

SUMMATIVE ASSESSMENT – II (2016-2017)

MATHEMATICS

Class – IX

Time allowed : 3 hours

Maximum Marks : 90

General Instructions :

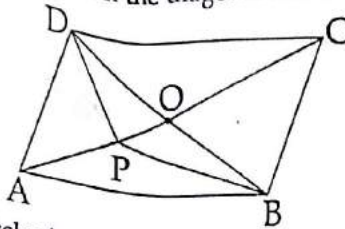
- (i) All questions are compulsory.
- (ii) The question paper consists of 31 questions divided into five sections A, B, C, D and E. Section-A comprises of 4 questions of 1 mark each, Section-B comprises of 6 questions of 2 marks each, Section-C comprises of 8 questions of 3 marks each and Section-D comprises of 10 questions of 4 marks each. Section E comprises of two questions of 3 marks each and 1 question of 4 marks from Open Text theme.
- (iii) There is no overall choice.
- (iv) Use of calculator is not permitted.

SECTION-A

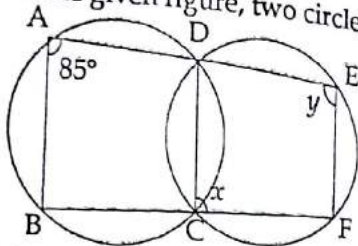
- 1 Question numbers 1 to 4 carry one mark each.
- 2 Cost of a pen is two and half times the cost of a pencil. Express this situation as a linear equation in two variable. 1
- 3 Find a point on x-axis from which graph of linear equation $2x = 1 - 5y$ will pass. 1
- 4 Construct an acute angle and draw its bisector. 1
- 5 The edge of a solid cube is 6 cm. How many cubes of 2 cm edge can be formed from this cube ? 1

SECTION-B

- 5 Question numbers 5 to 10 carry two marks each.
- 6 In the given figure, P is any point on the diagonal AC of the parallelogram ABCD. Show that $\text{ar}(\triangle ADP) = \text{ar}(\triangle ABP)$. 2



- 6 In the given figure, two circles intersect at D and C. If $\angle BAD = 85^\circ$, find x and y. 2



- 7 Construct $\angle POY = 30^\circ$, using compass and ruler. 2
- 8 The volume of a cone with circular base is $216\pi \text{ cm}^3$. If the base radius is 9 cm, then find the height of the cone. 2
- 9 A die is rolled 250 times and its outcomes are recorded as below : 2

Outcome	1	2	3	4	5	6
Frequency	40	45	35	38	52	40

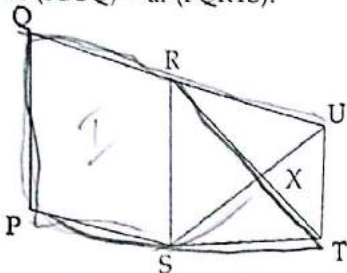
Find the probability of getting :

- (i) an even number
 (ii) a multiple of 3
- 10 A store stocked some bags of wheat flour containing the following weights of flour (in kg): 2
 4.97, 5.05, 5.08, 4.85, 5.11, 5.03, 5.00, 5.06, 5.08, 5.07, 5.04, 5.00, 4.98.
 Find the probability that any one of these bags chosen at random contains more than 5 kg of flour.

SECTION-C

Question numbers 11 to 18 carry three marks each.

- 11 Draw the graph of $3x - 4y - 13 = 0$. Check whether $(3, -1)$ is on the line or not. 3
- 12 Gurnam & Akhtar have some money with them. Gurnam says to Akhtar, if you give me ₹ 3
 ₹40, my money will be three times the money left with you. Represent this situation in linear
 equation in two variables. Also find two solutions for this equation.
- 13 Draw a line segment $AB = 12$ cm and by ruler and compasses, obtain a line segment of length 3
 $\frac{1}{4}AB$. Write steps of construction.
- 14 If two chords of a circle with a common end-point are inclined equally to the diameter 3
 through this common end point, prove that the chords are equal.
- 15 PQRTS is a pentagon. A line through T meets QR produced in U such that $SR \parallel UT$. Show that 3
 $ar(PQU) = ar(PQRTS)$.



- 16 A hemispherical bowl made of brass has inner diameter 0.105 m. Find the cost of tin-plating it 3
 on the inside at the rate of ₹ 16 per 100 cm^2 .
- 17 एक ₹ The electricity bills of twenty households in a locality are as follows : 3
 375, 415, 525, 275, 815, 720, 1085, 717, 807, 780, 315, 380, 417, 425, 375, 223, 245, 255, 615, 575.
 Construct a frequency distribution table with class size 100.

- 18 The average weight of A, B and C is 45 kg. If the average weight of A and B be 40 kg and that 3
 of B and C be 43 kg, find the weight of B.

SECTION-D

Question numbers 19 to 28 carry four marks each.

