

MAHARAJA RANJIT SINGH AFPI – 2016

*** ENGLISH ***

Direction (Q. No. 1 to 4) : In these questions, out of the four alternatives, choose the one which best expresses the meaning of the given word.

Q.1 Scintillating

- (1) Moving (2) Interesting
(3) Burning (4) Glittering

Q.2 Garrulous

- (1) Unreasonable (2) Talkative
(3) Quarrelsome (4) Proud

Q.3 Fortitude

- (1) Resignation (2) Defiance
(3) Indifference (4) Forbearance

Q.4 Exhilarated

- (1) Satisfied (2) Surprised
(3) Disappointed (4) Overjoyed

Direction (Q. No. 5 to 7) : Choose the word opposite in meaning to the given word.

Q.5 Virtue

- (1) Fault (2) Vice
(3) Anger (4) Ill-temper

Q.6 Obscure

- (1) Clear (2) Gloomy
(3) Unpleasant (4) Dark

Q.7 Flexible

- (1) Blunt (2) Rigid
(3) Gentle (4) Rough

Direction (Q. No. 8 to 12) : In these questions, a part of sentence is underlined. Below are given alternatives to the underlined part. Choose the correct alternative.

Q.8 Loose tea leaves are kept in a tea box.

- (1) tin (2) cosy
(3) caddy (4) no improvement

Q.9 Sincere workers do not rest till they have reached perfection in their work.

- (1) they had achieved (2) they have achieved
(3) they having reached (4) no improvement

Q.10 I saw the woman whom you said lived next door.

- (1) that you said live next door
(2) who you said lived next door
(3) which you said lived next door
(4) no improvement

Q.11 One of her friends had just got down from the bus.

- (1) alighted from (2) arrived in
(3) landed from (4) no improvement

Q.12 I have never been hearing from him since he left for America.

- (1) have never heard (2) have never been hearing
(3) was never heard (4) no improvement

Direction (Q. No. 13 to 16) : In these questions, out of the four alternatives, choose the one which can be substituted for the given words/ sentences.

Q.13 A word or practice that has gone out of use.

- (1) Obsolete (2) Absolute
(3) Outdated (4) Old-fashioned

Q.14 To talk without respect for something sacred or holy.

- (1) Rudeness (2) Blasphemy
(3) Vulgarity (4) Obscenity

Q.15 Through which light cannot pass.

- (1) Dark (2) Obscure
(3) Opaque (4) Dull

Q.16 One who knows everything.

- (1) Literate (2) Scholar
(3) Omnipotent (4) Omniscient

Q.17 Find the incorrectly spelt word out of the four words given.

- (1) Believe (2) Grieve
(3) Decieve (4) Relieve

Q.18 Find the incorrectly spelt word out of the four words given.

- (1) Defination (2) Determination
(3) Termination (4) Culmination

Direction (Q. No. 19 to 23) : Four alternatives are given for the idiom/ phrase in italics in the sentence. Choose the one which best expresses the meaning of the idiom/phrase.

Q.19 Discipline is *on the wane* in schools and colleges these days.

- (1) declining (2) increasing
(3) spreading (4) spiraling

Q.20 If you give John all your money, you are likely to *burn your fingers*.

- (1) be unhappy (2) be happy
(3) suffer (4) be ill

Q.21 He has *made his mark* in politics.

- (1) ruined his wealth (2) distinguished himself

- (3) acquired wealth (4) attained notoriety

Q.22 I *ran out* of money on my European tour.

- (1) exhausted my stock of
(2) did not have enough
(3) lost
(4) carried a lot of

Q.23 The robber *took to his heels* when the police arrived.

- (1) opened fire (2) hid himself
(3) ran off (4) surrendered

Direction (Q. No. 24 to 27) : Sentences are given with blanks to be filled in with an appropriate word(s). Choose the correct alternative out of the four.

Q.24 The police _____ on duty.

- (1) are (2) is
(3) was (4) have

Q.25 I've been awake _____ four O' clock.

- (1) for (2) since
(3) till (4) until

Q.26 They _____ at their parents with respect.

- (1) stare (2) look
(3) peep (4) view

Q.27 There was no _____ in railway compartment for additional passengers.

- (1) place (2) room
(3) blank (4) space

Direction (Q. No. 28 to 29) : Some of the sentences have errors and some have none. Find out which part (1), (2) or (3) of a sentence has an error. If there is no error, select (4).

