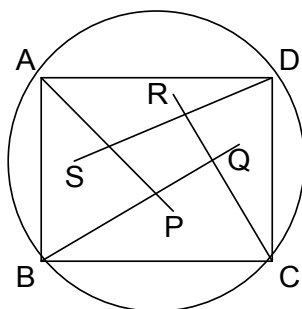
[e] 1

68. Volume of a solid hemisphere is 30 cm^3 . Find the volume of a cone of maximum size which carved out from this hemisphere.?

[a] 30 cm^3 [b] 15 cm^3 [c] 60 cm^3 [d] 120 cm^3 [e] 7.5 cm^3

SPACE FOR ROUGH WORK

69.



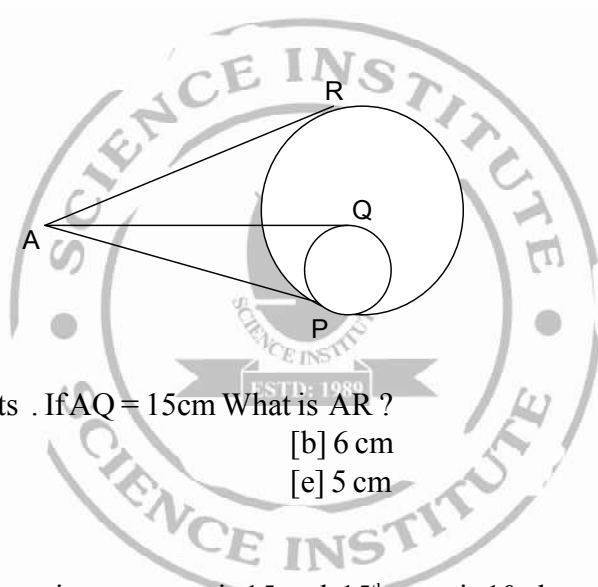
AP, BQ, CR, DS are angle bisectors of $\angle A, \angle B, \angle C, \angle D$ respectively. If $\angle PSR = 110^\circ$ that what is $\angle PQR$?

- [a] 110°
- [d] 35°

- [b] 40°
- [e] 70°

- [c] 55°

70.



AP, AQ, AR are tangents . If $AQ = 15\text{cm}$ What is AR ?

- [a] 12 cm
- [d] 15cm

- [b] 6 cm
- [e] 5 cm

- [c] 7.5 cm

71. If 10th term of an arithmetic sequence is 15 and 15th term is 10 then what will be its 30th term ?

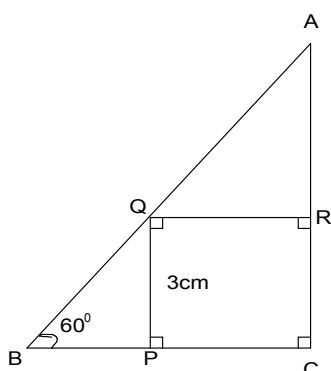
- [a] - 5
- [d] 25

- [b] 5
- [e] 10

- [c] 0

SPACE FOR ROUGH WORK

72.



If $PQ = 3\text{cm}$, PQRC is a square. Then what is the length of AB?

[a] $2\sqrt{3}$

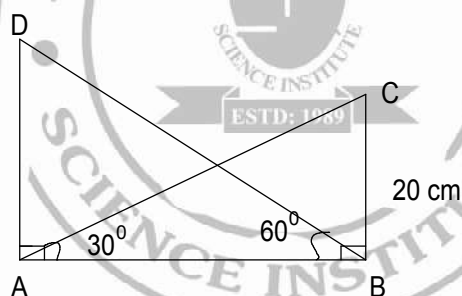
[b] $2+2\sqrt{3}$

[c] $6+2\sqrt{3}$

[d] $6+\frac{2}{\sqrt{3}}$

[e] $3+3\sqrt{3}$

73.



If $BC = 20\text{cm}$ find the length of AD

[a] 60 cm

[b] 40cm

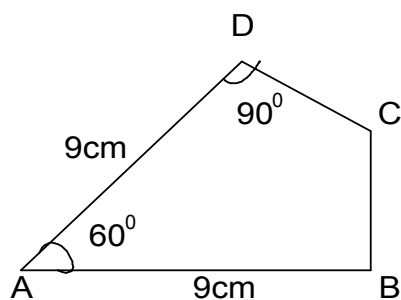
[c] 55cm

[d] 50 cm

[e] 100cm

SPACE FOR ROUGH WORK

74.



ABCD is a cyclic quadrilateral then what is the length of the diagonal AC?

[a] 9 cm

[b] $3\sqrt{3}$ cm[c] $6\sqrt{3}$ cm[d] $9\sqrt{3}$ cm[e] $3\sqrt{21}$ cm

75.

If $\cos A + \cos^2 A = 1$, then the value of $\sin^2 A + \sin^4 A$ is

[a] 1

[b] $\frac{1}{2}$

[c] 2

[d] 3

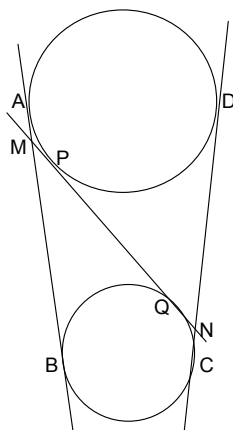
[e] $\frac{1}{4}$

76

The sum of the third and seventh terms of an arithmetic progression is 6 and their product is 8, then common difference is

[a] ± 1 [b] $\pm \frac{1}{2}$ [c] $\pm \frac{1}{4}$ [d] ± 2 [e] $\pm \frac{1}{3}$

SPACE FOR ROUGH WORK



77.

In the figure AB, CD, PQ are tangents. If $AB = 12$ cm, $AM = 3$ cm. What is the length of PQ?

[a] 6

[b] 9

[c] 12

[d] 15

[e] 7

78. If $\cos \theta + \cos \theta = \sqrt{2} \cdot \sin(90 - \theta)$ then $\cos \theta = \dots\dots\dots$

[a] 1

[b] $\sqrt{2} - 1$ [c] $\sqrt{2} + 1$

[d] -1

[e] 0

79. The area of a square is the same as the area of a circle. The perimeters of the circle and square are in the ratio

[a] 1 : 1

[b] $2 : \pi$ [c] $4 : \pi$ [d] $\sqrt{2} : \pi$ [e] $\sqrt{\pi} : 2$ 80. The sum of three numbers is 98. The ratio of the first to the second number is $\frac{2}{3}$ and the ratio of thesecond to the third is $\frac{5}{8}$, Then the second number is

[a] 15

[b] 30

[c] 20

[d] 23

[e] 32

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SPACE FOR ROUGH WORK



SPACE FOR ROUGH WORK



Space for rough work



Space for rough work