Zonal Education Office-Galle

32	E	I

GCE (O/L) Practice Paper- 2020 (2021- January)

Grade 11

| **Mathematics I** | **Index Number** .... | **Class** .... | **Two Hours** |

Important

- ❖ This question paper consists of 8 pages .

- ❖ Write your index number correctly in the space provided on this page and on page three.

- ❖ Answer **all** question **on this question paper itself.**

- ❖ Use the space provided under each question for working and writing the answer.

- ❖ Indicate the **relevant step** and **the correct units** when answering the answer.

- ❖ Marks are awarded as follows.

  In part A
  2 marks for each question

  In part B
  10 marks for each question

- ❖ Blank paper can be obtained for scratch work.

For marking examiners' use only

part	Question numbers	marks
A	1-25	
B	1	
	2	
	3	
	4	
	5	
Total		

....

Examiner

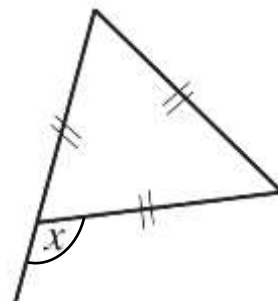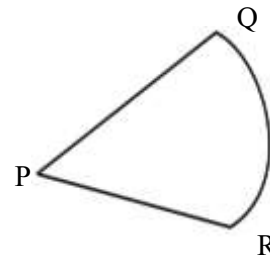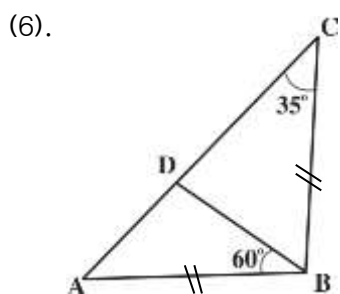|	
(1).	Find the annual percentage of rate for a house whose annual assessed value is Rs. 40 000 when the quarterly payment is Rs. 600.
(2).	Factorize. $4x^2 - 9$
(3).	Find the value of xº by using the given data.
(4).	The perimeter of the given sector of a circle PQR is 78cm and its arc length is 22cm. Find its radius.
(5).	Simplify $\dfrac{3}{5mn^2} \div \dfrac{11}{15mn}$
(6).	In the triangle ABC, AB = BC. Find the value of $B\widehat{D}C$ by using the given data.
(7).	Write $lg\ 5 = 0.6990$ in index notation.
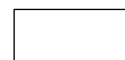
(8). The area of the base of the given prism is 20cm^2 and its height is 8cm,   find its volume.

8cm
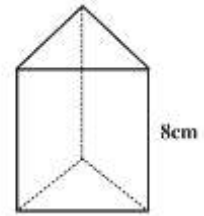
(9).   Given in the diagram are two circles with center O.

Chord AB of length 12cm touches the small circle of radius 8 cm at C. Find the radius of the large circle.

A
C
O
B
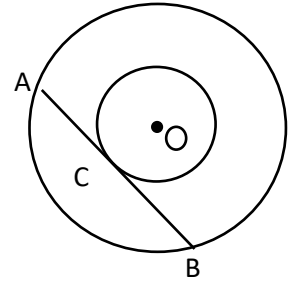
(10). Solve. $\frac{1}{x} + \frac{1}{3x} = \frac{1}{3}$
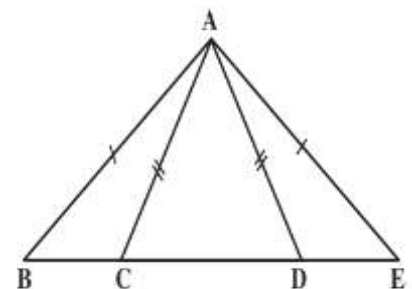
(11).   Find the distance travelled by a bicycle in kilo meters within 15 minutes with a uniform speed of 12 kmh^{-1}