Q.28 This watch (1)/ is superior and (2)/ more expensive than that (3)/ no error (4).

Q.29 Neither the famine (1)/ or the subsequent fire (2)/ was able to destroy the spirit of the people (3)/ no error (4).

Direction (Question. 30 to 32) : The first and last parts of the sentence are numbered 1 and 6. The rest of the sentence is split into four parts and named P, Q, R and S. These four parts are not given in their proper order. Read the sentence and find out which of the four combinations is correct.

Q.30 1. If the sovereignty

P. of the people and their elected representatives

Q. and the unity

R. in the hands

S. of a country is not safe

6. it cannot be safe in any other hands.

- (1) SRPQ (2) PQRS
(3) QSRP (4) RPQS

Q.31 1. At the end of the lecture

P. for sparing their valuable time

Q. the speaker thanked the audience

R. and listening to him

S. in coming to the meeting

6. patiently

- (1) RSPQ (2) QPSR
(3) PSRQ (4) SRQP

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P. without the written permission

Q. reproduced, stored in or transmitted

R. of the copyright owner and

S. in any form or by any means

6. the publisher of this book

- (1) PQRS (2) QSPR
(3) RPSQ (4) SRQP

Direction (Question. 33 to 40) : In these questions, you have two brief passages with 4 questions following each passage. Read the passages carefully and choose the best answer out of the four alternatives.

PASSAGE - 1 : Cave men who roamed the earth centuries ago must have thought it strange that the moon has many different shapes. Sometimes it appeared as a thin white curve, sometimes as a half circle, and at other times as a huge orange disc. How must they have explained the moon's curious behavior? Today, of course, we know why our satellite appears to have many shapes.

Once a month the moon travels in a complete circle around the earth. And as it moves in its circle it seems to change shape. This is because we on earth see only that section of the moon that catch the sun's light.

Q.33 "Our satellite" means

- (1) The earth (2) The sun
(3) The moon (4) The cave man

Q.34 "The moon's curious behavior" implies

- (1) Roaming the earth
(2) Catching the sun's light
(3) Travelling in a circle around the earth
(4) Seeming to have many different shapes

Q.35 To the eyes of people on earth

- (1) Only the moon's shape changes
(2) Only the moon's colour changes
(3) Both the moon's colour and shape changes
(4) Neither the moon's shape nor its colour changes

Q.36 "A thin white curve" means

- (1) The half moon
(2) The new moon
(3) The full moon
(4) The earth

PASSAGE - 2 : India is chiefly an agricultural land. The cultivation of crops depends on a proper supply of water throughout the year. Since olden times, large parts of our

country have suffered from occasional periods of too much rain and those of drought. People have known that if surplus flood water could be stored away for use during the dry season, these problems will be solved.

Unfortunately, they had neither the knowledge nor the means to do much in this direction. Whatever little they knew, they tried to put into practice. They dug canals to drain water from perennial rivers. This was heavy and expensive work and practicable over only a small area. Large tanks were excavated and small dams built to hold back floods. But it was not possible to do anything on a countrywide scale.

Q.37 India's economy is chiefly

- (1) Socialistic (2) Industrial
(3) Mixed (4) Agricultural

Q.38 The term "perennial" means

- (1) Rivers flowing into canals
(2) Flowing once a year
(3) Flowing throughout the year
(4) Flowing during the monsoon

Q.39 Why were the people unable to solve the problem?

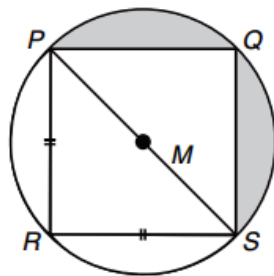
- (1) Absence of will power
(2) They were indifferent to the problem
(3) They lacked knowledge and the means to solve the problem
(4) Inadequate finance

Q.40 "Excavated" means

- (1) To fill (2) To make caves
(3) To dig (4) To flood

***** MATHEMATICS *****

Q.41 If the figure, PQRS is a square, M is the centre of the circle. If $RS = 10\sqrt{2}$, then area of the shaded region is:



- (1) $90\pi - 90$ (2) $80\pi - 80$
(3) $50\pi - 100$ (4) $100\pi - 100$

Q.42 $\sin(45^\circ + \theta) - \cos(45^\circ - \theta)$ is equal to:

