IMPORTANT INSTRUCTIONS

- The maximum marks are 300. Time allotted is **90 MINUTES.**
- There are four sections in the question paper having total **75 questions:**
  - Section – A : Maths (20 Questions)
  - Section – B : Science (20 Questions)
  - Section – C : English (20 Questions)
  - Section – D : Aptitude (15 Questions)
- Each question carries **4 marks.**
- **Negative Marking : ¼ (One-fourth) mark** will be deducted for every incorrect answer.
- **Use only BLUE / BLACK pen to fill the circles in bubble sheet.**
- Use of PENCIL is strictly **not allowed.**
- **Do not use marker or white fluid** to hide the mark.

SECTION – A
MATHS

Choose the correct option.

1) Match the following :

Column - I		**Column - II**	
(P)	Product of a rational number and its reciprocal is	(i)	- 1
(Q)	If $\frac{12}{30}$ and $\frac{x}{5}$ are equivalent, then x =	(ii)	0
(R)	$\left[\frac{8}{21} \div \left(\frac{-32}{39} \div \frac{16}{13}\right)\right] \times \frac{7}{4}$	(iii)	2
(S)	Sum of a rational number and its additive inverse is	(iv)	1

a) (P)→ (iv); (Q)→ (iii); (R)→ (i); (S)→ (ii) b) (P)→ (i); (Q)→ (iii); (R)→ (iv); (S)→ (ii)
c) (P)→ (iv); (Q)→ (iii); (R)→ (ii); (S)→(i) d) (P)→ (iv); (Q)→ (iii); (R)→ (ii); (S)→ (i)

2) One-sixth of a number when subtracted from the number itself gives 25. The number is
a) 30 b) 32 c) 35 d) 28

3) The following table.

Items		**Cost**	
I	Hot dog	(i)	5 for ₹60
II	Pastry	(ii)	4 for ₹20
III	Roll	(iii)	3 for ₹60

Ronak bought 3 hot dogs, 2 pastries and 4 rolls. If he has total 200 in his pocket, then represent remaining money to the total money in the form of $\left(\frac{p}{q}\right)$ i.e., rational number is

a) $\frac{37}{50}$ b) $\frac{37}{100}$ c) $\frac{126}{200}$ d) none of these

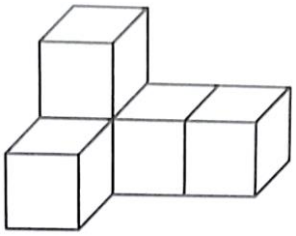
4) If a = $\sqrt{2}$ + 1 and b = $\sqrt{2}$ – 1, then the value of expression $\frac{a^2-ab+b^2}{a^2+ab+b^2}$ is:

a) 32 - 4$\sqrt{2}$ b) 32 + 4 $\sqrt{2}$ c) 0 d) $\frac{5}{7}$

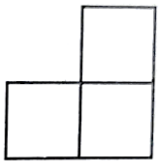
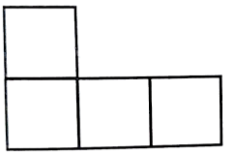
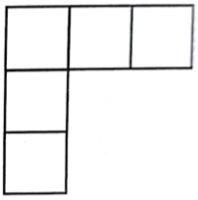
5) The sum of the additive inverse and multiplicative inverse of $\frac{1}{5}$ is _____.

a) $\frac{24}{5}$ b) $-\frac{24}{5}$ c) 25 d) -25

6) Which of the following is the front view of the given (fig. 1).



