



Question Booklet  
Serial No.

**MAHAEXAM<sup>®</sup>**

**PRE SECONDARY SCHOLARSHIP MOCK EXAMINATION - 2018**

**Medium : English**

**Subject : First Language - Mathematics**

**Date : 28/01/2018      Time : 1.30 Hr.      Std. : 8th      Total Marks : 150**

***Instructions :***

- (1) This question paper will be of 75 questions carrying 2 marks each.
- (2) All questions are compulsory.
- (3) Each question will have Four alternatives. ①②③④
- (4) The answer sheet provided separately along with the question paper will have 4 circles ①②③④. Darken the correct alternative circle completely either with black or blue ink ballpen.  
For example, if the answer for a question is 2, the circle having 2 should be completely made black or blue like this ①●③④
- (5) Any of the answer coloured or marked as follows will get zero mark.  
① ② ③ ④
- (6) Answers marked in pencil will not be considered.
- (7) Answer once given cannot be changed.
- (8) Answers marked in more than one circle will not be considered.
- (9) Time limit of the examination is fixed. So if you do not know the answer to any of the questions, go to the next one. If time remains after attempting the final question attempt the questions left out.

**Subject : First Language & Mathematics**  
**Model Answer**

**Question Paper****PART - I : FIRST LANGUAGE**

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- Q.1 2) Think before you speak
- Q.2 3) Goods and Services Tax
- Q.3 2) Cascade
- Q.4 2) Flask
- Q.5 4) every
- Q.6 1) Almost
- Q.7 2) He has done his project.
- Q.8 4) adverb clause of contrast
- Q.9 2) Toran  
4) Garland
- Q.10 1) is doing \_\_\_\_\_ is being done.  
3) was doing \_\_\_\_\_ was being done.
- Q.11 3) better
- Q.12 4) do they?
- Q.13 2) When
- Q.14 3) online
- Q.15 3) Hunting point  
4) Majori point

Q.16 2) Venna

Q.17 3) a site

Q.18 2) Circumstances

Q.19 4) persistent

Q.20 4) Before

Q.21 2) gears

Q.22 1) A.P.J. Abdul Kalam

Q.23 1) Chanakya

Q.24 1) 14th November

Q.25 2) ISRO

## PART - II : MATHEMATICS

Q.26 1)  $\sqrt{6}, \sqrt{10}, 1.410243$ 

Solution :

Square roots of imperfect square nos and numbers whose decimal representation is non terminal numbers.

$$= \sqrt{6}, \sqrt{10}, 1.401243$$

Q.27 4)  $-1\frac{4}{45}$ 

Solution :

$$\frac{-315}{215} \times \frac{301}{405} = \frac{-49}{45} = -1\frac{4}{45}$$

Q.28 1) 78

Solution :

$$\begin{aligned} \text{Sum of the composite numbers from 1 to 20} &= 12 + 14 + 15 + 16 + 18 + 20 \\ &= 95 \end{aligned}$$

$$\begin{aligned} \text{Sum of the prime numbers from 1 to 10} &= 2 + 3 + 5 + 7 \\ &= 17 \end{aligned}$$

$$\therefore \text{Difference} = 95 - 17 = 78$$

Q.29 1) 5.75

Solution :

$$9\frac{1}{3} + 7\frac{2}{5} + 3\frac{3}{5} + 2\frac{2}{3}$$

$$= \frac{28}{3} + \frac{37}{5} + \frac{18}{5} + \frac{8}{3}$$

$$= \left(\frac{28}{3} + \frac{8}{3}\right) + \left(\frac{37}{5} + \frac{18}{5}\right)$$

$$= \frac{36}{3} + \frac{55}{5} = 12 + 11 = 23$$

$$\therefore \frac{23}{4} = 5.75$$

Q.30 4) 5 : 2

Solution :

$$1 \text{ lit} = 1000 \text{ ml}$$

$$\therefore 1000 : 400$$

$$\therefore \frac{1000}{400} = 5 : 2$$

Q.31 **3) 9**

Solution :

$$(-3)^6 \times (-1)^6 \times \left(3\frac{1}{2}\right)^2$$

$$\therefore (-3)^6 \times 3^{-4} = (+3)^{6-4} = 3^2 = 9$$

Q.32 **2) 20**

Solution :

$$(3.25 \div 0.325) + (63.5 \div 6.35)$$

$$= \frac{3.25}{100} \times \frac{1000}{325} + \frac{635}{10} \times \frac{100}{635}$$

$$= 10 + 10 = 20$$

Q.33 **2) 4**

Solution :

$$x = \frac{39 + \sqrt{625}}{4} = \frac{39 + 25}{4} = \frac{64}{4}$$

$$\therefore \sqrt{x} = 4.$$

Q.34 **4) 48, 7**

Solution :