- (1) $2 \cos\theta$ (2) 0
(3) $2 \sin\theta$ (4) 1

Q.43 A sphere and a cube have equal surface areas. The ratio of the volume of the sphere to that of cube is:

- (1) $\sqrt{\pi} : \sqrt{6}$ (2) $\sqrt{6} : \sqrt{\pi}$
(3) $\sqrt{\pi} : \sqrt{3}$ (4) $\sqrt{3} : \sqrt{\pi}$

Q.44 Length of the shadow of a person is 'x' when the angle of elevation of the sun is 45° . If the length of the shadow increases by $(\sqrt{3} - 1)x$, then the angle of elevation of the sun should become:

- (1) 60° (2) 45°
(3) 30° (4) 20°

Q.45 If $y = 2^3 \times 3^2 \times 5^4$ and $z = 2^2 \times 3^2 \times 5^1$, then H.C.F of 'y' and 'z' is:

- (1) 360 (2) 180
(3) 90 (4) 35

Q.46 If $x = \sqrt{4 + \sqrt{4 + \sqrt{4 + \sqrt{4}}}} \dots \infty$ and 'x' is a natural number, then find the quadratic equation.

- (1) $x^2 + x + 4 = 0$ (2) $x^2 - x - 4 = 0$
(3) $-x^2 - x - 4 = 0$ (4) $-x^2 + 4 - x = 0$

Q.47 If $p(x)$ and $g(x)$ are any two polynomial with $g(x) \neq 0$, then we can find polynomials $q(x)$ and $r(x)$ such that $p(x) = g(x) \times q(x) + r(x)$, where $r(x) = 0$ or degree of $r(x) < \text{degree of } g(x)$. This result is known as:

- (1) Euclid's algorithm for division
(2) Division algorithm for polynomials
(3) Multiplication algorithm for polynomial
(4) None of these

Q.48 The point (5, 0) lies in the direction of:

- (1) Negative y-axis (2) Negative x-axis
(3) Positive y-axis (4) Positive x-axis

Q.49 Five persons A, B, C, D and E each having different weights.

- I. A weighs twice as much as B.
II. B weighs four and a half times as much as C.
III. C weighs half as much as D.
IV. D weighs half as much as E.
V. E weighs less than A but more than C.
E is lighter in weight than which of the other two:

- (1) A, B (2) D, C
(3) A, C (4) D, B

Q.50 Find the perimeter of a quadrant of a circle of radius 'z'.

- (1) $\frac{z}{2}(\pi + 4)$ (2) $\frac{z}{2}(\pi - 4)$
(3) $\frac{z}{4}(2\pi - 2)$ (4) $\frac{z}{4}(2\pi + 2)$

Q.51 A student is given three sticks of length 12 cm, 6 cm and 4 cm respectively. He is asked to make a triangle and find the area of the triangle formed, area of the triangle is:

- (1) 36 cm^2 (2) 12 cm^2
(3) 24 cm^2 (4) Not possible

Q.52 Jackson walks 10 meters towards the South. Turning to the left, he walks 20 meters and then moves to his right. After moving a distance of 20 meters, he turns to the right and walks 20 meters. Finally, he turns to the right and moves a distance of 10 meters. How far and in which direction is he from the starting point?

- (1) 10 m North (2) 20 m South

- (3) 20 m North (4) 10 m South

Q.53 In the following question given below, two signs in the question given have been interchanged. Find out these two signs to make the equation correct.

$$15 \times 8 \div 60 - 6 + 25 = 135$$

- (1) - and + (2) - and \div
 (3) \times and \div (4) \times and +

Q.54 The mean age of a combined group of men and women is 30 years. If the mean of the age of men and women are respectively 32 and 27, then the percentage of women in the group is:

- (1) 30 (2) 20
 (3) 50 (4) 40

Q.55 An angle is 20° more than three times the given angle. If the two angles are supplementary, then the angles are:

- (1) $\frac{70^\circ}{4}, \frac{290^\circ}{4}$ (2) $40^\circ, 140^\circ$
 (3) $60^\circ, 120^\circ$ (4) $50^\circ, 100^\circ$

Q.56 Find the missing character from among the given alternatives.

	60	
45	1	55
	61	

	82	
49	4	32
	87	

	79	
37	?	12
	65	

- (1) 2 (2) 3
 (3) 5 (4) 6

Q.57 The number of integral values of x so that $2^{2x^2 - 7x + 5} = 1$, is:

- (1) 0 (2) 1
 (3) 2 (4) 4

Q.58 Which of the following letter/ number is at the 6th position to the right of the 12th letter/ number from the right end?

