QUESTION 1
If a = 20, b = 0, c = 10, x = 8, y = 12, then the value of

   2aby + 2cx is

   A.  100     B.  160     C.  400     D.  640     E.  none of these


QUESTION 2-5 / 4
For each of the following equations or pairs of equations, concerned with
real numbers, mark on the answer sheet

   A.  if there is no solution
   B.  if there is one solution
   D.  if there are three solutions
   E.  if there are more than three solutions


2.  x + y = 12 , x - y = 4
   _____

3.  m + n = 2, 3m + 3n = 9
   _____

4.  xý – 5x + 6 = 0
   _____

5.  3p + q = 16
   _____


QUESTION 6
If xy = 1 and x is greater than 0, which of the following statements
is true?

   A.  When x is greater than 1, y is negative.
   B.  When x is greater than 1, y is greater than 1.
   C.  When x is less than one, y is less than 1.
   D.  As x increases, y increases.
   E.  As x increases, y decreases.

QUESTION 7
In the figure on the right,
$$KX = \frac{1}{3} KL \text{ and } KY = \frac{1}{3} KM.$$
Which of the following statements
are true ?

    I.   $XY = \frac{1}{3} LM$

    II.   Line XY is parallel to
        line LM

    III.  Area KXY = $\frac{1}{3}$ area KLM                [ Picture ]

    IV.  Area KXY = $\frac{1}{9}$ area KLM

    A.  I and II only            D.  I, II and III only
    B.  II and III only
    C.  I and III only           E.  I, II and IV only


QUESTION 8
In the figure on the right, m
represents a plane, and PQ is
a straight line which is per-
pendicular to the plane at the
point Q. Points A, B and C
lie on the plane. If QA = QB =
QC, then the triangles PQA,
PQB, and PQC are

    A.  congruent (two sides and
       included angle)
    B.  congruent (two sides and angle
       not included)             [ Picture ]
    C.  congruent (two angles and
       corresponding side)
    D.  similar but not congruent
    E.  neither similar nor congruent

QUESTION 9
In the figure below, PQ Á OQ, and RS Á OQ. If the measure of OQ
and of OR equal 1 and é is the measure of À POQ, then the measure of
the intercept PQ is equal to

[     : the character À denotes the character for an angle             ]
[     : the character Á denotes the character for a perpendicular line ]

    A.  sin é
    B.  cos é
    C.  tan é                                    [ Picture ]
    D.  2 sin é
    E.  1 - cos é


QUESTION 10-11 / 2
    [ Picture ]

Questions 10 and 11 are based upon the graph of a quadratic function
which is shown in the figure above.


10.  For what value of x is the quadratic function a minimum?

                    1          1                    1
    A.  -1      B.  - -     C.  -      D. 1      E. 1 -
1 2   10. A B C D E
                    2          2                    2

11.  The range of values of x for which the function represented by the straight
     line MN exceeds the quadratic function is

    A.  -1 < x < I                  D. x > 0

    B.  x < -1  and  x > 1

          3          1
    C.  - - <  x  < 1 -             E. x > y
11. A B C D E
          4          4


QUESTION 12
A square plate of the largest possible size is cut from a circular plate of
16 cm. diametcr. The area of the square plate (in sq. cm.) will be

    A.  64     B.  96     C.  128     D.  192     E.  256


QUESTION 13
The locus of all mid-points of chords drawn from a point on the
circumference of a circle is

    A. a semi-circ]e                D. a rectangle
    B. a circle
    C. a straight line              E. none of these

QUESTION 14
A piece of wire 52 inches long is cut into two parts and each part is bent
to form a square. The total area of the two squares is 97 square inches.
What is the length in inches of the side of the smaller square?

_____


QUESTION 15
The complex number $(1 + i)^2$ is equal to

    A.  0     B.  2     C.  2i     D.  1 + i     E.  2 + 2i


QUESTION 16

Given $\log_b 2 = \dfrac{1}{3}$, $\log_b 32$ is equal to

    A.  2     B.  5     C.  $-\dfrac{3}{5}$     D.  $-\dfrac{5}{3}$     E.  $\dfrac{3}{\log_2 32}$


QUESTION 17
Below there are several definitions of new operations named * in terms
of the usual operations on real numbers.  For which of the definitions
is the property y * x = x * y valid for all positive real numbers x and y ?

    A.  $x * y = \dfrac{x}{y}$                      D.  $x * y = \dfrac{xy}{x + y}$

    B.  $x * y = x - y$

    C.  $x * y = x(x + y)$         E.  $x * y = x^2 + xy^2 + y^4$


QUESTION 18
Solve the equation

$$\sqrt{x + 5} - \sqrt{x - 3} = \sqrt{x}$$

_____

QUESTION 19
The graph on the right is the
representation of one of the
following equations. Which
one does it represent?

[ Picture ]

   A.  y = (1 - x) (x - 2)
   B.  y = (1 - x) (2 - x)
   C.  y = (1 - x) (2 - x)ý
   D.  y = (1 - x)ý (x - 2)
   E.  y = (1 - x)ý (2 - x)


QUESTION 20
The expression

$$\frac{2}{\hat{u}\,\overline{5}} + \frac{\hat{u}\overline{45}}{5} + \frac{1}{\hat{u}\,\overline{5} - 2}$$

is equal to

   A.  2 $\hat{u}\,\overline{5}$ + 2              D.  2 $\hat{u}\,\overline{5}$

   B.  2 $\hat{u}\,\overline{5}$ - 2

   C.  2                      E.  2 - 2 $\hat{u}\,\overline{5}$


QUESTION 21
Chords of the same length are drawn in two cireles of unequal radii. Which
of the following is true?

   A.  The chord in the largel circle could be equal to the radius of the
       smaller circle.
   B.  The chord in the smaller circle could not be a diameter.
   C.  The distance from the centre to the chord is less in the larger circle.
   D.  The minor arc intercepted on the larger circle is longer.
   E.  The minor arc intercepted on the larger circle subtends the greater
       angle at the centre.