(fig. 1)

a)  b)  c)  d) 

7) If $4^x + 4^x + 4^x + 4^x = \frac{1}{256}$ then the value of $-\frac{3}{x}$ is_____.

a) -5 b) -8 c) -0.75 d) -4.25

8) The value of the expression $\left(\frac{81}{16}\right)^{-3/4} \times \left[\left(\frac{25}{9}\right)^{-3/2} \div \left(\frac{5}{2}\right)^{-3}\right]$ is_____.

a) $\frac{6}{25}$ b) $\frac{12}{125}$ c) 1 d) $-\left(\frac{5}{2}\right)^{-3}$

9) Given $\left(\frac{x^2-5x+6}{x^2-7x+12}\right) = \left(\frac{x^2-x-6}{x^2+7x+10}\right)$ then value of x is_____.

a) 2.40 b) -2.0 c) 2.2 d) 2.23

10) What is the class mark of the given interval 30-20?

a) 10 b) 14 c) 12 d) None of these

11) A unique right-angled triangle cannot be constructed when

a) Two side lengths are given.
b) One side length and hypotenuse are given.
c) The length of the base having right angle and the other base angle are given.
d) Two angles apart from the right angle are given.

12) Frequency distribution of daily income of 550 workers of a factory is given in (fig. 2)
What is the class size of the class interval?

a) 24 b) 26
c) 25 d) 30

	Class intervals (daily income in Rs.)	Frequency (number of workers)
I	100-125	45
II	125-150	25
III	150-175	55
IV	175-200	125
V	200-225	140
VI	225-250	55
VII	250-275	35
VIII	275-300	50
IX	300-325	20
	Total	550

(fig. 2)

13) Fill in the blanks.

i) $If\ (-3)^{m+1} \div (-3)^5 = (-3)^7, then\ m = A$

ii) $If\ \frac{x}{y} = \frac{3}{2}, then\ \frac{x^2+y^2}{x^2-y^2} = B$

iii) $If\ \frac{18^x}{18^{-5}} = 18^9, then\ x = C$

	A	B	C		A	B	C
a)	4	$\frac{13}{5}$	11	b)	4	11	$\frac{13}{5}$
c)	11	$\frac{13}{5}$	4	d)	12	$\frac{13}{5}$	4

14) Find the compound interest on ₹ 4000 for $1\frac{1}{2}$ years at 10% per annum, interest being compounded half yearly.

a) ₹ 4630.50 b) ₹ 645 c) ₹ 630.50 d) ₹ 4560

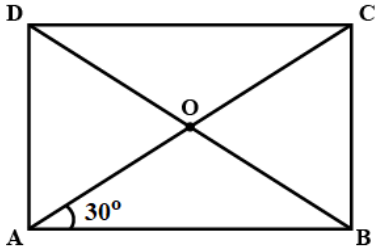
15) If A:B= $\frac{2}{3}$ and B:C= $\frac{4}{9}$, then A:C is _____

a) 3:4 b) 8:27 c) 2:9 d) 1:2

16) In the given (fig. 3), if ABCD is rectangle, then find the ∠DOC.

a) 140° b) 120°

c) 60° d) 90°



(fig. 3)

17) The value of $\left(\frac{9}{5} \div \frac{3}{-10}\right) - \left(\frac{3}{4} \times \frac{4}{8}\right) - \left(\frac{4}{5} \times \frac{3}{2}\right)$ is _____.

a) $\frac{191}{30}$ b) $\frac{-303}{40}$ c) $\frac{-71}{36}$ d) $\frac{291}{40}$

18) Which of the following is not a property of histogram?

a) The bars are of equal length.

b) The adjacent bars have no gap.

c) The adjacent bars have gap.

d) The height of column gives number of data items in the given data range.

19) Match the following and select the correct option.

Column I		**Column II**
i)	If 9187n2 is divisible by 8, then the least value of n is.	P. 0
ii)	If 123123n4 is divisible by 11, then the least value of n=	Q. 1
iii)	If 20n3 is a multiple of 3, then the least value of n=	R. 4
iv)	If 56232n is divisible by 18, then the least value of n=	S. 3

	i)	ii)	iii)	iv)		i)	ii)	iii)	iv)
a)	P	Q	R	S	b)	P	R	Q	S
c)	S	Q	R	P	d)	S	R	Q	P

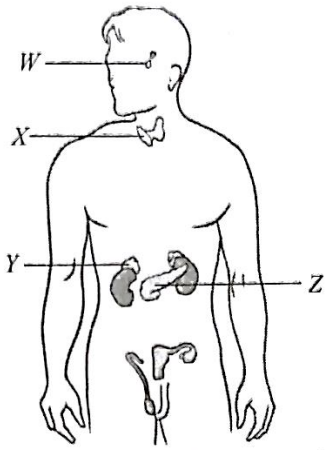
20) Kshitij can do a piece of work in 20 days and Rohan can do the same work in 15 days. They work together for 5 days and then Rohan leaves. In how many days will Kshitij alone finish the remaining work?

