



# Zydus School for Excellence

Class: 10

Practice Test Paper Sem-II

Date: 25-02-22

MM:40

Subject: Mathematics

Time:  $1\frac{1}{2}$  hours

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## Instructions:

Answer all questions from **Section-A** and any three questions from **Section-B**.

There are 7 printed pages in this question paper.

The first 10 minutes are only for reading the Question Paper.

All working, including the rough work, must be clearly shown and must be done on the same sheet as the rest of the answers.

Omission of essential working will result in the loss of marks.

The intended marks for questions or parts of questions are given in brackets [ ].

Images of each page of the answer sheet should be pasted on a word (or PDF) document and mailed to email ID **abraham@zydusschool.org** by **12:30 pm** on the same day. Student's Name + Surname + Class + Section should be the file name for the answer sheet. (Eg: Heer Shah 10 A).

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## SECTION-A [ 10 Marks]

( Attempt **all** questions from this section)

### Question 1

Choose the correct answers to the questions from the given options.

( **Do not copy the question, write the correct answer only.**) [10]

(i) If the height of the vertical pole is  $\sqrt{3}$  times the length of its shadow on the ground, then the angle of elevation of the sun at that time is:

- a)  $30^\circ$                       b)  $60^\circ$                       c)  $45^\circ$                       d)  $75^\circ$

(ii) A box contains 150 apples . If one apple is taken out of random and the probability of its being rotten is 0.06, then the number of good apples in the box is:

- a) 90                              b) 121                              c) 60                              d) 141

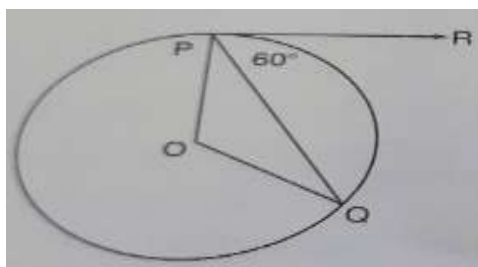
(iii) The reflection of a point A(5,2) in the line  $x-2 = 0$  is:

- a) (5,-2)                      b) (-5,2)                      c) (-1,2)                      d) ( 1,-2)

(iv) The midpoint of the line segment joining (2a, 4) and (-2, 2b) is (1, 2a+1) then the value of b is :

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

(v) If PR is a tangent to the circle at P and O is the centre of the circle , then  $\angle POQ = \underline{\hspace{2cm}}$ .



- a)  $130^\circ$                                       b)  $100^\circ$                                       c)  $120^\circ$                                       d)  $90^\circ$

(vi) Consider the following frequency distribution:

Class	0-9	10-19	20-29	30-39	40-49
Frequency	13	10	15	8	11

The upper limit of the median class is:

- a) 19.5                                      b) 29.5                                      c) 23.5                                      d) 29

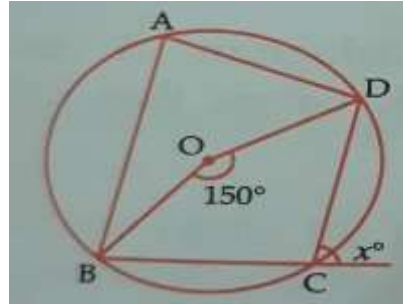
(vii) The value of  $\sqrt{\frac{1+\sin\theta}{1-\sin\theta}}$  is:

- a)  $\cot\theta - \operatorname{cosec}\theta$     b)  $\operatorname{cosec}\theta + \cot\theta$     c)  $\operatorname{cosec}^2\theta + \cot^2\theta$                       d)  $\sec\theta + \tan\theta$

(viii) The slope of a line parallel to y axis is :

- a) 0                                      b) 1                                      c) -1                                      d) not defined.