2 H B 1 M 1 3 D 7 0 L 5 G 9 Q R 8 N A 6 P J F 4 E K C

- (1) L (2) 0
 (3) J (4) F

Q.59 If $\sin\theta$ and $\cos\theta$ are the roots of the equation $ax^2 - bx + c = 0$, then a, b, c satisfies the relation:

- (1) $b^2 - a^2 = 2ac$ (2) $a^2 - b^2 = 2ac$
 (3) $a^2 + b^2 = c^2$ (4) $a^2 + b^2 = 2ac$

Q.60 Find next term in the series: 2, 3, 10, 15, 26,

- (1) 37 (2) 33
 (3) 35 (4) 34

Q.61 The parallel sides of a trapezoid are 3 cm and 9 cm. The non parallel sides are 4 cm and 6 cm. A line parallel to the base divides the trapezoid into two trapezoids of equal perimeters. The ratio in which each of the non parallel sides is divided, is:

- (1) 4 : 5 (2) 3 : 2
 (3) 4 : 1 (4) 3 : 1

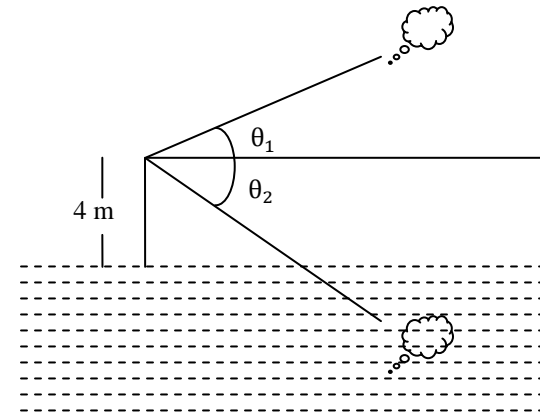
Q.62 p, q are zeroes of $dx^2 - 5x + e$. Find the value of d and e, if $p + q = p \times q = 10$.

- (1) $d = 2, e = 1$ (2) $d = \frac{1}{2}, e = 5$
 (3) $d = \frac{1}{2}, e = -5$ (4) $d = 1, e = 2$

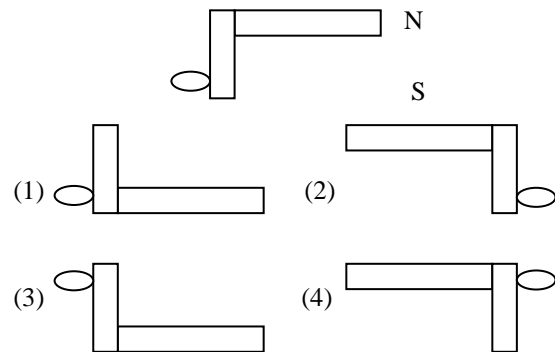
Q.63 If a man standing on a platform, 4 meters above the surface of a lake observes a cloud and its reflection in the lake then, the angle of elevation of the cloud is equal to the angle of depression of its reflection.

Choose your option.

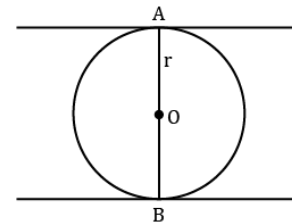
- (1) False, $\theta_1 \neq \theta_2$ (2) False, $\theta_1 = 0^\circ, \theta_2 = 45^\circ$
 (3) True, $\theta_1 = \theta_2$ (4) True, $\theta_1 \neq \theta_2$



Q.64 What will be the mirror image of the following figure if the mirror is placed as NS?



Q.65 Two parallel lines touch the circle at points A and B respectively. If area of the circle is $25\pi \text{ cm}^2$, then AB is equal to:



- (1) 5 cm (2) 8 cm
 (3) 10 cm (4) 25 cm

Q.66 If β and $\frac{1}{\beta}$ are zeroes of polynomial $4x^2 - 2x + (k - 4)$. Find the value of k.

