Instructions:

All the questions are compulsory.

Question Numbers	Question Type	Count	Points per Questions	Total
1 - 40	Multi choice	40	1	40
Grand Total				40

1. Find the HCF of 1848, 3058, and 1331.   1 Pt.

   A) 9

   B) 14

   C) 13

   D) 11

2. Without actually performing the long division, state whether the following rational numbers will have a   1 Pt.
   terminating decimal expansion or a non-terminating decimal expansion: 23/8

   A) Non-terminating non – repeating decimal

   B) Non-terminating repeating decimal

   C) Non-terminating decimal

   D) Terminating decimal

3. Which one of the following can't be the square of a natural number?   1 Pt.

   A) 42437

   B) 20164

   C) 81225

   D) 32761

4. Write down the decimal expansions of 13/ 6250   1 Pt.

   A) 0.0208

   B) 0.00208

   C) 0.00512

   D) 0.00416

5. Decide whether 52.123456789 is a rational number or not. If rational (in the form p/q), what can you   1 Pt.
   say about the prime factors of q?

   A) Rational Number, Prime factor of q will be only 2.

   B) Rational Number, Prime factor of q will have a factor other than 2 or 5.

   C) Not rational number

   D) Rational Number, Prime factors of q will have either 2 or 5 or both

6. Which of the following does not satisfy the following property?   1 Pt.
   "A number that divides 542 and 128 and leaves a remainder 2 in both cases."

   A) 12

   B) 9

   C) 6

   D) 3

7. If p, q & r are the zeroes of a cubic polynomial ax^3+bx^2+cx+d, then what will be p+q+r?   1 Pt.

   A) c/a

   B) b/a

   C) –(c/a)

   D) – (b/a)

8. If α,β are the zeros of the polynomial, $x^2-px+36$ and $\alpha^2+\beta^2=9$, then what is the value of p? **1 Pt.**

   A) 6
   B) 3
   C) 9
   D) 8

9. The figure shows the graphical representation of a pair of linear equations. On the basis of graph, the pair of linear equation gives _____ solutions. **1 Pt.**
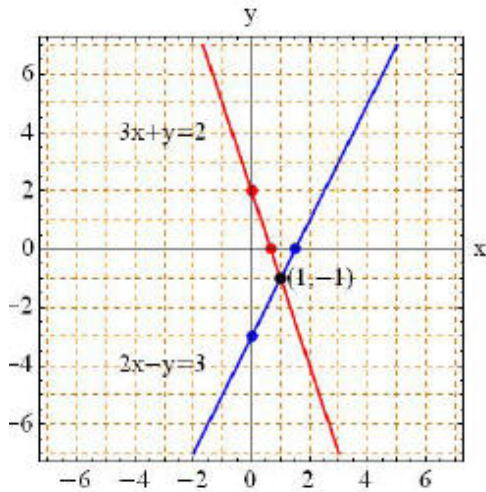

   A) Four
   B) Only one
   C) Infinite
   D) Zero

10. Solve the following pair of equation **1 Pt.**
    (7x-2y) / xy=5
    (8x+6y) /xy =15

    A) (-2) /5 , not defined
    B) 2, not defined
    C) 5/2 , not defined
    D) None of the above

11. Solve the following pair of equations:2x+y=73x+2y=12 **1 Pt.**
    Choose the correct answer from the given options.

    A) (-3,2)
    B) (1,0)
    C) (3,2)
    D) (2,3)

12. Point P lies on the line 3x+ 4y – 12 = 0. If X- coordinate of P is a, then its y-coordinate is _____. **1 Pt.**

    A) (12-3a) / 4
    B) (12-4a)/ 3
    C) (12+3a)/4
    D) (3a-12)/4

13. The distance of the point (–2, –2) from the origin is **1 Pt.**

    A) 2
    B) 8
    C) 22
    D) 9

14. Mid-point of the line-segment joining the points (– 5, 4) and (9, – 8) is: 1 Pt.

    A) (-2,2)
    B) (7,-6)
    C) (2,-2)
    D) (-7,6)

15. Point A (1, 2) and B (3, 4) are two ends of a line segment. Find the point which divides AB in the ratio 3:4 1 Pt.
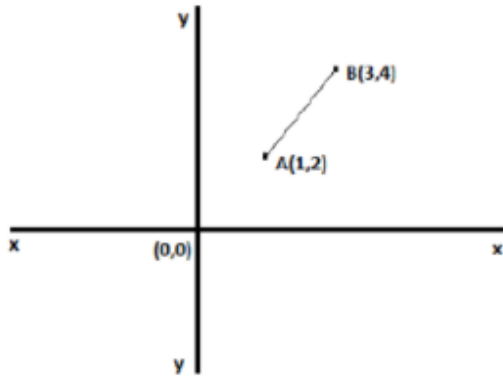