(ix) In the following figure, point O is the centre of the circle, find the value of x:



a)  $30^\circ$

b)  $75^\circ$

c)  $150^\circ$

d)  $60^\circ$

(x) If the diameter of the base of the cone is 10 cm and its height is 12 cm, then its curved surface area is :

a)  $60\pi \text{ cm}^2$

b)  $65\pi \text{ cm}^2$

c)  $90\pi \text{ cm}^2$

d)  $120\pi \text{ cm}^2$

### SECTION-B [ 30 Marks]

( Attempt any 3 questions from this section )

#### Question 2

(i) The points  $(k,3)$ ,  $(2,-4)$  and  $(-k+1, -2)$  are collinear. Find the value of  $k$ . [2]

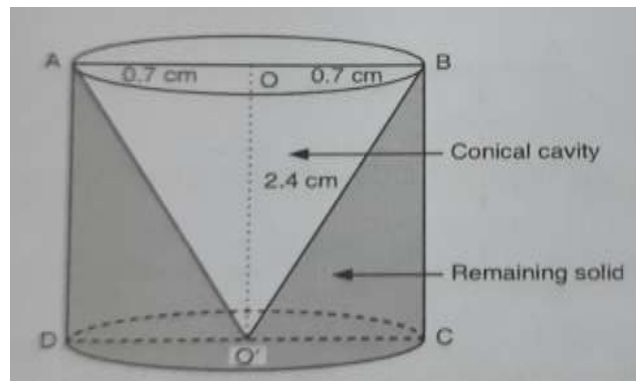
(ii) Heer shah took a 10-rupee coin and a 5-rupee coin. She tossed these two coins simultaneously. Find the probability of getting:

(a) atmost one head.

(b) atleast one tail.

[2]

(iii) From a solid cylinder whose height is 2.4 cm and diameter 1.4 cm, a conical cavity of same height and same diameter is hollowed out. Find the total surface area of remaining solid to the nearest  $\text{cm}^2$ . [3]



(iv) Two persons standing on the same side of a tower in a straight line with it, the measure of angles of elevation of the top of the tower as  $30^\circ$  and  $50^\circ$  respectively. If the height of the tower is 200m, find the distance between the two persons. [ give your answer correct to 1-decimal place.] [3]

### Question 3

(i) Prove that:  $\tan^2\theta + \cot^2\theta + 2 = \sec^2\theta \operatorname{cosec}^2\theta$ . [2]

(ii) Find the median height of the following data: [2]

Height (in cm)	131	132	133	134	135	136	137
No. of students	6	4	11	9	16	12	2

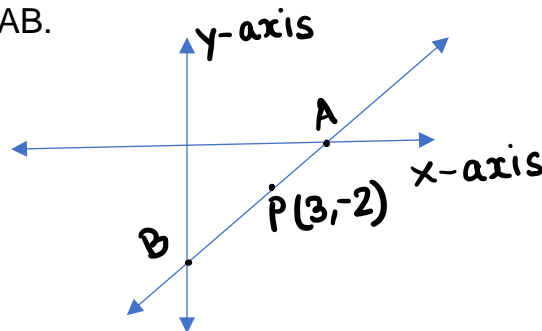
(iii) A and B are two points on x-axis and y-axis respectively. P(3,-2) is a point such that P divides AB in the ratio 2:3 .

(a) Find the coordinates of A and B .

(b) the angle of inclination of the line AB in the positive direction of x-axis.

(c) Equation of line AB.

[3]



(iv) Use graph for this question. Take 2cm = 1 unit on both the axes.

(a) Plot the points A (-1,4) B (-4,2) C (-2,1) and reflect these points in the line  $x=0$  to obtain the points A', B' and C'. Write the coordinates of A' , B', and C'.

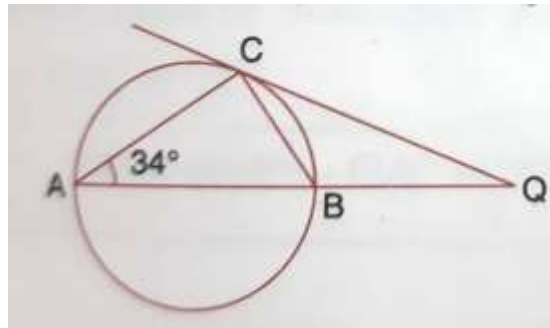
(b) Reflect the point C in the line  $y=0$  to obtain a point D. Write the coordinates of D.