- (1) $k = 2$ (2) $k = 4$
 (3) $k = 6$ (4) $k = 8$

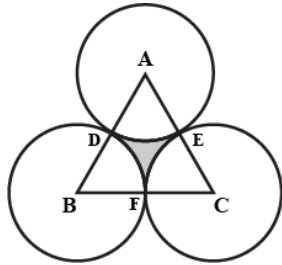
Q.67 If $B_1, B_2,$ and B_3 denotes the area of three adjacent faces of a cuboid, then its volume is:

- (1) $B_1 B_2 B_3$ (2) $2B_1 B_2 B_3$
 (3) $\sqrt{B_1 B_2 B_3}$ (4) $\sqrt[3]{B_1 B_2 B_3}$

Q.68 ‘Anand’s daughter Karishma said to Lalita “Your mother Veena is the younger sister of my father, who is the second child of Bharat.” How is Bharat related to Lalita?

- (1) Father (2) Grandfather
 (3) Uncle (4) Brother

Q.69 ABC is an equilateral triangle. Find the area of the shaded region if the radius of each of the circle is 2 cm.



- (1) $2(2\sqrt{3} - \pi)$ cm² (2) $2(3\sqrt{3} - \pi)$ cm²
 (3) $2(4\sqrt{3} - \pi)$ cm² (4) $2(5\sqrt{3} - \pi)$ cm²

Q.70 The remainder obtained when the polynomial $p(x)$ is divided by $(m - nx)$ is:

- (1) $p\left(\frac{-m}{n}\right)$ (2) $p\left(\frac{n}{m}\right)$
 (3) $p\left(\frac{m}{n}\right)$ (4) $p\left(\frac{-n}{m}\right)$

Q.71 The point $(k + 1, 1), (2k + 1, 3)$ and $(2k + 2, 2k)$ are collinear if:

- (1) $k = -1, 2$ (2) $k = \frac{1}{2}, 2$
 (3) $k = 2, 1$ (4) $k = -\frac{1}{2}, 2$

Q.72 The year next to 1981 will have the same calendar as that of year 1981.

- (1) 1983 (2) 1987
 (3) 1988 (4) 1986

Q.73 Mean of n numbers $x_1, x_2, x_3, \dots, x_n$ is m . If x_n is replaced by x , then new mean is:

- (1) $m - x_n + x$ (2) $\frac{(n-1)m+x}{n}$
 (3) $\frac{nm - x_n + x}{n}$ (4) $\frac{m - x_n + x}{n}$

Q.74 Select the missing number (?) out of the following options given.

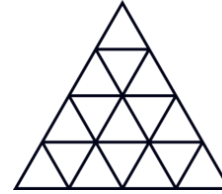
3	6	5
7	4	8
6	7	13
15	17	?

- (1) 25 (2) 26
 (3) 27 (4) 28

Q.75 The radii of two cylinder are in the ratio 2 : 3 and their heights are in the ratio 5 : 3. The ratio of their volumes is:

- (1) 3 : 4 (2) 5 : 3
 (3) 27 : 20 (4) 20 : 27

Q.76 How many triangles are there in the following figure?



- (1) 27 (2) 16
 (3) 17 (4) 25

Q.77 Express $\sqrt[3]{\frac{64}{a^5b^6c^4}}$ in the simplest form:

- (1) $\frac{4}{ab^2c} \sqrt[3]{\frac{1}{a^2c}}$ (2) $\frac{16}{ab^2c} \sqrt[3]{\frac{4}{a^2c}}$
 (3) $\frac{4}{abc} \sqrt[3]{\frac{27}{ab^2c}}$ (4) $\sqrt[3]{\frac{6}{a^5b^6c^4}}$

Q.78 Side AC of right triangle ABC is divided into 8 equal parts. Nine line segments parallel to BC are drawn from the points of division. If $BC = 20$ cm, then the sum of lengths of the nine line segments is:

- (1) 25 cm (2) 35 cm
 (3) 45 cm (4) 90 cm

Q.79 Find product of $\left(a - \frac{1}{a}\right) \left(a + \frac{1}{a}\right) \left(a^2 + \frac{1}{a^2}\right) \left(a^4 + \frac{1}{a^4}\right)$.

- (1) $a^4 - \frac{1}{a^4}$ (2) $a^4 + \frac{1}{a^4}$
 (3) $a^8 + \frac{1}{a^8}$ (4) $a^8 - \frac{1}{a^8}$

Q.80 4 bells toll together at 9:00 a.m. They toll after 7, 8, 11 and 12 seconds respectively. How many times will they toll together again in the next 3 hours.