LCM of co. prime no = 336

B.C.D. of co. prime no. 1

$$\frac{\text{LCM}}{\text{GCB}} = \frac{\text{Product of two uncommon numbers}}{\text{numbers}}$$

$$\therefore 336 = 48 \times 7 \text{ (Difference between them is 41)}$$

Q.35 **4) 8**Q.36 **2) 15°**

Solution :

Let the measure of complementary angle be x

$$\therefore \text{measure of : given angle} = 5x$$

$$\therefore x + 5x = 90, \quad 6x = 90 \quad x = 15^\circ$$

Q.37 **3) 85°**

Solution :

m∠PLB = m∠LMD ..... Corresponding angle

$$m\angle LMD = 65^\circ$$

m∠LMD + m∠DMQ = 180° ..... linear par

$$\therefore 65 + x + 30^\circ = 180^\circ$$

$$\therefore x + 95 = 180^\circ$$

$$\therefore x = 180 - 95$$

$$\therefore x = 85^\circ$$

Q.38 2) 500

Solution :

$$3.3 \text{ km} = 3300 \text{ m}$$

Distance covered in

$$\begin{aligned} \therefore \text{one rotation} &= \text{circumference of wheel} \\ &= \pi 'd' \\ &= \frac{22}{7} \times 21^3 = 6.6 \text{ m} \end{aligned}$$

$$\begin{aligned} \therefore \text{No of rotation} &= \frac{\text{Total distance traveller}}{\text{Circumference}} \\ &= \frac{3300}{606} \\ &= \frac{100 \times 3300 \times 10^5}{66_2} \end{aligned}$$

Option : 2 = 500

Q.39 3) S-A-S test

Solution :

$$m \angle ACB = m \angle DCE \Rightarrow \text{Vertically opposite angle}$$

 $\therefore$  S - A - S test

Option = 3

Q.40 2)  $30\sqrt{3}$  cm

Solution :

Height of an equilateral

$$\Delta = \frac{\sqrt{3}}{2} \times \text{side}$$

$$15 = \frac{\sqrt{3}}{2} \times \text{side}$$

$$\frac{30}{\sqrt{3}} = \text{side}, \quad \frac{10 \times 3}{\sqrt{3}} = \text{side}$$

$$\therefore \frac{10 \times \sqrt{3} \times \sqrt{3}}{\sqrt{3}} = \text{side}$$

$$\therefore \text{Side} = 10\sqrt{3}$$

$$\therefore \text{Perimeter} = 3 \times \text{side} = 3 \times 10\sqrt{3}$$

$$= 30\sqrt{3} \text{ cm}$$

Option = 2

Q.41 **3) Square**Q.42 **2) (8, 15, 17)**

Solution :

8, 15, 17 pythagorean triplet

$$20^2 + 25^2 = 30^2 \quad 8^2 + 15^2 = 17^2$$

$$400 + 625 = 900 \quad 64 + 225 = 289$$

$$1025 \neq 900 \quad 289 = 289$$

$$4^2 + 5^2 = 6^2 \quad 9^2 + 40^2 = 45^2$$

$$16 + 25 = 36 \quad 81 + 1600 = 2025$$

$$41 \neq 36 \quad 1681 \neq 2025$$

Q.43 **3) 21.5 cm**

Solution :

