Roll No

No. of Questions : **50**

No. of Printed Pages : **24**

AHSC-2026

MTH

Class – X (HSC) Annual

Question Booklet Number

SET - B

ସଚିବଙ୍କ ଦସ୍ତଖତ

Secretary

Time : **1 Hour 15 minutes**

Full Marks : **50**

ସମୟ : 1 ଘଣ୍ଟା 15 ମିନିଟ୍

ପୂର୍ଣ୍ଣ ସଂଖ୍ୟା : 50

ନିରୀକ୍ଷକଙ୍କ ନିମନ୍ତେ ବିଶେଷ ସୂଚନା
SPECIAL INSTRUCTION TO THE INVIGILATORS

ପରୀକ୍ଷା ସରିବା ପରେ ଏହି ପ୍ରଶ୍ନ ପୁସ୍ତିକା (**PART-I-OBJECTIVE**) ଟିକୁ ପରୀକ୍ଷାର୍ଥୀମାନେ ସାଥିରେ ନେବେ | ପରୀକ୍ଷା ଗୃହ ଛାଡିବା ପୂର୍ବରୁ ନିରୀକ୍ଷକମାନେ ତାହାକୁ ଠିକ୍ ଭାବେ ତଦାରଖ କରିବା ଏକାନ୍ତ ଜରୁରୀ |

The candidates shall take away this Question Booklet (**PART-I-OBJECTIVE**) after the examination of this subject is over. It is important that the invigilators should verify the Booklet of the candidates before leaving the examination hall/room.

PART – I – OBJECTIVE (MCQ)

OBJECTIVE QUESTION BOOKLET

AR/AXR – 16 – MTH

MTH – MATHEMATICS

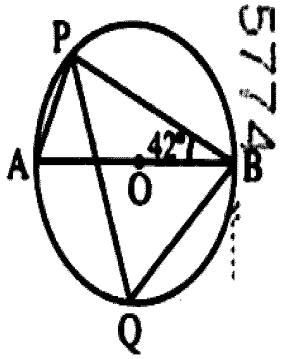
ପରୀକ୍ଷାର୍ଥୀଙ୍କ ନିମନ୍ତେ ସୂଚନା
INSTRUCTION TO CANDIDATES

ଏହି ପ୍ରଶ୍ନ ପୁସ୍ତିକାରେ 50ଟି ବିକଳ୍ପ ଉତ୍ତରମୂଳକ ପ୍ରଶ୍ନ ଦିଆଯାଇଛି | ପ୍ରତ୍ୟେକ ପ୍ରଶ୍ନର ଉତ୍ତର OMR ଫର୍ଦ୍ଦରେ ଥିବା ନିର୍ଦ୍ଦେଶାନୁସାରେ ଦେବା ଆବଶ୍ୟକ |

This Questions-Booklet contains **50** multiple choice questions. The candidates are required to answer the questions as per the instructions given in the **OMR** Sheet.

4. ଦତ୍ତ ଚିତ୍ରରେ O କୁଣ୍ଡର କେନ୍ଦ୍ର ।

$m\overset{\frown}{ABP} = 42°$ ହେଲେ $m\overset{\frown}{PQB}$ = ?



(A) 58°

(B) 48°

(C) 42°

(D) 38°

5. ଯଦି $\Delta ABC \sim \Delta EDF$ ଏବଂ ΔABC, ΔDEF ସହିତ ସଦୃଶ ନୁହେଁ, ତେବେ ନିମ୍ନଲିଖିତ ମଧ୍ୟରୁ କେଉଁଟି ସତ୍ୟ ନୁହେଁ ?

(A) BC.EF = AC.FD

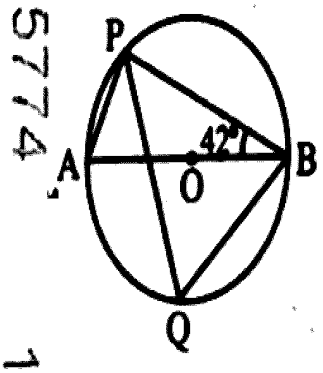
(B) AB.EF = AC.DE

(C) BC.DE = AB.EF

(D) BC.DE = AB.FD

4. In the given figure, O is the centre of the circle

and $m\overset{\frown}{ABP} = 42°$, then $m\overset{\frown}{PQB}$ = ?



(A) 58°

(B) 48°

(C) 42°

(D) 38°

5. If $\Delta ABC \sim \Delta EDF$ and ΔABC is not similar to ΔDEF, then which of the following is not true?

(A) BC.EF = AC.FD

(B) AB.EF = AC.DE

(C) BC.DE = AB.EF

(D) BC.DE = AB.FD

29. ଦୁଇ ଅଙ୍କ ବିଶିଷ୍ଟ ଏକ ସଂଖ୍ୟାର ଅଙ୍କ ଦୁଇଟିର ଯୋଗଫଳ 9 | ସେହି ସଂଖ୍ୟାରୁ 27 ବିୟୋଗ କଲେ, ତାହାର ଅଙ୍କ ଦୁଇଟିର ସ୍ଥାନ ବଦଳିଯାଏ | ଏହାର ଅଙ୍କ ଦୁଇଟିର ଗୁଣଫଳ କେତେ ?

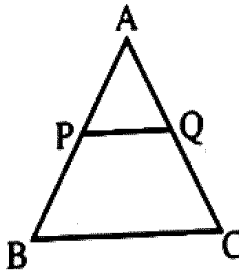
(A) 8

(B) 14

(C) 18

(D) 20

30. ଦତ୍ତ ଚିତ୍ରରେ $\overline{PQ}||\overline{BC}$, PB = 6 ସେ. ମି., AP = 4 ସେ. ମି. ଏବଂ AQ = 8 ସେ. ମି. | $\overline{AC}$ ର ଦୈର୍ଘ୍ୟ କେତେ ସେ. ମି. ?