- 19 Draw the graphs of the following equations on the same graph sheet : 4
 $x - y = 0$, $x + y = 0$, $y + 5 = 0$. Also, find the area enclosed between these lines.
- 20 A lending library has a fixed charge for the first three days and an additional charge for each 4
 day thereafter. Neeru paid ₹ 21 for a book kept for five days. Write a linear equation which
 satisfies this data. Also draw the graph for the equation.
- 21 Construct a triangle ABC, given base $AC = 7$ cm and sum of two other sides $AB + BC = 8.6$ cm and base 4
 angle is 120° .
- 22 ABCD is a parallelogram. X is the mid point of AB and Y is the mid-point of CD. Show that 4
 $AYCX$ is a parallelogram and find the ratio $ar(AXCY) : ar(ABCD)$.

- 23 Prove that the angle subtended by an arc of a circle at the centre is double the angle subtended by it at any point on the remaining part of the circle. 4
- 24 A steel company uses old steel and scraps for making a closed cylindrical petrol storage tank of 4.2 m diameter and 4.5 m height. Find its curved surface area. If $\frac{1}{12}$ of the steel was wasted, then how much steel was actually used in making tank. Which value is depicted by company? (Use $\pi = \frac{22}{7}$) 4
- 25 A roller 140 cm long has a radius of 35 cm. To level the playground it takes 980 complete revolutions. Determine the cost of levelling the playground at the rate of 75 paise per square metre. 4
- 26 The cost of papering the walls of the room 12 m long at the rate of Rs. 1.35 per m^2 is Rs. 340.20 and the cost of matting the floor at the rate of 85 paise per m^2 is Rs. 91.80. Find the height of the room. 4
- 27 A company selected 2400 families at random and surveyed them to determine a relationship between income level and the number of vehicles in a home. The information gathered is listed in the table below: 4

Monthly income (in ₹)	Vehicles per family			
	0	1	2	Above 2
Less than 7000	10	160	35	0
7000 -10000	0	305	37	2
10000 -13000	1	535	39	1
13000 -16000	2	469	29	25
16000 or more	1	579	82	88

- If a family is chosen at random, find the probability that the family is:
- earning ₹ 10000 - 13000 per month and owning exactly 1 vehicle
 - owning not more than one vehicle.
 - earning more than ₹ 16000 and owning 2 or more than 2 vehicles.
 - not having any vehicle

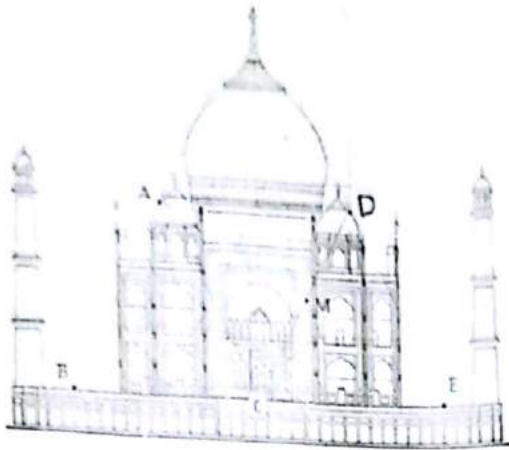
28 Draw a histogram and frequency polygon of the following distribution : 4

Heights (in cm) :	150-153	153-156	156-159	159-162	162-165	165-168
Number of students	10	7	8	14	9	6

SECTION-E Open Text)

(* Please ensure that open text of the given theme is supplied with this question paper.)
Theme : Quadrilateral in Architecture, WAH T.A.J.

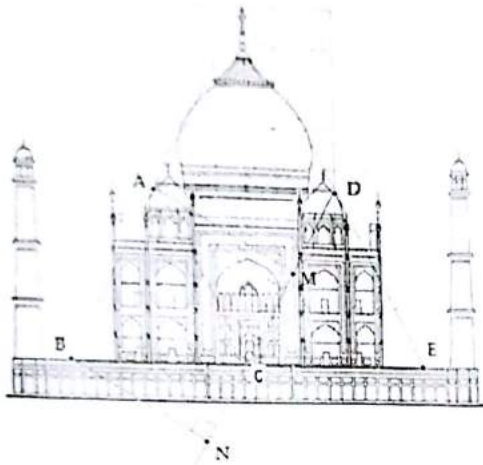
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3

If in the parallelogram ABCD (see figure) $\angle B$ and $\angle C$ are in the ratio 3: 7, then find all angles of parallelogram.

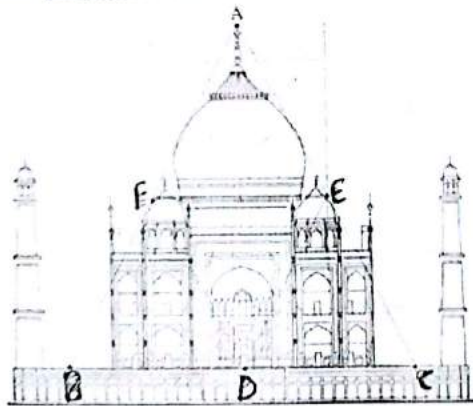
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3

ABCD is a parallelogram (see figure). AM and BN are respectively perpendicular from A and B to DC and DC produced. Prove that $AM=BN$.

31



4

Show that in the given figure of triangle ABC, if mid-points of sides AB, BC and AC are joined, then triangle is divided into four congruent triangles.