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# JSUNIL TUTORIAL

PUNJABI COLONY GALI 01

## 10th Class Sample Test Paper – 2011

### Section A

Q.1 From the top of a lighthouse 60 metres high with its base at the sea level, the angle of depression of a boat is  $30^\circ$ . The distance of the boat from the foot of the lighthouse is

- (a)  $10\sqrt{3}$  m (b)  $15\sqrt{3}$  m (c)  $20\sqrt{3}$  m (d) none of these

Q.2 The sum  $S$  of first  $n$  even natural numbers is given by the relation  $s = n(n+1)$ . Find  $n$ , if the sum is 420

- (A) 20 (B) 22 (C) 18 (D) NONE

Q.3 In what ratio does the point  $(11/6, 17/6)$  divide the join of  $A(1, 2)$  and  $B(3, 4)$ .

- (A) 5 : 7 (B) 7 : 5 (C) 2 : 3 (D) NONE

Q.4 Find the probability that a number selected at random from the numbers 3, 4, 5, ..., 25 is prime.

- (A)  $9/23$  (B)  $8/25$  (C)  $8/23$  (D) NONE

Q.5 The sum of all three digit numbers which are divisible by 7

- (A) 7336 (B) 70336 (C) 128 (D) NONE

Q.6 If tangents  $PA$  and  $PB$  from a point  $P$  to a circle with centre  $O$  are inclined to each other at angle of  $80^\circ$ , then  $\angle POA$  is equal to

- (A)  $50^\circ$  (B)  $60^\circ$  (C)  $70^\circ$  (D) NONE

Q.7 The angle subtended at the centre of a circle of radius 7 cm, by an arc of length 11 cm?

- (A) 90 (B) 80 (C) 60 (D) NONE

Q.8 A right  $\triangle ABC$  right angled at  $A$  drawn to circumscribe a circle of radius 5cm with centre  $O$ . If  $AC = 17$ cm and  $AB = 18$ cm, then  $OC$  is equal to

- (a) 10cm (b) 9cm (c) 12cm (d) 13cm

Q.9 What is the probability that two friends have different birthdays?

- (A)  $1/365$  (B)  $364/365$  (C)  $364/366$  (D) NONE

Q.10 Distance between two parallel lines is 14cm. The radius of circle which will touch both two lines is

- (a) 6cm (b) 7cm (c) 12cm (d) 14cm

**Section B**

**Q.11** Using quadratic formula, solve the following equation for  $x$  :  $abx^2 + (b^2 - ac)x - bc = 0$ .

**Q.12** Two concentric circles are of radii 5cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.

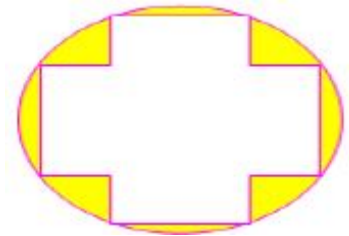
**Q.13** Find the arithmetic progression whose third term is 16 and seventh term exceeds its fifth term by 12.

**Q.14** Solid cylinder of brass 8 m high and 4 m diameter is melted and recast into a cone of diameter 3 m. Find the height of the cone.

**Q.15** AB is a diameter and AC is a chord of a circle such that  $\angle BAC = 30^\circ$ . If tangent at C intersects AB produced at D, prove that  $BC=BD$ .

**Q.16** Find the probability of getting 52 Sunday and Monday in a leap year.

**Q.17** The length of minute hand of a clock is 14cm. find the area swept by the minute hand in 5 minutes.



OR,

Two equal rectangles are intersecting each other in a circular field. If the dimensions of Rectangular courts are 20 m x 10 m. Find the area of the shaded region

18. If,  $3/2, k, 5k/8$  are in A.P., find the value of K.

**Section C**

**Q.19** The shadow of a flagstaff is three times as long as the shadow of the flagstaff when the sun rays meet the ground at an angle of  $60^\circ$ . Find the angle between the sun rays and the ground at the time of longer shadow.

OR

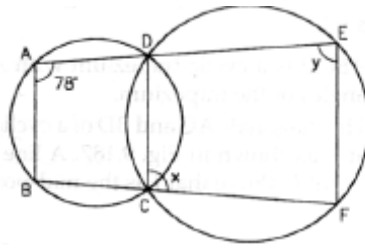
The angle of elevation of the top Q of a vertical tower PQ from a point X on the ground is  $60^\circ$ . At a point Y, 40 m vertically above X, the angle of elevation is  $45^\circ$ . Find the height of the tower PQ and the distance XQ.

**Q.20** If I walked  $1 \text{ km/hr}$  faster, I would have taken 15 minutes less to walk 3 km. find the rate of my walking.

**Q.21** If the point C(-1,2) divides line segment AB in the ratio 3:4, where the co-ordinates of A are (2,5), find the co-ordinates of B .

**Q.22** In a family, there are three children. Assuming that the chances of a child being a male or female are equal , find the probability that (a) there is one girl in the family (b) there is no male child in the family,there is at least one male child in the family.

**Q.23** In fig.,  $\angle BAD = 78^\circ$ ,  $\angle DCF = x^\circ$  and  $\angle DEF = y^\circ$ . Find the values of x and y.

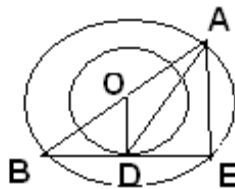


**Q.24** If  $S_1$  ,  $S_2$  ,  $S_3$  are the sum of n terms of three AP's, the first term of each being unity and the respective common difference being 1, 2 , 3; prove that  $S_1 + S_2 = S_3$

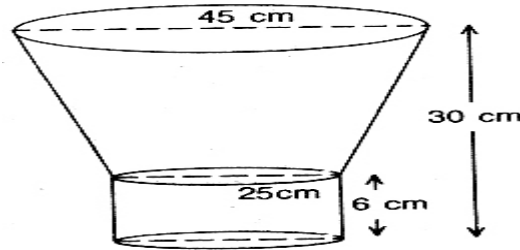
OR

The angles of a quadrilateral are in A.P. whose common difference is  $10^\circ$ . Find the angles.

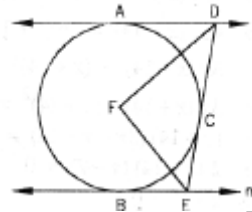
**Q.25** The radii of two concentric circles are 13 cm and 8 cm . AB is a diameter of the bigger circle BD is tangent to the smaller circle touching it at D .Find the length of AD .



**Q.26** A metallic bucket is in the shape of a frustum of a cone mounted on a hollow Cylindrical base given in the figure. If the diameters of two circulars ends of the bucket are 45cm and 25 cm, total vertical height is 30 cm and that of the cylindrical portion is 6 cm, find the area of the metallic sheet used to make the bucket.



**Q.27** In fig. I and m are two parallel tangents at A and B. The tangent at C makes an intercept DE between l and m. Prove that  $\angle DFE = 90^\circ$ .



**Q.28** Find the coordinates of the points which divide the line segment joining the points  $(-8, 0)$  and  $(4, -8)$  in four equal parts.

### Section C

**Q.29** One fourth of a herd of camels was seen in the forest. Twice the square root of the herd had gone to the mountains and the remaining 15 camels were seen on the bank of a river. Find the total number of camels.

**Q.30** Draw a triangle ABC with side  $BC = 7\text{cm}$ ,  $\angle B = 45^\circ$ ,  $\angle A = 105^\circ$ , then construct a triangle whose sides are  $\frac{5}{3}$  times the corresponding side of  $\triangle ABC$ .

**Q.31** There is a small island in between a river 100 meters wide. A tall tree stands on the island P and Q are points directly opposite to each other on the two banks and in line with the tree. If the angles of elevation of the top of the tree from P and Q are  $30^\circ$  and  $45^\circ$  respectively, find the height of tree.

**Q.32** A well with 10m inside diameter is dug 14 m deep. Earth taken out of it is spread all a round to a width of 5 m to form an embankment. Find the height of embankment.

OR

A hemispherical tank of radius  $\frac{7}{3}$  m is full of water. It is connected with a pipe which empties it at the rate of 7 litres per second. How much time will it take to empty the tank completely?

**Q.33** Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.

**Q.34** The sum of three numbers in A.P. is 27 and their product is 648. Find the numbers.