    A) (4,3)
    B) (2,3)
    C) 15/7, 22/7
    D) 13/7, 20/7

16. The points (6. 6), (0, 6), and (6, 0) are the vertices of a right triangle as shown in the figure. Find the distance between its centroid and circumcentre. 1 Pt.
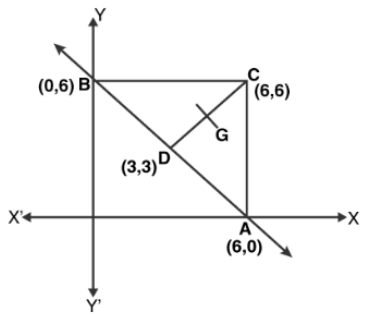

    A) 3
    B) 2
    C) 6
    D) 5

17. What will be the reflection of the point (4, 5) about the X-axis, in the fourth quadrant? 1 Pt.

    A) (4,5)
    B) (4,-5)
    C) (-4,-5)
    D) (-4,5)

18. If △ ABC ~ △ DEF such that AB = 12 cm and DE = 14 cm. Find the ratio of areas of △ ABC and △ DEF. 1 Pt.
    A) 49/9
    B) 36/49
    C) 49/16
    D) 25/49

19. △ ABC is an acute-angled triangle. DE is drawn parallel to BC as shown. Which of the following is always   1 Pt.
true?
i) △ ABC ~ △ ADE
ii) AD/BD= AE/EC
iii) DE= BC/2
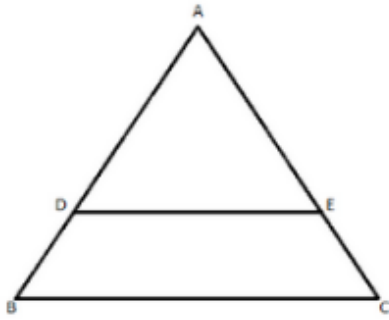

A) Only (i)
B) (i) and (ii) only
C) (i), (ii) and (iii)
D) (ii) and (iii) only

20. △ ABC is such that AB = 3 cm, BC = 2 cm and CA = 2.5 cm.△ DEF is similar to △ABC. If EF = 4 cm, then   1 Pt.
the perimeter of △DEF is –

A) 7.5 cm
B) 15cm
C) 30cm
D) 22.5cm

21. In the figure, △ABC is a right-angled triangle with a right angle at B. BD is perpendicular to AC. Then   1 Pt.
which of the following options will hold true?
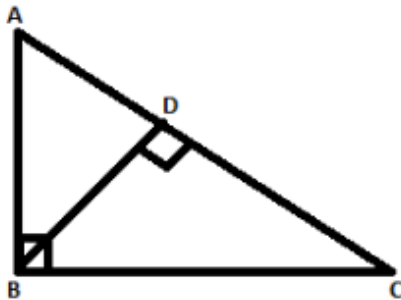
A) AD2=DC×AC
B) AB2=AD×AC
C) AB2=AD×DC
D) AB2=DC2+AD2

22. In △ ABC and △ DEF, ∠A = ∠E = 40∘ and AB/ED=AC/EF. Find ∠B if ∠F is 65°   1 Pt.

A) 85°
B) 75°
C) 35°
D) 65°

23. In △ABC, AB = 3 and, AC = 4 cm and AD is the bisector of ∠A. Then, BD : DC is —   1 Pt.

A) 9: 16
B) 4:3
C) 3:4
D) 16:9

24. There is a circle of diameter 10 cm. A chord of length 6 cm is drawn inside the circle. What is the distance between the centre and this chord in cm?   1 Pt.

A) 1.5

B) 2

C) 4

D) 3

25. If a square with side 'a' is inserted within a circle such that the corners coincide with the circumference of the circle with diameter 'd'. Find the relation between 'a' and 'd'.   1 Pt.
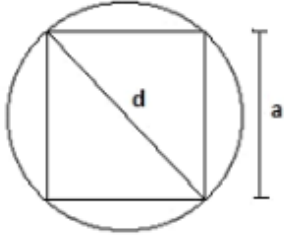
A) a=d2

B) a=d2

C) a = 2d

D) a = d

26. If the perimeter and the area of a circle are numerically equal, then the radius of the circle is   1 Pt.

A) 3 units

B) 4 units

C) π units

D) 2 units

27. Consider a point A on the circle of radius 7/π cm as shown in the figure. A ball on point A moves along the circumference until it reaches a point B. The tangent at B is parallel to the tangent at A. What is the distance travelled by the ball? (Consider the ball to be a point object)   1 Pt.
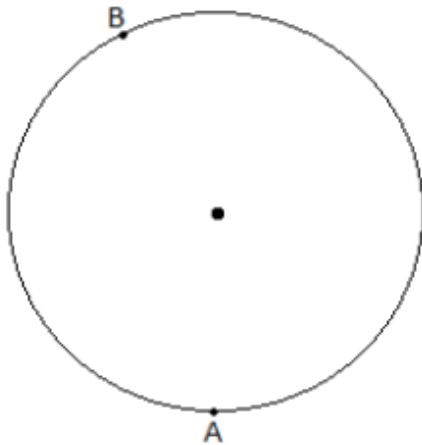

Note: The point B in the diagram may not represent its actual position.