a) 8 days b) $8\frac{1}{3}$ days c) $9\frac{1}{3}$ days d) None of these

SECTION – B
SCIENCE

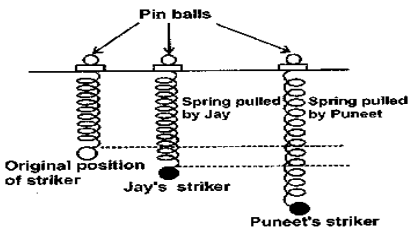
21) Refer to the given passage.
The mosquito P is a carrier of virus that spreads a disease Q. Another mosquito R is a carrier of protozoan S that spreads a disease called T.
Select the option which correctly identifies P, Q, R, S, T
a) P-Aedes, Q-Dengue, R-Anopheles, S-Plasmodium, T-Malaria
b) P-Tse-tse fly, Q-Dengue, R-Anopheles, S-Plasmodium, T-Malaria
c) P-Aedes, Q-Dengue, R-Tse-tse fly, S-Entamoeba, T-Amoebic dysentery
d) P-Tse-tse fly, Q-Dengue, R-Aedes, S-Entamoeba, T-Amoebic dysentery

22) In (fig. 4) identify the labelled glands W-Z and select the incorrect statement regarding them.
a) W secretes hormones like growth hormone, thyroid stimulating hormone and adrenocorticotrophic hormone.
b) X secretes a hormone that controls the metabolism of the body.
c) Y secretes a hormone that helps the body to adjust to stress, anger and worry.
d) Z in a normal human secretes a hormone that regulates the calcium and phosphate balance in the body.



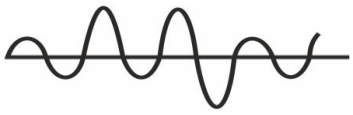
(fig. 4)

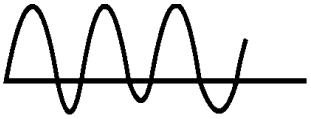
23) Jay and Puneet go to the amusement park to play the pin ball game. The (fig. 5) shows the extent to which each of them pulls the striker. Which one of the following statements is correct?
a) Jay's ball will move faster because spring of his striker is more elastic.
b) Puneet's ball will move faster because the spring of his striker is more elastic.
c) Jay's ball will move faster because the spring of his striker stores more potential energy.
d) Puneet's ball will move faster because the spring of his striker stores more potential energy



(fig. 5)

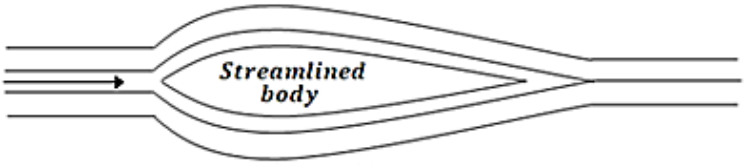
24) Which of the following (fig. 6, 7, 8, 9) shows a pleasant sound?
a)

(fig. 6)
b)

(fig. 7)
c)

(fig. 8)
d)

(fig. 9)

25) Select the pair of diseases that are caused by contaminated water.
a) cholera and typhoid
b) diarrhoea and common cold
c) pneumonia and typhoid
d) malaria and pneumonia

26) A rocket and a bird have a streamlined shaped body as shown in (fig. 10) because



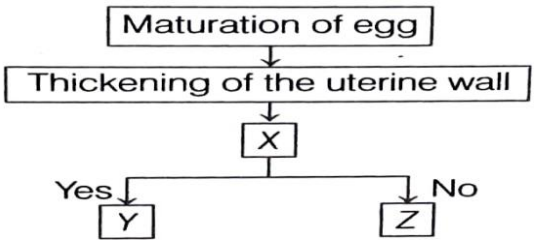
(fig. 10)

a) it gives force to move
b) it moves through air with minimum friction
c) it increases the speed of the object
d) All of these

27) Study the flowchart in given (fig. 11).