(12). ABCD is a square , CDE is an equilateral triangle and GCE is a straight line. If FB $\parallel$ GE. Find the value of A$\hat{B}$F
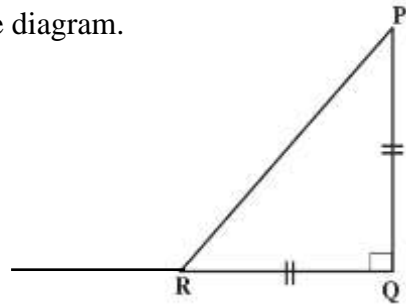
A   D
E
B   C
F   G
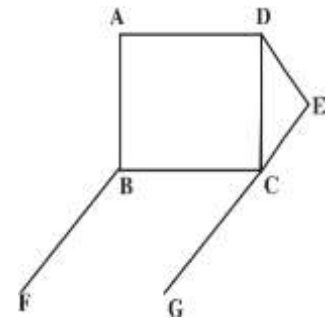
(13).   A and B are mutually exclusive events. If P (A) = $\frac{1}{2}$ and P (B) = $\frac{1}{3}$ find P (A∪B).

(14).   Name the pair of angles such that ACE Δ and ADB Δ are congruent under S.A.S.
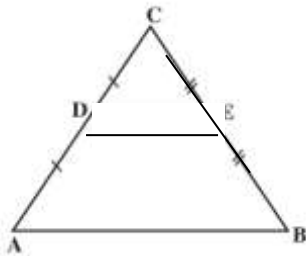
A
B   C   D   E

(15).   Express the 12th term of the geometric progression 16,32,64 ...as a power of 2.

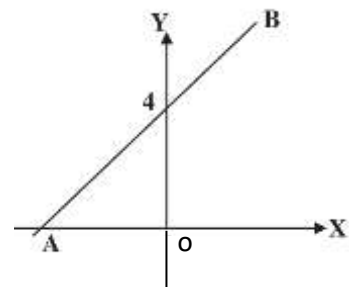(16).   Find the angle of depression of R from P and mark it in the diagram.

(17).   State (✓) for the correct statements and (x) for the incorrect statements.

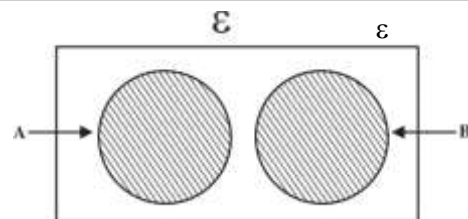|	
AB = $\frac{1}{2}$ DE	
DE = $\frac{1}{2}$ AB	
AB ∦ DE	

(18).   If the equation of the straight line AB given in the diagram is $3y = 2x + b$ find the value of b.

(19).   Find the values of y° and x°.
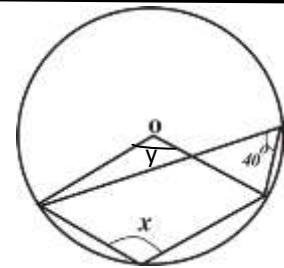
(20).   Represent the given shaded region in set notation.

(21). It takes 3 days for two men to paint a house in a housing scheme. How many men are to be occupied to paint 12 such houses within 8 days?

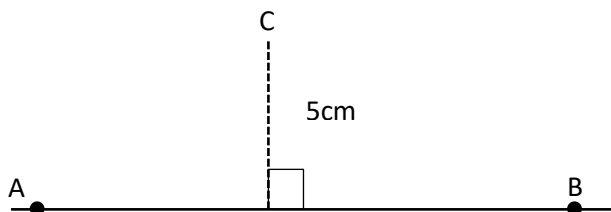(22). Solve the inequality 3x -2 ≤ 10 and the write the positive integral solution set of x.

(23). If 30 students study Commerce, find the number of students who study Maths.
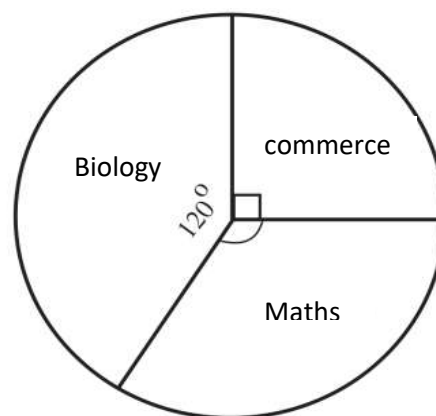
(24). If   x + 2y = 8   find the value of y.
          x = 1 - y

(25). C is 5cm away from the straight line AB. Find the places on the straight line AB such that they are 9cm away from the point C by using a rough diagram.

(1). Ramal decides to start a grocery store by using $\frac{2}{5}$ of the money he has to buy the items for the. store and $\frac{1}{3}$ for the renovations of the store

    i. What fraction of the whole amount is spent to buy the items and renovations?

    ii. If $\frac{1}{4}$ of the rest is deposited in the bank, what fraction of the whole amount is deposited in the bank?

    iii. The rest after that is kept for day to day expenses. What fraction of the whole is kept for that?

    iv. If the amount kept for day to day expenses is Rs. 81000, find the amount spent for renovations.

(2). Given below is a rough diagram of an indoor stadium.

    A - Semi circular area for the boards of judges

    B - Rectangular play area

    C - Isosceles right angled triangular practicing area

    i. Find the minimum length required for the stadium.

    ii. Find the arc length of the semicircular part.

    iii. It takes Rs. 3550 per 1 square meter to lay a special mixture on the floor of this stadium Find the cost needed.
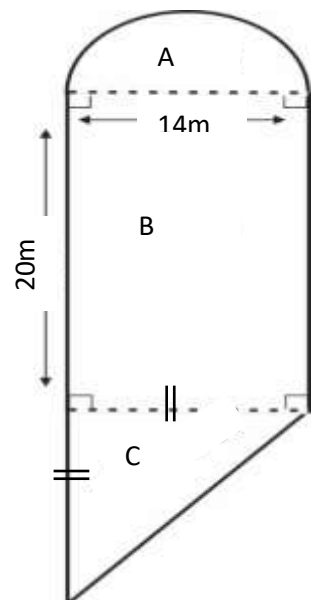
    iv. It is decided to change the shape of the practicing area to a rectangle with the same area. Draw the shape of that rectangle with measurements without changing the width of the play area.

(3). Following is an incomplete table and a histogram drawn to represent the ages of some employees in an apparel factory. 35- 40 means "equal or more than 35 and less than 40"and the other class intervals are also same.

Age (years)	....	25 -35	35 - 40	40 - 45	45 - 60
No. of employees	20	....	15	....	15

i. Complete the frequency table and the histogram by using the given information.

ii. How many employees are there in total?

iii . Express the number of employees who are more than 40 years of age as a percentage of the total number of employees.
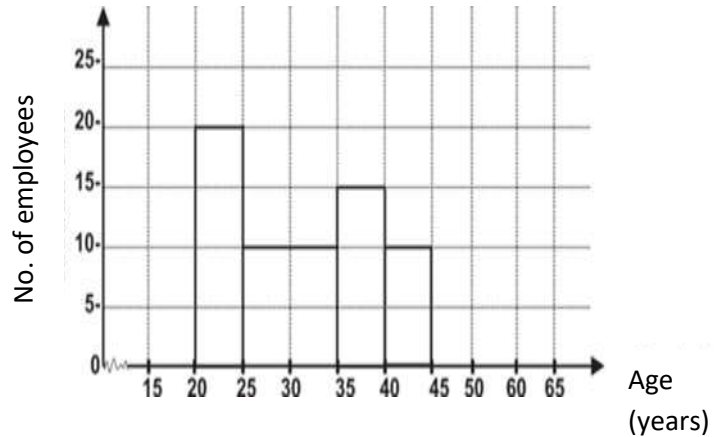
iv. Draw the frequency polygon on the histogram.

(4).

> The market price of a share of a company is Rs. 100

i. If Kumudu received Rs. 6000 as the annual dividend income who bought 400 shares, find the annual dividend per share.

ii. If Amal received Rs. 7800 as his dividend income from the same company, find the amount invested by him.

iii. Amal pays an equal amount to that invested amount as his income tax. The income tax is calculated according to the table below. Find his annual income.

Annual Income	Tax percentage
First Rs. 500 000	Tax free
Next Rs. 250 000	10%
Next Rs. 250 000	15%

iv. At the end of the year Kumudu sold his 400 shares. The total amount of money by the dividend he received and the capital gain is 25% of the invested amount. Find the selling price of shares.

7

(5). (a) There are 5 equal cards numbered as 1, 2, 3, 4, 5 in the first box and there are 4 equal cards numbered as 5, 6, 7, 8 in the second box. A student takes a card from the first box as the **units place** and another card from the second box as the **tens place** to make a number.