Diameter of a circle = side of a square

radius = 5

$$\text{Area of square} = (10)^2 = 100 \text{ ----- (1)}$$

$$\text{Area of a circle} = \pi r^2$$

$$= 3.14 \times (5)^2$$

$$= \frac{314}{100} \times 25$$

$$= 78.5 \text{ ----- (2)}$$

$$\text{Alshaded region} = A(\text{square}) - A(\text{circle})$$

$$= 100 - 78.5$$

$$= 21.5 \text{ cm}$$

Q.44 **4) 240°**

Solution :

minor arc = m (corresponding central angle)

$$AC = 120$$

$$\therefore m(\text{major arc}) = 360 - \text{minor arc}$$

$$= 360 - 120$$

$$= 240^\circ$$

Q.45 **3) 100°, 15°**

Solution :

$$= (4x + 20) + (5x + 25) = 180^\circ$$

$$= 9x + 45 = 180$$

$$9x = 180 - 45$$

$$9x = 135$$

$$x = 15^\circ$$

$$\text{Greater angle} = 5x + 25$$

$$= 5 \times 15 + 25 = 75 + 25 = 100^\circ$$

Q.46 1) **0.00006**

Solution :

1 hectometre = 1,00,000 milli litre

$$\begin{aligned} \therefore 1 \text{ milli litre} &= \frac{6}{10,0000} \\ &= 0.00006 \end{aligned}$$

Q.47 4) **105**

Solution :

let the equal number of each type of coin be x

$$\begin{aligned} \therefore 2x + 5x + 10x &= 595 \\ \therefore 17x &= 595 \\ \therefore x &= 35 \\ \text{coin} &= 35 \\ \therefore \text{Total coin} &= 35 \times 3 \\ &= 105 \end{aligned}$$

Q.48 3) **144 m**

Solution :

Distance covered as per path

= Semi perimeter + diameter

$$= \frac{2\pi}{2} + 27$$

$$= \frac{22}{1} \times 28 + 2 \times 28$$

$$= 88 + 56$$

$$= 144 \text{ m}$$

Q.49 3) **500 m**

Solution :

To fence one round wire required

= perimeter of a square

= 4 side

= 4 x 25

= 100 m

Five round = 100 x 5

= 500 m



Q.50 3) 336 sq.cm.

Solution :

Diagonal of rhombus are perpendicular bisector

In  $\triangle AOD$ 

$$(AD)^2 = (AR)^2 + (PC)^2$$

$$\therefore 25^2 = x^2 + (24)^2$$

$$625 - 576 = x^2$$

$$\therefore 49 = x^2$$

$$7 = x \quad \therefore AC = 2 \times 7 = 14$$

$$\begin{aligned} \text{Area of rhombus} &= \frac{1}{2} \times d_1 \times d_2 \\ &= \frac{1}{2} \times 48 \times 14 \\ &= 336 \text{ sq.cm} \end{aligned}$$

Q.51 3) 21 cm

Solution :

Surface area of sphere =  $4 r^2$ 

$$\therefore 5544 = 4 \times \frac{22}{7} \times r^2$$

$$\therefore r^2 = \frac{5544 \times 7}{22 \times 4} = 63 \times 7$$

$$\therefore r = 21$$

Q.52 3) 2400

Solution :

$$\begin{aligned} \text{No of bricks} &= \frac{\text{Volume of cuboidal wall}}{\text{Vol. of one brick}} \\ 4.8 \text{ m} &= 480 \text{ cm} \\ 3 \text{ m} &= 300 \text{ cm} \\ &= \frac{480 \times 30 \times 300}{20 \times 12 \times 725} \\ &= \frac{480^{24} \times 30^{10} \times 300^4 \times 10}{20 \times 12_3 \times 75} \\ &= 24 \times 10 \times 10 \\ &= 2400 \end{aligned}$$

Q.53 **4) 7234.56 cu.cm**

Solution :

Air filled in balloon = Vol. of sphere

$$\begin{aligned}
 &= \frac{4}{3} \pi r^3 \\
 &= \frac{4}{3} \times 3.14 \times 12 \times 12 \times 12 \\
 &= 16 \times 144 \times 3.14 \\
 &= 7234.56
 \end{aligned}$$

Q.54 **3) 300%**

Solution :

Let the original side be 100

$$\begin{aligned}
 \text{Area} &= (100)^2 \\
 &= 10000 \dots\dots(1)
 \end{aligned}$$