Read the statements given below and select the option which correctly relates with X, Y and Z.

a) X could be the process of fertilisation where one of the male gametes entering the female reproductive tract fuses with the egg.
b) For Y-in absence of fertilisation, uterine lining sheds off as menstrual bleeding.
c) Z-represents establishment of a pregnancy after fusion of gametes.
d) X-release of eggs from ovaries, Y-fertilisation of gametes and Z-menstruation



(fig. 11)

28) The table given below has certain terms and four blank spaces named A, B, C and D.

Cell	Feature/Part	Function
Amoeba	A	Movement
Plant cell	Plastids	B
C	Spindle shaped	Contraction
Nerve cell	D	Stimuli and Response

From the options given below choose the correct combination of terms.

a) A-Pseudopodia; B-Respirations; C-Muscle cell; D-Branched
b) A-Pseudopodia; B-Photosynthesis; C-Muscle cell; D-Branched
c) A-Contractile vacuole; B-Photosynthesis; C-Blood cell; D-Spindle shaped
d) A-Pseudopodia; B-Photosynthesis; C-Cheek cell; D-Spindle shaped.

29) In (fig. 12), a boy is shown pushing the box from right to left.

From which direction force of friction will act on the box :

a) from right to left (←)
b) from left to right (→)
c) vertically downwards (↓)
d) vertically upwards (↑)



(fig. 12)

30) The first antibiotic called penicillin was extracted from

a) a bacterium b) a protozoan c) a fungus d) an alga

31) Which one of the following has the highest calorific value?

a) Kerosene b) Biogas c) LPG d) Petrol

32) In the circuit illustrated in (fig. 13) upon completion, the gong is struck by the hammer. Which of the following force is responsible for the movement of hammer?

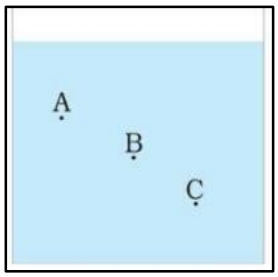
a) gravitational force alone
b) electrostatic force alone
c) magnetic force alone
d) frictional force alone



(fig. 13)

33) In (fig. 14) shows a container filled with water. Which of the following statements is correct about pressure of water?

a) Pressure at A> Pressure at B> Pressure at C
b) Pressure at A=Pressure at B =Pressure at C
c) Pressure at A< Pressure at B>Pressure at C
d) Pressure at A< Pressure at B<Pressure at C



(fig. 14)

34) Consider the list of terms given below and fill in the blank with correct option.

i) Seismic Zone ii) Fault Zone iii) Mantle iv) Inner Core

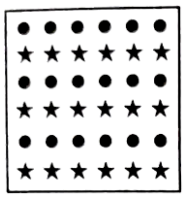
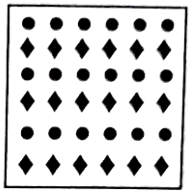
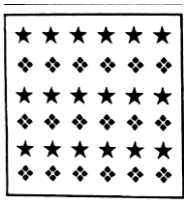
The boundaries of the earth's plate are known as_____.

a) i) and ii) b) i) and iii) c) iii) and iv) d) ii), iii) and iv)

35) In (fig. 15) which of the following agricultural practices, the nutrient requirements of one crop are fulfilled by the other crop? Choose the correct option from the options given below.