A) 3.5cm

B) 7cm

C) 14cm

D) 28cm

28. 24 cards numbered 1, 2, 3, ..., 23, 24 are put in a box and mixed thoroughly. One person draws a card from the box. The probability that the number on the card is divisible by 2 or 3 or both is   1 Pt.

A) 5/6

B) 2/3

C) 1/3

D) 1/6

29. A single die is rolled. The probability of getting 1 or an even number is   1 Pt.
    A) 1/6
    B) 4/6
    C) 5/6
    D) 3/6

30. There are 5 green, 6 black and 7 white balls in a bag. A ball is drawn at random from the bag. Find the   1 Pt.
    probability that it is not white.
    A) 5/18
    B) 2/13
    C) 11/18
    D) 7/18

31. Solve the following pair of equations: 1 Pt.
    (1/x) + (3/y) =1
    (6/x)- 12/y=2
    A) X= 5/3 , Y= 15/2
    B) x=4,y=9
    C) x=3,y=11
    D) X= 3/4 , Y= 7/3

32. If $\sec\theta + \tan\theta = x$, then $\tan\theta$ is: 1 Pt.
    A) (x2-1) / 2x
    B) (x2+1) / 2x
    C) (x2-1) / x
    D) (x2+1) / x

33 - 36 are based on Case Study - I

Two airplanes leave an airport, one after the other. After moving on the runway, one flies due North and the other flies due South. The speed of the two airplanes is 400 km/hr and 500 km/hr respectively. Considering PQ as a runway and A and B are any two points in the path followed by two planes, then answer the following questions.
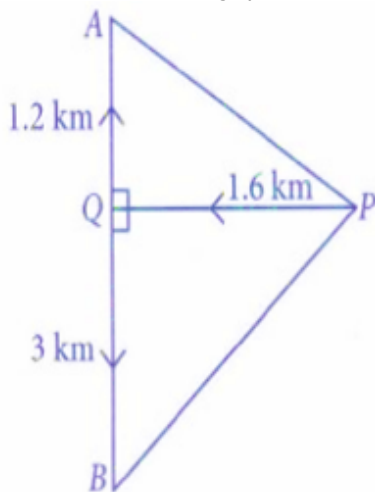
33. Find $\tan\theta$; if $\angle APQ=\theta$ 1 Pt.
    A) 12
    B) 12
    C) 32
    D) 34

34. Find cotB, if ∠APQ=θ   1 Pt.

   A) 45

   B) 158

   C) 154

   D) 38

35. Find tanA, if ∠APQ=θ   1 Pt.

   A) 2

   B) 2

   C) 43

   D) 23

36. Find SecA. if ∠APQ=θ   1 Pt.

   A) 1

   B) 23

   C) 43

   D) 53

37 - 40 are based on Case Study - II

An asana is a body posture, originally and still a general term for a sitting meditation pose, and later extended in hatha yoga and modern yoga as exercise, to any type of pose or position, adding reclining, standing, inverted, twisting, and balancing poses. In the figure, one can observe that poses can be related to representation of quadratic polynomial.

37. The shape of the poses shown is   1 Pt.

   A) Spiral

   B) Ellipse

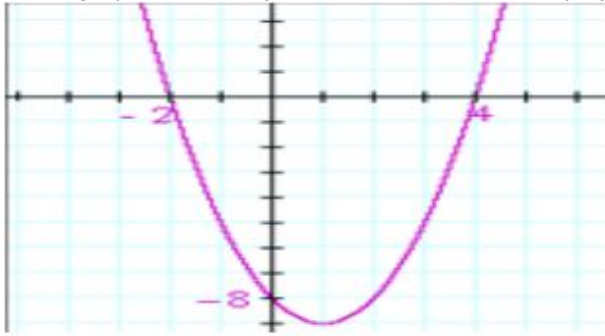   C) Linear

   D) Parabola

38. The graph of parabola opens downwards, if _____   1 Pt.

   A) $a \geq 0$

   B) $a = 0$

   C) $a < 0$

   D) $a > 0$

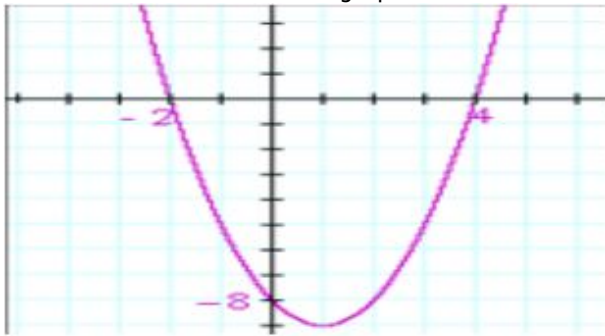39. In the graph, how many zeroes are there for the polynomial?   1 Pt.

A) 0
B) 1
C) 2
D) 3

40. The two zeroes in the shown graph are   1 Pt.

A) 2, 4
B) -2, 4
C) -8, 4
D) 2, -8