(i). Represent all possible outcomes by (X) in the given grid.

(ii). Mark the event of making an even number on the grid as A and write its probability

(iii). Find the probability of making a square number.

Second Box

Tens Place

Units Place

First Box
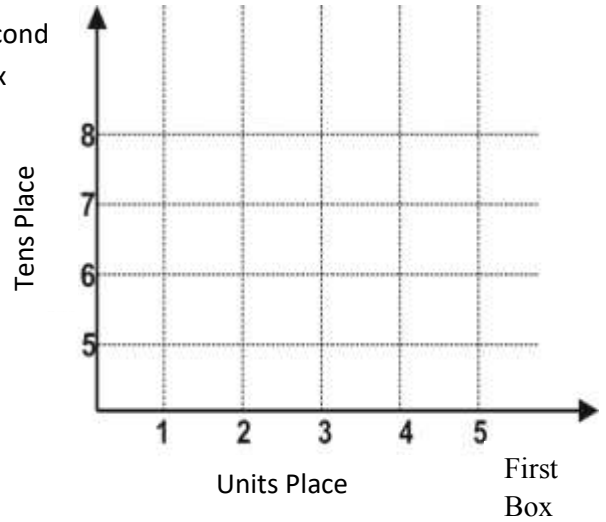
b). Following tree diagram is drawn by considering whether the card taken out is an **even number** or an **odd number**.

Second card

First card

E

$\frac{2}{5}$

O
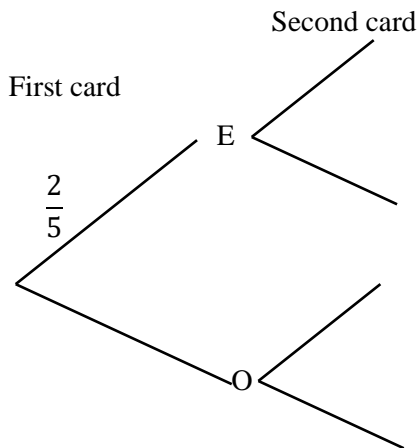
i. Complete the tree diagram.

ii. Hence find the probability of the total of the two cards being an odd number.

(03). (a) The total price of the marked prices of a Mathematics book and a Science book is Rs. 1425 When 10% discount is given for the Science book, the price of the Science book is equal to that of the Mathematics book. Find the price of the Mathematics book and the Science book separately by using the simultaneous equations.

(b) When a set of Mathematics and Science books is bought, a present of a box of pencils worth of $\frac{2}{15}$ of the total of marked prices of both books is given. The value of the boxes of pencils received by a person who buys P sets of book do not exceed Rs. 3000. Hence find the maximum number of boxes of pencils that can be received by a person.

(4). The number of customers who buy medicine **via online** is given by $-x^2 + 10x + 40$. Here x means the number of hours spent after the pharmacy being open from 7.00 a.m. The number of customers who **come to the pharmacy** and buy medicine is given by $x^2 - 14x + 30$ during the same period of time.

(i) Show that the instance when the number of customers who buy via online is equal to the number of customers who come to the pharmacy is given by $x^2 - 12x - 5 = 0$

(ii) Find the time of which these two types of customers being equal by using completing squares or any other method to solve this equation. ($\sqrt{41} = 6.4$)

(iii) Find the number of customers who were in the pharmacy to the nearest whole number in the time you obtained in (ii)

(5). Amith who is in a boat coming to the sea shore sees the top of the light house which is 45m high with an angle of elevation of 15° . There after the boat runs at a speed of $1.2\ kmh^{-1}$ direct towards the light house for 5 minutes. Now find the angle of depression of the boat for Sumith who is on the top of the light house.

(6). Following table gives the information about the number of days of hospital stay for a certain disease.

No. of days hospitalized	4-8	8-12	12-16	16-20	20-24	24-28
No. of patients	3	10	12	8	5	2

(i) Find the mean number of hospitalized days by using a suitable assumed mean or otherwise to the nearest whole number.

(ii) Develop a cumulative frequency table for a copy of the above table.

(iii) Draw the cumulative frequency curve by using the table.

(iv) Hence find the median number of hospitalized days.

Part B

(7).