★ Green bean
● Maize
♦ Rice
❖ Pea

(fig. 15)

a)  b)  c)  d) both a) and c)

36) How can plant prevent self-pollination?

a) Stamen and pistil prevent mature at different times
b) Plants should develop bisexual flowers
c) Pistil should have increased respectively from pollens from same plants
d) All of these

37) Jiya's mother does not allow her to lie on the abdomen immediately after having food. What could most likely be the reason for this?

a) In stomach food gets processed into a thick liquid called chime
b) It may affect peristaltic movement throughout the digestive tract hence food does not properly mix with enzymes and stays undigested
c) The small intestine, on compression, releases intestinal juices which restrict the action of digestive enzymes in the small intestine
d) It may affect peristaltic movement throughout the digestive tract especially large intestine where poor motility may result in greater absorption of water and thereby may cause diarrhea

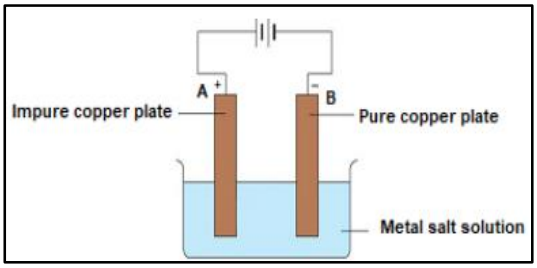
38) In a survey, it was found that organelle P is deteriorating in a population of unicellular organisms present in an area. Major reason for this was found out to be a chemical mutagen present in water and soil of that locality. The organelle is membrane less and occurs freely in cytoplasm and also found attached to ER.
Which of the following holds true regarding this?
a) The organisms will die immediately due to stoppage of cellular respiration.
b) The organisms will survive for sometime but die eventually as they cannot perform photosynthesis.
c) The organisms will die immediately as it cannot manufacture its carbohydrates and lipids.
d) The organisms will survive for sometime but die eventually as it cannot manufacture its proteins, some of which are essential for maintaining life processes.

39) Match the Column I with Column II:

Column I	**Column II**
i) Binary fission	a) Spirogyra
ii) Budding	b) Yeast
iii) Fragmentation	c) Low organisms
iv) Vegetative propagation	d) Aphids
v) Parthenogenesis	e) Sugarcane

a) i) – b), ii) – d), iii) – e), iv) – c), v) – a) b) i) – c), ii) – b), iii) – a), iv) – e), v) – d)
c) i) – e), ii) – c), iii) – d), iv) – a), v) – b) d) i) – a), ii) – e), iii) – b), iv) – d), v) – c)

40) In (fig. 16) shows the process of purification of copper metal. A thick copper plate A of impure copper and a thin pure copper plate B are immersed in a metal sulphate solution and an electric current is passed through it.
1) Which metal solution is taken as electrolyte?
2) Which electrode is connected to the positive terminal of the battery?
a) 1-Copper sulphate solution
2-The thick plate of impure copper (Anode)
b) 1-Iron sulphate solution
2-The thick plate of impure copper (Cathode)
c) 1-Copper sulphate solution
2-The thin plate of pure copper (Anode)
d) 1-Iron sulphate solution
2-The thin plate of pure copper (Cathode)



(fig. 16)

SECTION – C
ENGLISH

Read the passage carefully and answer the following questions.

Failure and success are the ways of life. Constant efforts despite initial setbacks have brought us from the chrysalis of failures into the bright opportunity of triumphs. The conquest of Everest is a fitting example. Success eluded men for nearly twenty-five years. The leader of an unsuccessful expedition started, "Everest cannot add to its height, but spirit of man heightens even under repulse." Subsequent conquest of Everest has proved the truth of this. Indeed every newborn day

is in itself an opportunity teeming with splendid chances for those who are alert, wide awake and aspiring.