By 100% increasing new side

$$\begin{aligned}
 \text{will be} &= 200 \text{ cm} \\
 \therefore \text{area both 200 side} &= (200)^2 \\
 &= 40000 \dots\dots(2)
 \end{aligned}$$

Difference in area = 30000

$$\begin{aligned}
 \therefore \text{Increase} &= \frac{30000}{10000} \times 100 \\
 &= 300 \%
 \end{aligned}$$

Q.55 **1) 90 cm**

Solution :

$$(\text{Hypo})^2 = (\text{Side 1})^2 + (\text{Side 2})^2$$

$$(41)^2 = (9)^2 + (\text{Side 2})^2$$

$$\therefore 1600 = (\text{Side 2})^2$$

$$\therefore \text{Side 2} = \sqrt{1600} = 40$$

$$\therefore \text{Perimeter} = 9 + 40 + 41 = 90 \text{ cm}$$

Q.56 **3) 162°**

Solution :

Central angle of blood group

$$\begin{aligned}
 \theta &= \frac{45}{100} \times 360 \\
 &= 162^\circ
 \end{aligned}$$

Q.57 **2) 72°**

Solution :

$$\begin{aligned}
 \text{Central angle of blood group A} &= \frac{20}{100} \times 360 \\
 &= 72^\circ
 \end{aligned}$$

Q.58 1)  $18^\circ$ 

Solution :

$$\begin{aligned} \text{Central angle of bood group AB} &= \frac{5}{100} \times \frac{360}{2} \\ &= 18^\circ \end{aligned}$$

Q.59 2)  $8 \times 10^3$ 3)  $80 \times 10^2$ 

Solution :

$$25\% \text{ of } x = 50\% \text{ of } 4000$$

$$= \frac{25}{100} \times x = \frac{50}{100} \times 4000$$

$$\therefore x = 8000$$

$$\therefore 8 \times 10^3 \text{ or } 80 \times 10^2$$

Q.60 4) 32%

Solution :

Let the original bus rate be 100 with 20% increase

$$= \frac{100 \times 20}{100}$$

$$= 20$$

$$\therefore \text{New} = 100 + 20 = 120$$

$$\text{Again 10\% Increase} = 120 \times \frac{10}{100}$$

$$= 12$$

$$\text{Revised fare} = 120 + 12 = 132$$

$$\therefore \text{ difference} = 132 - 100 = 32$$

$$\therefore \% \text{ increase} = \frac{32}{100} \times 100$$

$$= 32\%$$

Q.61 4) 5 : 8

Solution :

Same rate, same period so intrest is porportional to priod

$$\frac{T_1}{T_2} = \frac{P_1}{P_2}, = \frac{10000}{16000} = \frac{5}{8}$$

$$= 5 : 8$$

$$\left( I_1 = \frac{P_1 NR}{100}, I_2 = \frac{P_2 NR}{100} \right)$$

Q.62 1) Rs.72/-

Solution :

$$S. I. = \frac{PNR}{100} = \frac{5000 \times 2 \times 12}{100} = 1200$$

$$A = P \left( 1 + \frac{R}{100} \right)^N = 5000 \left( 1 + \frac{R}{100} \right)^2$$

$$= 5000 \times \frac{112}{100} \times \frac{112}{100}$$

$$= 112 \ 56 = 6272$$

$$\text{Interest date compound} = 6272 - 5000$$

$$= 1272 \text{ -----(2)}$$

$$\text{Diff. between them} = 1272 - 1200 = 72$$

Q.63 1) 10%

Solution :

$$\text{Profit} = S.P. - C.P.$$

$$= 35200 - 32000$$

$$= 3200$$

$$\text{Profit} = \frac{3200}{32000_{10}} \times 100$$

$$= 10\%$$

Q.64 2) 20% Loss

Solution :

Let the cost price of one watch - 100 Rs.