(A) 12

(B) 20

(C) 6

(D) 14

29. The sum of the digits of a two-digit number is 9. If 27 is subtracted from the number, its digits are interchanged. What is the product of the digits of the number?

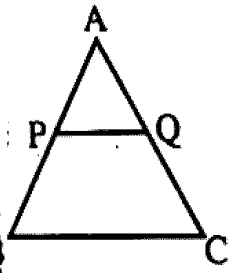
(A) 8

(B) 14

(C) 18

(D) 20

30. In the given figure, $\overline{PQ}||\overline{BC}$, PB = 6cm, AP = 4cm and AQ = 8cm. What is the length of $\overline{AC}$ in cm?



(A) 12

(B) 20

(C) 6

(D) 14

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

31. ଗୋଟିଏ ସମତଳ ଭୂମି ଉପରେ ଭୂଲମ୍ବ ଭାବେ ଦଣ୍ଡାୟମାନ ଏକ ବତୀଖୁଣ୍ଟର ଉଚ୍ଚତା ଯେତେ, ତାର ପାଦଦେଶରୁ ସେହି ସମତଳର ସେତିକି ଦୂରସ୍ଥ ଏକ ବିନ୍ଦୁ P ଠାରେ ଉକ୍ତ ବତୀଖୁଣ୍ଟର ଅଗ୍ରଭାଗର କୌଣିକ ଉନ୍ନତିର ପରିମାଣ କେତେ ?

(A) 135°

(B) 60°

(C) 45°

(D) 30°

32. $3x + y = 1$ ଏବଂ $(2k - 1)x + (k - 1)y = 2k + 1$ ସହ ସମୀକରଣ ଦ୍ୱୟ ଅସଙ୍ଗତ ହେଲେ, k ର ମାନ କେତେ ?

(A) –1

(B) –2

(C) 1

(D) 2

31. A light post stands vertically on a level ground and a point P is situated on the same ground at a distance equal to the height of light post from the foot of it. What is the angle of elevation of the top of the light post at the point P?

(A) 135°

(B) 60°

(C) 45°

(D) 30°

32. If the simultaneous equations $3x + y = 1$ and $(2k - 1)x + (k - 1)y = 2k + 1$ are inconsistent, then k =?

(A) –1

(B) –2

(C) 1

(D) 2

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

33. ଦତ୍ତ ଚିତ୍ରରେ A (7, – 2) ଏବଂ B (1, – 5) ବିନ୍ଦୁକୁ ଯୋଗ କରୁଥିବା ରେଖାଖଣ୍ଡର ସମତ୍ରିଖଣ୍ଡିତ ବିନ୍ଦୁ P (5, – 3) ଏବଂ Q (3, y) । ତେବେ y ର ମୂଲ୍ୟ କେତେ ?

(A) 2

(B) 4

(C) – 4

(D) $\frac{-5}{2}$

34. ଯଦି (– 2, – 5), (2, – 2) ଏବଂ (8, P) ବିନ୍ଦୁ ଗୁଡିକ ଏକରେଖୀୟ ହୁଅନ୍ତି ; ତେବେ P ର ମୂଲ୍ୟ କେତେ ?

(A) $\frac{-5}{2}$

(B) $-\frac{3}{2}$

(C) $\frac{5}{2}$

(D) $\frac{3}{2}$

35. 3, 4, 7, 5, 6, 7, 3, 5, 7 ର ଗରିଷ୍ଠକ କେତେ ?

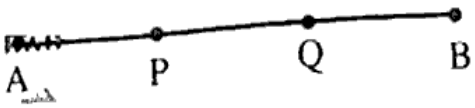
(A) 3

(B) 5

(C) 6

(D) 7

33. In the given figure, P (5, – 3) and Q (3, y) are the points of trisection of the line segment joining A (7, – 2) and B (1, – 5), then what is the value of y?



(A) 2

(B) 4

(C) – 4

(D) $\frac{-5}{2}$

34. If the points (– 2, – 5), (2, – 2) and (8, P) are collinear, then what is the value of P?

(A) $\frac{-5}{2}$

(B) $-\frac{3}{2}$

(C) $\frac{5}{2}$

(D) $\frac{3}{2}$

35. What is the mode of 3, 4, 7, 5, 6, 7, 3, 5, 7?

(A) 3

(B) 5

(C) 6

(D) 7

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

36. ଗୋଟିଏ କୋନ୍‌ର ଉଚ୍ଚତା ଗୋଟିଏ ସିଲିଣ୍ଡରର ଉଚ୍ଚତା ସଙ୍ଗେ ସମାନ ଏବଂ ସେମାନଙ୍କର ଆୟତନ ସମାନ | କୋନ୍‌ର ବ୍ୟାସ ଓ ସିଲିଣ୍ଡରର ବ୍ୟାସର ଅନୁପାତ କେତେ ?

(A) $2\sqrt{3}:1$

(B) $\sqrt{3}:1$

(C) $1:\sqrt{3}$

(D) $1:2\sqrt{3}$

37. ଗୋଟିଏ ସମାନ୍ତର ଅନୁକ୍ରମରେ $t_1=200$ ଓ $d=-9$ | ଏହାର କେତେ ତମ ପଦଟି ପ୍ରଥମ ଋଣାତ୍ମକ ସଂଖ୍ୟା ହେବ ?