41) According to the writer, the conquest of Everest proves that_____.
   a) the spirit of man heightens under demanding circumstances
   b) man cannot attain the unattainable
   c) success is always elusive
   d) the nature is most potent

42) In this passage, "chrysalis of failure" means that
   a) failure involves a closed situation from which one cannot escape
   b) failure can be compared to the pupa of the gold-coloured butterflies
   c) failure is a transitional state
   d) as an insect emerges in a different shape from chrysalis, so a human being changes after every failure

43) The expression "teeming with" in the passage can be replaced by
   a) abounding b) promising c) multiplying d) fruitful

44) The very style of the prose suggests that the writer intends the last sentence of the passage to be
   a) poetic b) inspiring
   c) vague d) contradictory to the first sentence of the passage

45) Every new day brings fresh challenges for a person
   a) Who is young b) Whose head is teeming with bright ideas
   c) Who is watchful and daring d) Who has come out of the chrysalis of failure

WORD AND STRUCTURE KNOWLEDGE

46) Some parts of the sentence has errors and some are correct. Find out which part of a sentence has an error and mark the appropriate correct option. If a sentence is free from error, mark to "No Error"

   He finds fault at everything I do.

   a) He finds fault b) at everything c) I do d) No error

47) Choose the antonym of the underlined word.

   My doctor said that smoking could <u>terminate</u> my life. But I told him “Everybody’s life has to end sometime.”

   a) extremity b) begin c) climax d) call off

48) Sentence given with blanks to be filled in with an appropriate word. Four alternatives are suggested. Choose the correct alternative out of the four.

   We have been living in this house _____1965.

   a) when b) for c) before d) since

49) Match the following to complete a sentence in direct speech.

List – I	List – II
A. “Don’t worry about the tickets	1. at that horse shaped cloud.”
B. Nia said, “it’s so noisy, I cannot	2. I’ll pay for them,” said Jack.
C. The child exclaimed in joy, “look	3. be fine,” said the doctor
D. “Don’t worry about Nickil, he’ll	4. concentrate, can you?”

Codes

	A	B	C	D
a)	3	1	2	4
b)	1	4	2	3
c)	2	4	1	3
d)	3	2	4	1

50) In the following question, the sentence has been given in Active voice. From the given alternatives, choose the one which best expresses the given sentence in Passive Voice.
We are not following their advice.
a) Their advice was not followed by me.
b) Their advice has not been followed by me.
c) Their advice is not followed by us.
d) Their advice is not being followed by us.

51) Choose the alternative which best expresses the meaning of the idiom/phrase given below in bold. If you develop friendship with an individual, you must stand by him through "**thick and thin**."
a) to think about his/her welfare
b) under all circumstances
c) to accompany through a thick forest
d) in day and night

52) Choose the option that has the correct order of adjectives.
I am going to wear my _____shirt for my cousin's wedding.
a) new, silk, purple
b) new, purple, silk
c) silk, purple, new
d) purple, new silk

53) Choose the most appropriate one-word substitution for the given description:
'Matter written by hand'.
a) Manuscript b) Sculpture c) Scription d) Monument

54) Replace the underlined words with appropriate verbs from the option given below.
Food <u>are</u> the necessity of life. It <u>will provide</u> nutrition, substance and growth to human body. Food <u>must</u> be classified into cereals, pulses, nuts and oilseeds, vegetables, fruits, milk and milk products and fresh food. Most of the food items <u>contained</u> protein, fat, carbohydrates, vitamins and water in varying amounts.
a) is, provide, will contain
b) is, provide, will, contains
c) is, provides, can, contains
d) is, provides, can, contain

55) Match the following.

List – I (Type of Adverb)	**List – II** (Example)
A) Adverb of Time	1. You have to push the peddle down to speed up.
B) Relative Adverb	2. The child ran towards his mother happily.
C) Adverb of Place	3. They will rehearse for the show tonight.
D) Adverb of Manner	4. Can you tell me the time when the manager may come?

Codes

	A	**B**	**C**	**D**
a)	1	2	3	4
c)	2	1	3	4

	A	**B**	**C**	**D**
b)	3	4	1	2
d)	4	3	2	1

56) Consider the following statements.
1. The nearer school is five kilometers from this village.
2. Her condition is now worse than what it was before.
In which of the above statements adjective is used correctly?
a) Only 1 b) Only 2 c) Both 1 and 2 d) None of these

57) Which of the following sentences has the correct usage of articles?
a) She found herself in trouble when she saw an auto outside a station.
b) Mr. