GOA BOARD OF SECONDARY AND HIGHER SECONDARY EDUCATION
SECOND TERM EXAMINATION
MODEL PAPER (2022-2023)

Class : X   Max Marks : 40
Subject :Mathematics(E) Level – 1   Time :1 hour 45 minutes

INSTRUCTIONS :   I)Answer each main question on a fresh page.

II) All questions are compulsory

III)The question paper consists of 4 questions each of 10 marks

IV) There is no overall choice however internal choice has been provided in one question of 3 marks

V) In questions of construction the drawing should be clear and exactly as per the given measurements. The construction lines and arcs should also be maintained

VI) Use of calculator and mathematical tables is not permitted.

Q1A)   Write the equation $x + \dfrac{1}{x} = 2$ in the form of $ax^2 + bx + c = 0$ (1)

B)   The distribution below shows the weight of 30 employees in a factory.Calculate the median weight of the employees. (Write your answer correct upto one decimal place)   (2)

Weight in Kg	No. of employees
40 – 45	6
45 – 50	7
50 – 55	8
55 – 60	9

C)   Find the roots of (**ANY ONE**) of the following quadratic equations   (3)

i) $5x^2 + 2x – 39 = 0$ (By Factorization method)
ii) $3x^2 + 6x + 1 = 0$ (By completing the square method)

D)   A number consists of 2 digits . The digit in ten's place is greater than the digit in units place by 4. The sum of the squares of the digits is 15 less than the original number. Find the original number .   (4)

Q2A) Write the modal class of the following frequency distribution table (1)

Class Interval	0 – 20	20 - 40	40 - 60	60 - 80
Frequency	6	10	18	4

B) For the AP: 3, 15,27 , 39,------------- (2)
Find :
  i)   The 21st term.
  ii)   Which term of the AP is 363 ?

C) A contract on construction job specifies a penalty for delay of completion
beyond a certain date as follows: Rs 200 for the first day and then Rs 50   (3)
more on every succeeding day . Find the total amount the contractor has
to pay as penalty for delaying the job by 30 days.

D) The following table shows the marks scored by 60 students in a test

| Marks Scored (C.I)	No. of students (f_i)	Class Marks x_i	Deviation $d_i = x_i - a$	$f_i d_i$
0 – 20	10	_____	_____	_____
20 – 40	12	_____	_____	_____
40 -60	8	_____	_____	_____
60 – 80	14	_____	_____	_____
80 – 100	9	_____	_____	_____
100 - 120	7	_____	_____	_____
Total	**$\Sigma f_i = 60$**			**$\Sigma f_i .d_i=$_____**

(4)

Taking the class mark denoted by 'a'of class interval 60 – 80 as the
assumed mean , rewrite and complete the table and find the mean of the
marks obtained by the assumed mean method.

Q3A) The inner radii of the 2 circular ends of a toy bucket are 10cm and 6cm (1)
respectively. If the height of the bucket is 15cm then find the capacity of
the bucket (Take π = 22/7)

B) Draw a line segment AB = 7.5cm. Taking A as the centre and radius 3cm (3)
draw a circle and taking B as centre draw another circle of radius 2.5 cm
.Using a pair of compasses and ruler construct tangents to each circle
from the centre of the other circle.

C) Using a pair of compasses and ruler , Construct ΔABC with BC = 6cm , (3)
AB = 5.5cm and ∟ABC = 60⁰ . Then construct ΔA'BC' whose sides are $\underline{5}$ of
                                                                          3
the corresponding sides of ΔABC.

D) A tree 'AB' casts a shadow when the sun is 30⁰ above the horizon . But (3)
when it rises 45⁰ above the horizon , the length of the shadow reduces by
20 metres. Find the height of the tree correct upto one place of decimal .
(Take √3 = 1.73)
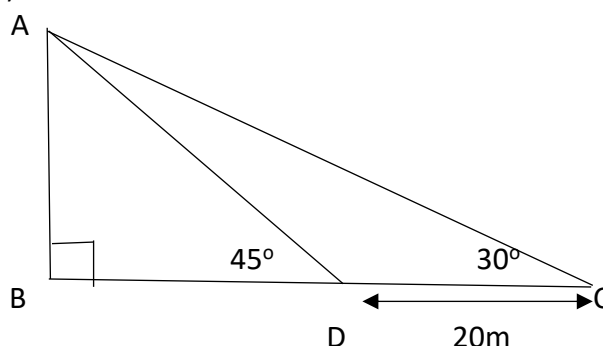
Q4A) A wooden article was made by scooping out a hemisphere from one end (2)
of a cylinder . If the height of the cylinder is 10 cm and its base is of
diameter 7cm then find :

i)The Curved surface area of the hemispherical part
(Do not substitute for π)
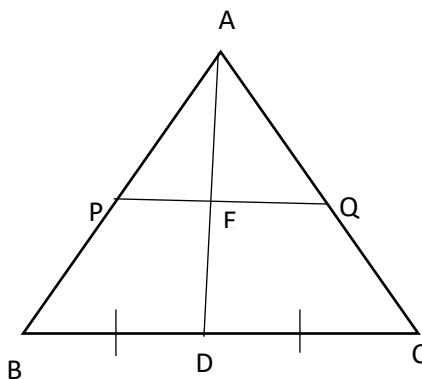
ii)TheCurved surface area of the cylindrical part
(Do not substitute for π)
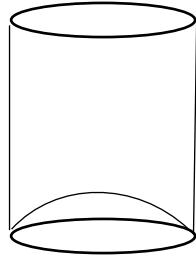
B)   In $\triangle PQR$, $\angle PQR = 90°$ and   Line segment MN ∥ QR as shown in the figure (2)
.If PM = 9cm , MQ = 2cm and ar($\triangle PMN$) = 81sqcm then Find ar($\triangle PQR$)
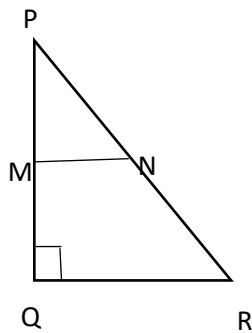
C)   In $\triangle ABC$, P and Q are points on the sides AB and AC respectively such (3)
that PQ ∥ BC.
Prove that the median AD drawn from A to BC bisects PQ

D)   A container shaped like a right circular cylinder having diameter 12cm (3)
and height 15cm is full of ice cream . This ice cream is to be filled into
cones of height 12cm and diameter 6cm, having a hemispherical shape on
the top . Find the number of such cones which can be filled with the
ice cream.