(A) 22

(B) 23

(C) 24

(D) n ତମ ପଦ

36. The height of a cone is equal to the height of a cylinder and their volumes are equal. What is the ratio of the diameters of the cone and cylinder?

(A) $2\sqrt{3}:1$

(B) $\sqrt{3}:1$

(C) $1:\sqrt{3}$

(D) $1:2\sqrt{3}$

37. In an A.P., $t_1 = 200$ and $d = -9$. Which term will be the 1st negative number in this series?

(A) 22

(B) 23

(C) 24

(D) tn

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

38. ଘଣ୍ଟାପ୍ରତି 60 କି. ମି. ବେଗରେ ଗତି କରୁଥିବା ଏକ ଗାଡିର ସ୍ଥିରତା ଆସିବା ଦୂରତା 54 ମିଟର ଓ ପିଛା କରିବା ଦୂରତା 3 ସେକେଣ୍ଡ ହେଲେ, ଏହାର ପ୍ରତିକ୍ରିୟା ଦୂରତା କେତେ ହେବ ?

(A) 18 ମି

(B) 20 ମି

(C) 27 ମି

(D) 30 ମି

39. ଯଦି ଏକ ଦ୍ୱିଘାତ ସମୀକରଣ, $ax^2 + bx + c = 0$ ର ବୀଜଦ୍ୱୟ ବାସ୍ତବ ଓ ସମାନ ହୁଅନ୍ତି, ତେବେ 'c' ର ମୂଲ୍ୟ :

(A) $\frac{-b}{2a}$

(B) $\frac{b}{2a}$

(C) $\frac{-b^2}{4a}$

(D) $\frac{b^2}{4a}$

38. If the stopping distance and chasing distance of a vehicle running at a speed of 60 km/hr are 54m and 3 seconds respectively, then what is its reaction distance?

(A) 18 m

(B) 20 m

(C) 27 m

(D) 30 m

39. If the quadratic equation, $ax^2 + bx + c = 0$ has two real and equal roots, then 'c' is equal to -

(A) $\frac{-b}{2a}$

(B) $\frac{b}{2a}$

(C) $\frac{-b^2}{4a}$

(D) $\frac{b^2}{4a}$

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

40. ଓଡ଼ିଶାରେ online ପ୍ରଦୂଷଣ ପ୍ରମାଣ ପତ୍ର କେବେଠାରୁ ଦିଆଯାଉଛି ?

(A) ଅକ୍ଟୋବର 1, 2019

(B) ଅକ୍ଟୋବର 1, 2018

(C) ଅକ୍ଟୋବର 10, 201

(D) ଅକ୍ଟୋବର 15, 2018

41. ଯଦି $4\tan\theta = 3$ ହୁଏ ତେବେ $\left(\frac{4\sin\theta - \cos\theta}{4\sin\theta + \cos\theta}\right) = ?$

(A) $\frac{2}{3}$

(B) $\frac{1}{3}$

(C) $\frac{1}{2}$

(D) $\frac{3}{4}$

42. ଗୋଟିଏ ବୃତ୍ତର ବହିଃସ୍ଥ ଏକ ବିନ୍ଦୁରୁ ବୃତ୍ତ ପ୍ରତି ଅଙ୍କିତ ଏକ ସ୍ପର୍ଶକଖଣ୍ଡର ଦୈର୍ଘ୍ୟ 12 ସେ. ମି. ଓ ବୃତ୍ତର କେନ୍ଦ୍ରଠାରୁ ବିନ୍ଦୁଟିର ଦୂରତା 13 ସେ. ମି. | ବୃତ୍ତର ବ୍ୟାସ କେତେ ସେ. ମି. ?

(A) 10

(B) $12\sqrt{2}$

(C) $13\sqrt{2}$

(D) 5

40. Since which date, online Pollution Under Control Certificate is being issued in Odisha?

(A) October 1, 2019

(B) October 1, 2018

(C) October 10, 2019

(D) October 15, 2018

41. If $4\tan\theta = 3$, then $\left(\frac{4\sin\theta - \cos\theta}{4\sin\theta + \cos\theta}\right) = ?$

(A) $\frac{2}{3}$

(B) $\frac{1}{3}$

(C) $\frac{1}{2}$

(D) $\frac{3}{4}$

42. The length of the tangent segment drawn to a circle from an external point is 12cm and the distance of the point from the centre is 13cm. What is the diameter of the circle in cm?

(A) 10

(B) $12\sqrt{2}$

(C) $13\sqrt{2}$

(D) 5

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

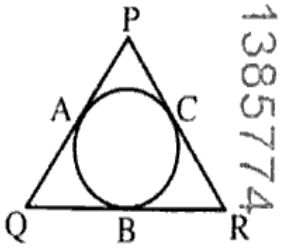
43. A ଓ B ଦୁଇଟି ପରସ୍ପର ବହିର୍ଭୂତ ଘଟଣା, ଯଦି $P(A) = 2P(B)$ ଏବଂ $P(A) + P(B) = 0.9$ ହେଲେ, P(A) କେତେ?

(A) 0.2
(B) 0.3
(C) 0.6
(D) 0.7

44. ଗୋଟିଏ ଗୋଲକର ବ୍ୟାସ କେତେ ସେ.ମି. ହେଲେ, ଏହାର ଆୟତନ ଯେତିକି ଘନସେ.ମି. ପୃଷ୍ଠର କ୍ଷେତ୍ରଫଳ ସେତିକି ବର୍ଗସେ.ମି. ହେବ ?