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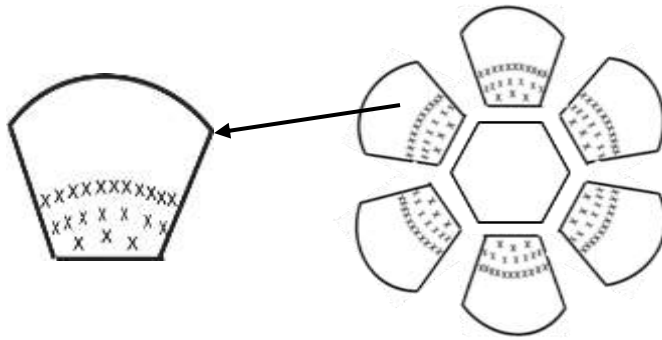
Shown in the diagram is how the seats of an outdoor stage are situated in a hexagonal manner. There are six such parts.

(i)   The seats are placed as 3, 7, 11, 15 … such that not to be disturbed from the person in the previous raw. There are 39 seats in the last raw. How many seats are there in total in the theater?

(ii)   Following are the prices of the seats.

Seat in the front raw	Rs. 500/=
Seat in the second raw	Rs. 300/=
Seat in the third raw	Rs. 200/=
All the other seats	Rs. 150/=

All the tickets were sold for one show.

Show that the amount received is more than Rs. 200 000.

(8). (i)   Draw a line segment PQ = 7.5cm and construct a circle with PQ the diameter.

    (ii)   Mark a point R on the circle such that PQR is an isosceles triangle.

    (iii)   Construct a parallel line to QP through R.

    (iv)   Show that $S\widehat{P}Q = 135^0$ by completing the parallelogram PQRS and give reasons.

(9). In the triangle ABC the bisector of $A\widehat{B}C$ meets AC at E. The perpendicular from A to BC meets BC at D. BE and AD intersects at O. Show that,

    (i) $A\widehat{O}E = B\widehat{A}D + ½ A\widehat{B}D$

    (ii) $A\widehat{O}B = O\widehat{B}D + A\widehat{D}C$

        If AB // ED and BD $= \frac{3}{2}$ AE,

    (iii)   Name a triangle equal in area to triangle ABD

    (iv)   Show that $2\,DC = 3\,EC$

(10). Mark a point A which is not the midpoint on the chord PQ of the circle with center O. The straight line which is perpendicular to OA through A meets the circle at B and C. Show that

$$PA \cdot PQ = PA^2 + AB^2$$

(11).(a) There is a solid hemispherical shaped glass of base diameter 6r and a right conical shaped glass with same base diameter and its height is thrice of half of the diameter. These two glasses are melted and 10 solid glass cylinders are made without waste.

(i)   Express the volume of hemispherical glass in terms of π

(ii)   If V is the total volume of two glasses show that V=$45\pi r^3$

(iii)   If the radius of the base of new cylinder is r and the ratio between the radius and the height of a cylinder is 1:5, show by giving reasons whether the expected number of glasses can be made.

(iii)   If V=$45\pi r^3$ find the value of V by using the logarithmic tables when $\pi = 3.14$ and $r = 12.2$

(12).   Following information is revealed about 40 members of a group of foreigners.

- 26 can speak English
- 8 can speak both languages.

(i)   Copy the venn diagram and represent the above information.

People who can speak English (E)   People who can speak French (F)
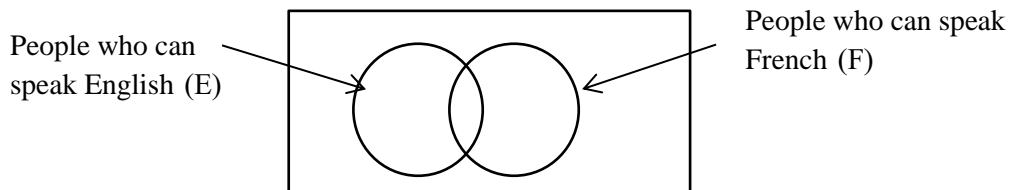
(ii)   If $E^1 \cap F = (E \cup F)^1$ how many people can speak only French?

15 of these foreigners are males and all of them can speak English while three of them can speak French.

(iii)   Copy the above diagram and insert the subset "males" and fill the respective regions.

(iv)   How many females can speak English?

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