- (1) 3 (2) 4
 (3) 5 (4) 6



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Q.81 The first term of an A.P is unity and common difference is 5. Which of the following will be a term of this A.P.?

- (1) 7880 (2) 7881
(3) 7890 (4) 7891

Q.82 Equation of line $L_1: a_1x + b_1y + c_1 = 0$
Equation of line $L_2: a_2x + b_2y + c_2 = 0$
Equation of line $L_3: (a_1x + b_1y + c_1) + (a_2x + b_2y + c_2) = 0$

If $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$, then line L_3 is:

- (1) Parallel to line L_1
(2) Parallel to line L_2
(3) Is coincident with L_2 or L_1
(4) None of these

Q.83 If in a code language HRITHIK is coded as 8992892, then in the same language ABHISHEK will be coded as:

- (1) 12892852 (2) 12892752
(3) 12891752 (4) 12891852

Q.84 If the points (a, 0), (0, b) and (1, 1) are collinear, then which of the following is true?

- (1) $\frac{1}{a} + \frac{1}{b} = 2$ (2) $\frac{1}{a} - \frac{1}{b} = 1$
(3) $\frac{1}{a} + \frac{1}{b} = 1$ (4) $\frac{1}{a} - \frac{1}{b} = 2$

Q.85 A quadratic polynomial whose one zero is 6 and sum of zeroes is 0 is:

- (1) $x^2 - 6x + 2$ (2) $x^2 - 36$
(3) $x^2 - 6$ (4) None of these

Q.86 Simplify $\sqrt[5]{\sqrt[4]{(2^4)^3}} - 5 \times \sqrt[5]{8} + 2 \times \sqrt[5]{\sqrt[4]{(2^3)^4}}$

- (1) 1 (2) $-2 \times \sqrt[5]{8}$
(3) -2 (4) $2 \times \sqrt[5]{16}$

Q.87 How many pairs of letters are there in the word 'JOURNALISM' which has as many letters between them (from both sides) as there are in the alphabets?

- (1) 2 (2) 3
(3) 1 (4) 4

Q.88 A two digit number is J times the sum of its digits. The number formed by interchanging the digits is the sum of digits multiplied by:

- (1) $9 - J$ (2) $11 - J$
(3) $J - 1$ (4) $J + 1$

Q.89 If the numbers from 5 to 85 which are exactly divisible by 5 are arranged in descending order, which would come at the eleventh place?

- (1) 35 (2) 45
(3) 50 (4) 30

Q.90 A pendulum swings through an angle of 60° and describes an arc of 8.8 cm length. Find the length of the pendulum.

- (1) 8.0 cm (2) 8.2 cm

- (3) 8.4 cm (4) 8.6 cm

Q.91 A number $10a + b$ is multiplied by another number $10x + y$ and the result as $100p + 10q + r$, where $r = 2b$, $q = 2(a + b)$ and $p = 2a$; $a, b < 5$, $q \neq 0$. The value of $10x + y$ may be:

- (1) 11 (2) 13
(3) 31 (4) 22

Q.92 The second term of an A.P is $(g - h)$ and 5th term is $(g + h)$, then its first term is:

- (1) $g - \frac{1}{3}h$ (2) $g - \frac{2}{3}h$
(3) $g - \frac{4}{3}h$ (4) $g - \frac{5}{3}h$

Q.93 In a right triangle shown below, $AB + AD = BC + CD$, if $AB = Y$, $BC = a$ and $CD = d$, then y equal:

- (1) $\frac{ad}{2a + d}$ (2) $d - a$
(3) $a + d$ (4) $\frac{1}{2} \times a$

Q.94 Which term comes next in the series? YEB, WFD, UHG, SKI, ?

- (1) QOL (2) QGL
(3) TOL (4) SKI

Q.95 If mean of 1, 2, 3 n is $\frac{6n}{11}$, then 'n' is:

- (1) 10 (2) 12
(3) 11 (4) 13

Q.96 If $S_n = nP + \frac{n(n-1)}{2}Q$, where S_n denotes the sum of the first 'n' terms of an AP, then common difference of the AP is:

- (1) $P + Q$ (2) $2P + 3Q$
(3) $2Q$ (4) Q

Q.97 On plotting the points O (0, 0); A (3, 0); B (3, 4); C (0, 4) and joining OA, OB, AB, BC and CO. Which of the following figure is obtained?

- (1) Square (2) Rectangle
(3) Trapezium (4) Rhombus



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