(A) 3
(B) 4
(C) 6
(D) 8

45. ଦତ୍ତ ଚିତ୍ରରେ ABC ବୃତ୍ତ ΔPQR ର ବାହୁମାନଙ୍କୁ A, B ଓ C ବିନ୍ଦୁରେ ସ୍ପର୍ଶ କରେ | QB = 8 ସେ. ମି. ଓ PC = 6 ସେ. ମି. ହେଲେ, PQ କେତେ ସେ.ମି. ?



(A) 10
(B) 11
(C) 13
(D) 14

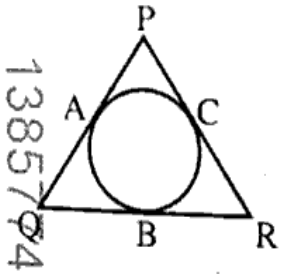
43. A and B are two mutually exclusive events. If $P(A) = 2P(B)$ and $P(A) + P(B) = 0.9$, then what is P(A)?

(A) 0.2
(B) 0.3
(C) 0.6
(D) 0.7

44. What should be the diameter of a sphere in cm so that its volume in cubic cm is equal to its surface area in sq.cm?

(A) 3
(B) 4
(C) 6
(D) 8

45. In the given figure, the circle ABC touches the sides of ΔPQR at points A, B and C. If QB = 8cm and PC = 6cm, what is PQ in cm?



(A) 10
(B) 11
(C) 13
(D) 14

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

46. ଗୋଟିଏ ଆୟତକ୍ଷେତ୍ରର ଦୈର୍ଘ୍ୟ ପ୍ରସ୍ଥ ଠାରୁ 4 ସେ. ମି. ବଡ ଓ ଏହାର କ୍ଷେତ୍ରଫଳ 60 ବର୍ଗ ସେ.ମି. | ଆୟତକ୍ଷେତ୍ରର ଦୈର୍ଘ୍ୟ ଓ ପ୍ରସ୍ଥ ନିର୍ଣ୍ଣୟ କରିବାପାଇଁ ନିମ୍ନୋକ୍ତ ସମୀକରଣ ମଧ୍ୟରୁ କେଉଁଟି ପ୍ରଯୁଜ୍ୟ ?

(A) $x^2 + 8x = 60$

(B) $2x^2 - 8x = 60$

(C) $3x^2 - 12x = 180$

(D) $3x^2 + 12x = 180$

47. ଯଦି ଏକ A.P. ର 7ମ ପଦର 7 ଗୁଣ ଏହାର 11 ତମ ପଦର 11 ଗୁଣ ସହିତ ସମାନ ହୁଏ, ତେବେ ଏହାର 18 ତମ ପଦଟି :

(A) 7

(B) 11

(C) 18

(D) 0

46. The length of a rectangle is greater than its breadth by 4 cm and its area is 60 sq. cm. Which of the following equation is applicable to find its sides?

(A) $x^2 + 8x = 60$

(B) $2x^2 - 8x = 60$

(C) $3x^2 - 12x = 180$

(D) $3x^2 + 12x = 180$

47. If 7 times of the 7^{th} term of an A.P. is equal to 11 times of its 11^{th} term, then its 18^{th} term will be

(A) 7

(B) 11

(C) 18

(D) 0

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

48. ନିମ୍ନସ୍ଥ ମଧ୍ୟରୁ କେଉଁଟି ଗରିଷ୍ଠକ ନିର୍ଣ୍ଣୟ କରିବା ପାଇଁ ଅନ୍ୟତମ ସୂତ୍ର ?

(A) ଗରିଷ୍ଠକ = $\frac{\text{ମାଧ୍ୟମାନ + ମଧ୍ୟମା}}{2}$

(B) ଗରିଷ୍ଠକ = 2 ମଧ୍ୟମା – 3 ମାଧ୍ୟମାନ

(C) ଗରିଷ୍ଠକ = 3 ମଧ୍ୟମା – 2 ମାଧ୍ୟମାନ

(D) ଗରିଷ୍ଠକ = 2 (ମଧ୍ୟମା - ମାଧ୍ୟମାନ)

49. ଗୋଟିଏ ପ୍ରିଜିମ୍‌ର ଭୂମି ଏକ ସମକୋଣୀ ସମଦ୍ୱିବାହୁ ତ୍ରିଭୁଜ | ଏହାର କର୍ଣ୍ଣର ଦୈର୍ଘ୍ୟ $6\sqrt{2}$ ସେ.ମି. | ପ୍ରିଜିମ୍‌ର ଉଚ୍ଚତା 10 ସେ. ମି. ହେଲେ, ଏହାର ଆୟତନ କେତେ ଘନ ସେ. ମି. ?

(A) 720

(B) $360\sqrt{2}$

(C) 360

(D) 180

50. 1 – 6 + 2 – 7 + 3 – 8 + ... 100 ପଦ ପର୍ଯ୍ୟନ୍ତ ରାଶିର ମୂଲ୍ୟ ହେଉଛି :

(A) – 225

(B) – 250

(C) – 300

(D) – 330

48. Which one of the following is the alternative formula for finding mode?

(A) Mode = $\frac{\text{Mean + Median}}{2}$

(B) Mode = 2 Median – 3 Mean

(C) Mode = 3 Median – 2 Mean

(D) Mode = 2 (Median – Mean)

49. The base of a prism is a right-angled isosceles triangle whose hypotenuse is $6\sqrt{2}$ cm. If the height of the prism is 10cm, then what is its volume in cubic cm?

(A) 720

(B) $360\sqrt{2}$

(C) 360

(D) 180

50. The value of the expression 1 – 6 + 2 – 7 + 3 – 8 + ... up to 100 terms is

(A) – 225

(B) – 250

(C) – 300

(D) – 330

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

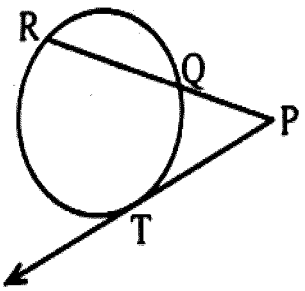
23. A(2, –5) ଏବଂ B(5, 2) ବିନ୍ଦୁକୁ ସଂଯୋଗ କରୁଥିବା ରେଖାଖଣ୍ଡକୁ 2 : 3 ଅନୁପାତରେ ଅନ୍ତର୍ବିଭକ୍ତ କରୁଥିବା ବିନ୍ଦୁଟି କେଉଁ ପାଦରେ ଅବସ୍ଥିତ ?

(A) Q_1
(B) Q_2
(C) Q_3
(D) Q_4

24. $\sin(45° + \theta) - \cos(45° - \theta) = ?$

(A) $2\cos\theta$
(B) 0
(C) $2\sin\theta$
(D) 1

25. ଦତ୍ତ ଚିତ୍ରରେ $\overline{PT}$ ଏକ ସ୍ପର୍ଶଖଣ୍ଡ । PQ = 8 ସେ. ମି. ଓ QR = 10 ସେ. ମି. ହେଲେ, $\overline{PT}$ ର ଦୈର୍ଘ୍ୟ କେତେ ସେ. ମି. ?



(A) 10^2
(B) 28
(C) 18^2
(D) 12

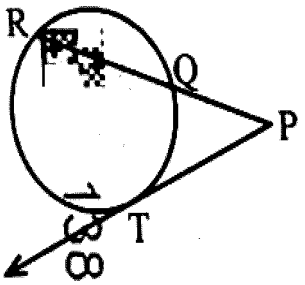
23. The point, which divides internally the line segment joining the points A(2, –5) and B(5, 2) in the ratio 2 : 3 lies in which quadrant?

(A) Q_1
(B) Q_2
(C) Q_3
(D) Q_4

24. $\sin(45° + \theta) - \cos(45° - \theta) = ?$

(A) $2\cos\theta$
(B) 0
(C) $2\sin\theta$
(D) 1

25. In the given figure, $\overline{PT}$ is a tangent segment. If PQ = 8cm and QR = 10cm, then what is the length of $\overline{PT}$ in cm?



(A) 10^2
(B) 28
(C) 18^2
(D) 12

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

26. ଗୋଟିଏ ବୃତ୍ତଜଳାର ବ୍ୟାସାର୍ଦ୍ଧ 7 ସେ.ମି. ଓ କେନ୍ଦ୍ରୀୟ କୋଣର ପରିମାଣ $\frac{2}{7}$ ରେଡିୟାନ୍ ହେଲେ, ଏହାର କ୍ଷେତ୍ରଫଳ କେତେ ବର୍ଗ ସେ. ମି. ?

(A) 7

(B) 14

(C) 35

(D) 49

27. ପ୍ରଥମ 14 ଟି ଗଣନ ସଂଖ୍ୟାର ମଧ୍ୟମା, ପ୍ରଥମ 13 ଟି ଗଣନ ସଂଖ୍ୟାର ମଧ୍ୟମା ଠାରୁ କେତେ ବେଶୀ ?

(A) 1.5

(B) 1

(C) 0.5

(D) 0

28. ଯଦି P – 1, P + 3, 3P – 1 ଗୋଟିଏ A.P. ର ଅନ୍ତର୍ଗତ ,ତେବେ P ର ମୂଲ୍ୟ ହେଉଛି :

(A) 4

(B) – 4

(C) 2

(D) – 2

26. The central angle of a sector of a circle is $\frac{2}{7}$ radian and its radius is 7cm. What is its area in sq.cm?

(A) 7

(B) [illegible]

(C) 35

(D) 49

27. By how much the median of the first 14 counting numbers is greater than the median of the first 13 counting numbers?

(A) 1.5

(B) 1

(C) 0.5

(D) 0

28. If P – 1, P + 3, 3P – 1 are in A.P., then P is equal to

(A) 4

(B) – 4

(C) 2

(D) – 2

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

ନିମ୍ନୋକ୍ତ ପ୍ରତ୍ୟେକ ପ୍ରଶ୍ନପାଇଁ ଚାରୋଟି ବିକଳ୍ପ ଉତ୍ତର ଦିଆଯାଇଛି | ସେଥି ମଧ୍ୟରୁ ଠିକ ଉତ୍ତରଟି ବାଛି OMR ଉତ୍ତର ପତ୍ରରେ ସମ୍ପୃକ୍ତ ବୃତ୍ତଟିକୁ କଳା/ନୀଳ ବଲ୍ ପଏଣ୍ଟ କଲମ ଦ୍ୱାରା ସମ୍ପୂର୍ଣ୍ଣ ଭାବେ କଳା/ନୀଳ କର |

Each of the following question has four answer choices. Choose the correct one and darken the appropriate circle in the OMR sheet completely with black/blue ball point pen only.

ପ୍ରତ୍ୟେକ ପ୍ରଶ୍ନର ମୂଲ୍ୟ 1 (ଏକ) ଅଟେ ।

Each question carries **(one) 1 mark.**

ସମସ୍ତ ପ୍ରଶ୍ନର ଉତ୍ତର ଦିଅ |

Answer all questions.