- (c) Reflect the point C in origin to obtain a point E. Write the coordinates of E.
- d) Write the geometrical name of the figure ABCDEC' B' A'. [3]

#### Question 4

(i) Three consecutive vertices of a parallelogram ABCD are A(1,2), B(1,0) and C(4,0). Find the 4<sup>th</sup> vertex D and the equation of diagonal BD. [2]

(ii) In the given figure, AB is a diameter. The tangent at C meets AB produced at Q. If  $\angle CAB = 34^\circ$ , find  $\angle CQB$ . [2]



(iii) Two vertical poles of different heights are standing 20m away from each other on the level ground. The angle of elevation of the top of the first pole from the foot of the second pole is  $60^\circ$  and angle of elevation of the top of the second pole from the foot of the first pole is  $30^\circ$ . Find the difference between the heights of two poles.[ Give your answer correct to 3-significant digits.] [3]

(iv) Use graph paper for this question. The following frequency distribution represents the height of 160 students of a school.

Height (in cm)	140-145	145-150	150-155	155-160	160-165	165-170	170-175	175-180
No. of students	12	20	30	38	24	16	12	8

Draw an ogive for the given distribution taking 2cm= 5cm height on one axis and 2 cm= 20 students on the other axis. Using your ogive, find the upper quartile. [3]

#### Question 5

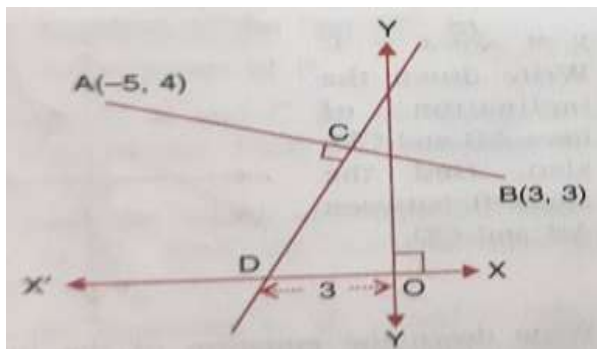
(i) A conical tent is 10 m high and the radius of its base is 24 m. Find the canvas required to make the tent, if the cost of  $1\text{m}^2$  canvas is ₹ 70 . [2]

(ii) In the adjoining figure,  $AB \perp CD$ ,

a) find the equation of AB.

b) Find the equation of CD.

[2]



(iii) Prove that  $(\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 = 7 + \tan^2\theta + \cot^2\theta$ . [3]

(iv) The following distribution shows the daily pocket money allowance of children of a locality. If the mean pocket money is ₹18, find the missing frequency k. [3]

Daily pocket allowance (in ₹)	11-13	13-15	15-17	17-19	19-21	21-23	23-25
No. of children	3	6	9	13	k	5	4

### Question 6

(i) Cards marked with numbers 13, 14, 15, ....., 60 are placed in a box and mixed thoroughly. One card is drawn at random from the box. Find the probability that the number drawn on the card is

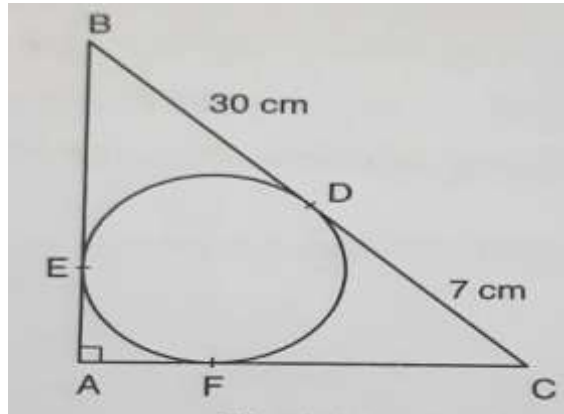
(a) divisible by 5

(b) a perfect square number.

[2]

(ii) Given a line segment AB joining the points A (-4,5) and B(16,10) . Find the ratio in which AB is divided by the y-axis. Find the coordinates of the point of intersection. [2]

(iii) BDC is a tangent to the given circle at point D such that  $BD = 30$  cm and  $CD = 7$  cm. The other tangents BE and CF are drawn respectively from B and C to the circle and meet when produced at A making BAC at right angled triangle. Find the radius of the circle. [3]



(iv) Use graph paper for this question. The following table shows daily expenditure on food of 50 locality. Draw histogram for the given data and estimate the mode using histogram. [3]

Daily Expenditure(in ₹)	100-150	150-200	200-250	250-300	300-350	350-400
No. of house holds	7	8	16	9	6	4

-----ALL THE BEST-----