$$\therefore \text{G.P. of 4 watches} = 4 \times 100$$

$$= 400 \text{ Rs.}$$

$$\therefore \text{S.P. of 5 watches} = \text{Cost Price of 4 watches}$$

$$\therefore \text{S.P. one watches} = \frac{400}{5} = 80 \text{ Rs.}$$

$$\therefore \text{S.P. of 4 watches} = 4 \times 80 = 320 \text{ Rs.}$$

$$\text{Loss} = 400 - 320$$

$$= 80 \text{ Rs.}$$

$$\% \text{ loss} = \frac{80}{400} \times 100$$

$$= 20\%$$

Q.65 2) Rs.40740/-

Solution :

3% discount on 42000

$$= 42000 \times \frac{3}{100}$$

$$= 1260$$

$$\therefore \text{Money paid} = 42000 - 1260$$

$$= 40,740/-$$

Q.66 1) Rs. 23520/-

Solution :

$$\text{Rebate for one good} = 24500 \times \frac{12}{100}$$

$$= 2940$$

$$\therefore \text{Rebate of 8 such electronic goods} = 2940 \times 8$$

$$= 23,520$$

Q.67 2)  $-x^6 + 5y^3$ 

Solution :

$$-x^6 + 2y^3 - 5x^6 - y^3 + 5x^6 + 4y^3$$

$$= -x^6 + 5y^3$$

Q.68 4)  $15x^2 - xy - 6y^2$ 

Solution :

$$\text{cost of mangoes} = (5x + 3y)(3x - 2y)$$

$$= 5x(3x-2y) + 3y(3x-2y)$$

$$= 15x^2 - 10xy + 9xy - 6y^2$$

$$= 15x^2 - xy - 6y^2$$

Q.69 1)  $\left(\frac{m}{8} - 9\right) \left(\frac{m}{8} + 9\right)$ 

Solution :

$$\frac{m^2}{64} - 81, \left(\frac{m}{8}\right)^2 - (9)^2$$

$$a^2 - b^2 = (a-b)(a+b)$$

$$= \left(\frac{m}{8} - 9\right) \left(\frac{m}{8} + 9\right)$$

Q.70 3) 2

Solution :

$$\begin{aligned}
 (x + 3)^3 &= x^3 + 12x^2 + 18 + 27 \\
 &= x^3 + 9x^2 + 27x + 27 \\
 y - 3 &= 8 \text{ in complete} \\
 \text{correct} &= (2m + 5)(2m - 5) \\
 &= 4m^2 - 25 \\
 &= (29 + 5)(29 - 3) \\
 &= 49^2 + 49 - 15 \\
 &= 2
 \end{aligned}$$

Q.71 3) 3

Solution :

$$\begin{aligned}
 \frac{11-6m}{5-11m} &= \frac{1}{4} \\
 \therefore 4(11-6m) - 5-11m & \\
 44 - 24m &= 5 - 11m \\
 \therefore 44 - 5 &= -11m + 24m \\
 \therefore 39 &= 13m \\
 \therefore 3 &= m \\
 &= 3
 \end{aligned}$$

Q.72 3) 30 years

Solution :

Present age of sahil is x y ?

 $\therefore$  present age of soham  $\rightarrow (x + 20)$ After 3 years Sahil  $\rightarrow x + 3$ Soham  $\rightarrow (x + 20) + 3$ 

$$\therefore x + 23 = 3(x + 3)$$

$$\therefore x + 23 = 3x + 9$$

$$\therefore 2x = 14 \quad \therefore x = 7$$

 $\therefore$  Soham age is

$$\begin{aligned}
 &= x + 20 \\
 &= 20
 \end{aligned}$$

Q.73 2) (1, 0, 7, 9)

Solution :

$$\begin{aligned}
 &x^3 + 7x + 9 \\
 \text{Standard form} &x^3 + 0x^2 + 7x + 9 \\
 \text{so co efficient} &= (1, 0, 7, 9)
 \end{aligned}$$

Q.74 3)  $-m^2 - 2m$ 

Solution :

let 'x' should be subtracted

$$m^2 - 2m + 5 - (x) = 2m^2 + 5$$

$$m^2 - 2m + 5 - (x) = 2m^2 - 5$$

$$= x$$

$$\therefore m^2 - 2m^2 - 2m = x$$

$$\therefore m^2 - 2m$$

Q.75 4) 8

Solution :

$$\text{Highest degree} = a^3 b^2 c^3$$

$$= (3 + 2 + 3) = 8$$