ସମୟ : 1 ଘଣ୍ଟା 15 ମିନିଟ୍ | ପୂର୍ଣ୍ଣ ସଂଖ୍ୟା – 50

Time:- 1 hour 15 min. | Full Marks :- 50

1. ଏକ ଚାରିଛକ ପାଖରେ ଏକ ଖମ୍ବର ଶୀର୍ଷ ଦେଶରେ ଏକ CCTV କ୍ୟାମେରା ଲାଗିଛି | ଉକ୍ତ କ୍ୟାମେରାରୁ ସଡ଼କ ଉପରେ ଥିବା ଏକ କାରର ଅବନତି କୌଣିକ 45° | ଖମ୍ବର ପାଦଦେଶରୁ କାରର ଦୂରତ୍ୱ 9 ମିଟର ହେଲେ, ଖମ୍ବର ଉଚ୍ଚତା କେତେ?

(A) $9\sqrt{3}$ ମି.

(B) $3\sqrt{3}$ ମି.

(C) 9 ମି.

(D) 10 ମି.

1. A CCTV camera is installed at the top of a pole near a four-way intersection. The angle of depression to a car on the road from the camera is 45°. If the distance from the base of the pole to the car is 9 meters, then what is the height of the pole?

(A) $9\sqrt{3}$ m

(B) $3\sqrt{3}$ m

(C) 9 m

(D) 10 m

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

21. $x_1, x_2, x_3 \ldots\ldots x_n$ ର ମାଧ୍ୟମାନ M ଅଟେ |

$\sum_{i=1}^{n} (x_i - 6) = 60$ ଏବଂ $\sum_{i=1}^{n} (x_i - 9) = 24$

ହେଲେ, n ର ମାନ କେତେ ?

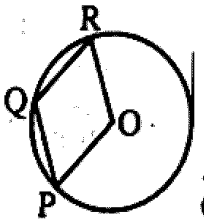
(A) 5

(B) 8

(C) 10

(D) 12

22. ଦତ୍ତ ଚିତ୍ରରେ O ବୃତ୍ତର କେନ୍ଦ୍ର, $\overline{OP} || \overline{QR}$ ଏବଂ $\overline{OR} || \overline{PQ}$ ହେଲେ, $m\angle R = ?$



(A) 30°

(B) 40°

(C) 45°

(D) 60°

21. The mean of the scores $x_1, x_2, x_3 \ldots\ldots x_n$ is M. If $\sum_{i=1}^{n} (x_i - 6) = 60$ and $\sum_{i=1}^{n} (x_i - 9) = 24$, then what is the value of n?

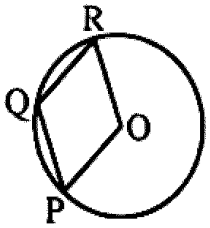
(A) 5

(B) 8

(C) 10

(D) 12

22. In the given figure, O is the centre of the circle. If $\overline{OP} || \overline{QR}$ and $\overline{OR} || \overline{PQ}$, then the measure of $\angle R = ?$



(A) 30°

(B) 40°

(C) 45°

(D) 60°

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

18. ଗୋଟିଏ ବୃତ୍ତ ଆକୃତି ବିଶିଷ୍ଟ ରାସ୍ତାର ଭିତର ଓ ବାହାର ପରିଧି ଯଥାକ୍ରମେ 88 ମିଟର ଓ 132 ମିଟର ହେଲେ, ରାସ୍ତାର ପ୍ରସ୍ଥ କେତେ ମିଟର ?

(A) 8
(B) 7
(C) 6
(D) 3

19. $\Delta ABC \sim \Delta PQR$ | ଯଦି $\overline{AM}$ ଏବଂ $\overline{PN}$ ଯଥାକ୍ରମେ ΔABC ଓ ΔPQR ର ଉଚ୍ଚତା ଏବଂ $AB^2 : PQ^2 = 4 : 9$ ତେବେ $AM : PN$?

(A) 3 : 2
(B) 16 : 81
(C) 4 : 9
(D) 2 : 3

20. ଯଦି ΔPQRର $\overline{PQ}$ ବାହୁ ଉପରିସ୍ଥ S ଏକ ବିନ୍ଦୁ ଯେପରିକି $PS = QS = RS$ ତେବେ :

(A) $PR.QR = RS^2$
(B) $QS^2 + RS^2 = QR^2$
(C) $PR^2 + QR^2 = PQ^2$
(D) $PS^2 + RS^2 = PR^2$

18. The inner and outer circumferences of a circular road are 88m and 132m respectively. Then what is the width of the road in metre?

(A) 8
(B) 7
(C) 6
(D) 3

19. $\Delta ABC \sim \Delta PQR$. If $\overline{AM}$ and $\overline{PN}$ are altitudes of ΔABC and ΔPQR respectively and $AB^2 : PQ^2 = 4 : 9$, then $AM : PN$ is ?

(A) 3 : 2
(B) 16 : 81
(C) 4 : 9
(D) 2 : 3

20. If S is a point on the side $\overline{PQ}$ of ΔPQR such that $PS = QS = RS$, then -

(A) $PR.QR = RS^2$
(B) $QS^2 + RS^2 = QR^2$
(C) $PR^2 + QR^2 = PQ^2$
(D) $PS^2 + RS^2 = PR^2$

16. 16 ସେ.ମି. ବ୍ୟାସାର୍ଦ୍ଧ ବିଶିଷ୍ଟ ଏକ ଅର୍ଦ୍ଧବୃତ୍ତ ଆକୃତିର କାଗଜ ଖଣ୍ଡକୁ ଏକ ବୃହତ୍ତମ କୋନ୍‌ରେ ପରିଣତ କଲେ, କୋନ୍‌ଟିର ଆଧାରର ବ୍ୟାସ କେତେ ସେ.ମି. ହେବ ?

(A) 16

(B) $\frac{8}{\pi}$

(C) $\frac{16}{\pi}$

(D) 8

17. ଗୋଟିଏ ମୁଦ୍ରାକୁ ଦୁଇଥର ଟସ୍ କରାଗଲା | ଅତି କମ୍‌ରେ ଗୋଟିଏ T ଆସିବାର ସମ୍ଭାବ୍ୟତା କେତେ ?

(A) $\frac{1}{4}$

(B) $\frac{2}{4}$

(C) $\frac{3}{4}$

(D) $\frac{4}{4}$

16. What will be diameter in cm of the base of the greatest cone that can be formed out of a semi-circular sheet of paper of radius 16cm ?

(A) 16

(B) $\frac{8}{\pi}$

(C) $\frac{16}{\pi}$

(D) 8

17. A coin is tossed twice. What is the probability of getting at least one T?

(A) $\frac{1}{4}$

(B) $\frac{2}{4}$

(C) $\frac{3}{4}$

(D) $\frac{4}{4}$

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

13. $\tan A = \frac{1}{2}$ ଓ $\cot B = 3$ ହେଲେ A + B ର ମାନ କେତେ ?

(A) 120°

(B) 60°

(C) 45°

(D) 30°

14. $x^2 - 3x - 4 = 0$ ସମୀକରଣଟିର ମୂଳଦ୍ୱୟ α ଓ β ହେଲେ $\alpha^2 - \beta^2$ ମାନ କେତେ ?

(A) 12

(B) – 12

(C) 15

(D) 17

15. ଗୋଟିଏ ବୃତ୍ତର ପରିଧି 352 ମିଟର ହେଲେ ଏହାର କ୍ଷେତ୍ରଫଳ କେତେ ?

(A) 985.6 ବ.ମି.

(B) 98.56 ବ.ମି.

(C) 9.856 ବ.ମି.

(D) 9856 ବ.ମି.

13. If $\tan A = \frac{1}{2}$ and $\cot B = 3$, then what is the value of A + B?

(A) 120°

(B) 60°

(C) 45°

(D) 30°

14. If the roots of the equation $x^2 - 3x - 4 = 0$ are α and β, then what is the value of $\alpha^2 - \beta^2$?

(A) 12

(B) – 12

(C) 15

(D) 17

15. What is the area of the circle whose circumference is 352 metre?

(A) 985.6 sq.m

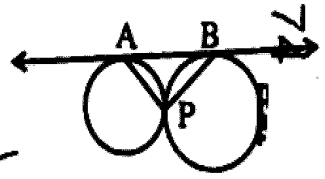
(B) 98.56 sq.m

(C) 9.856 sq.m

(D) 9856 sq.m

ରଫ୍ ପାଇଁ ସ୍ଥାନ/ SPACE FOR ROUGH WORK

10. ଦତ୍ତ ଚିତ୍ରରେ ବୃତ୍ତଦ୍ୱୟ P ବିନ୍ଦୁରେ ସ୍ପର୍ଶ କରନ୍ତି | $\overleftrightarrow{AB}$ ବୃତ୍ତଦ୍ୱୟର ସାଧାରଣ ସ୍ପର୍ଶକ ଏବଂ A ଓ B ସ୍ପର୍ଶବିନ୍ଦୁ | $m\angle APB = ?$



(A) 120°
(B) 90°
(C) 60°
(D) 45°

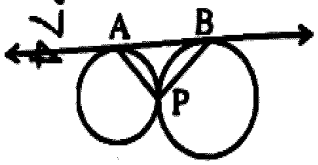
11. ନିମ୍ନସ୍ଥ କେଉଁ ଦ୍ୱିଘାତ ସମୀକରଣର ମୂଳଦ୍ୱୟ $(2+\sqrt{2})$ ଓ $(2-\sqrt{2})$ ହେବ ?

(A) $x^2 - \sqrt{2}x + 2 = 0$
(B) $x^2 - 2\sqrt{2}x + 2 = 0$
(C) $x^2 + 4x - 2 = 0$
(D) $x^2 - 4x + 2 = 0$

12. ଗୋଟିଏ ବୃତ୍ତାନ୍ତର୍ଲିଖିତ ଚତୁର୍ଭୁଜ ABCD ର $m\angle A = 60°$, $m\angle B = 130°$ ହେଲେ, $m\angle D$ ଓ $m\angle C$ ର ଅନ୍ତର କେତେ ?

(A) 50°
(B) 60°
(C) 70°
(D) 80°

10. In the given figure, the circles touch each other at the point P. $\overleftrightarrow{AB}$ is their common tangent and A, B are the points of contact. Then $m\angle APB = ?$



(A) 120°
(B) 90°
(C) 60°
(D) 45°

11. Which of the following quadratic equation has $(2+\sqrt{2})$ and $(2-\sqrt{2})$ as the pair of roots?

(A) $x^2 - \sqrt{2}x + 2 = 0$
(B) $x^2 - 2\sqrt{2}x + 2 = 0$
(C) $x^2 + 4x - 2 = 0$
(D) $x^2 - 4x + 2 = 0$

12. ABCD is a cyclic quadrilateral. If $m\angle A = 60°$, $m\angle B = 130°$, then what is the difference between $m\angle D$ and $m\angle C$?

(A) 50°
(B) 60°
(C) 70°
(D) 80°

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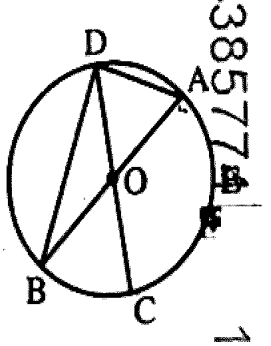
2. ଦତ୍ତ ଚିତ୍ରରେ O ବୃତ୍ତର କେନ୍ଦ୍ର | $m\overset{\frown}{AEC}=110^\circ$ ହେଲେ, $m\angle BDC=?$



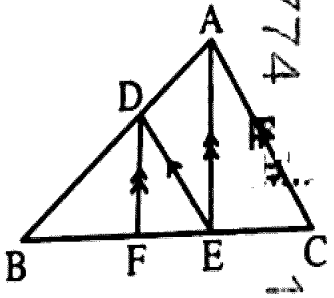
(A) 35°

(B) 45°

(C) 55°

(D) 70°

3. ଦତ୍ତ ଚିତ୍ରରେ $\overline{DE}||\overline{AC}$ ଏବଂ $\overline{DF}||\overline{AE}$ | ଏଥି ମଧ୍ୟରୁ କେଉଁଟି $\frac{BE}{FE}$ ସହିତ ସମାନ ?



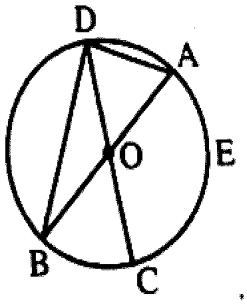
(A) $\frac{DF}{AE}$

(B) $\frac{BE}{EC}$

(C) $\frac{BA}{AC}$

(D) $\frac{FE}{EC}$

2. In the given figure O is the centre of the circle and $m\overset{\frown}{AEC}=110^\circ$, then $m\angle BDC=?$



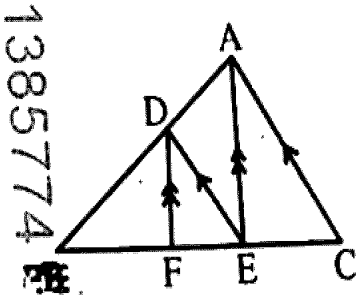
(A) 35°

(B) 45°

(C) 55°

(D) 70°

3. In the given figure, $\overline{DE}||\overline{AC}$ and $\overline{DF}||\overline{AE}$. Which of these is equal to $\frac{BE}{FE}$?



(A) $\frac{DF}{AE}$

(B) $\frac{BE}{EC}$

(C) $\frac{BA}{AC}$

(D) $\frac{FE}{EC}$

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6. ଯଦି $2x = 5y + 6$ ଓ $15y = 6x - 18$ ଦୁଇଟି ସରଳରେଖାର ସମୀକରଣ ହୁଏ, ତେବେ ସରଳରେଖା ଦ୍ୱୟ :

(A) ପରସ୍ପର ଛେଦୀ ହେବେ

(B) ସମାନ୍ତର ହେବେ

(C) ସମାପତିତ ହେବେ

(D) ହୁଏତ ପରସ୍ପର ଛେଦୀ କିମ୍ବା ସମାନ୍ତର ହୋଇପାରନ୍ତି

7. A ବିନ୍ଦୁ y-ଅକ୍ଷ ଉପରେ ମୂଳବିନ୍ଦୁ ଠାରୁ 4 ଏକକ ଦୂରତାରେ ଅଛି। ଯଦି B ବିନ୍ଦୁର ସ୍ଥାନାଙ୍କ $(-3, 0)$ ହୁଏ, ତେବେ $\overline{AB}$ ର ଦୈର୍ଘ୍ୟ କେତେ ?

(A) 7 ଏକକ

(B) 5 ଏକକ

(C) 49 ଏକକ

(D) 25 ଏକକ

6. If the equation of two lines are $2x = 5y + 6$ and $15y = 6x - 18$, the lines will be -

(A) intersecting each other

(B) parallel to each other

(C) coincident

(D) either intersecting or parallel to each other

7. Point A is on the y-axis at a distance of 4 units from origin. If co-ordinates of point B is $(-3, 0)$, then what is the length of $\overline{AB}$?

(A) 7 units

(B) 5 units

(C) 49 units

(D) 25 units

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8. ଏକ ବୃତ୍ତର ବ୍ୟାସାର୍ଦ୍ଧ 13 ସେ. ମି. । ଉକ୍ତ ବୃତ୍ତର କେନ୍ଦ୍ର ଠାରୁ 10 ସେ. ମି. ଦୀର୍ଘ ଏକ ଜ୍ୟା ର ଦୂରତା କେତେ ସେ. ମି. ?

(A) 8

(B) 10

(C) 12

(D) 18

9. ଦୁଇଟି ଲୁଡୁଗୋଟି ଏକ ସଙ୍ଗେ ଗଡାଇଲେ ସଂଖ୍ୟା ଦ୍ୱୟର ସମଷ୍ଟି 5 ରୁ ଅଧିକ ହେବାର ସମ୍ଭାବ୍ୟତା କେତେ ?

(A) $\frac{1}{18}$

(B) $\frac{5}{18}$

(C) $\frac{7}{18}$

(D) $\frac{13}{18}$

8. The radius of a circle is 13cm. What is the distance in cm of a chord of length 10cm from its centre?

(A) 8

(B) 10

(C) 12

(D) 18

9. Two dice are rolled together. What is the probability of getting the sum of numbers more than 5?

(A) $\frac{1}{18}$

(B) $\frac{5}{18}$

(C) $\frac{7}{18}$

(D) $\frac{13}{18}$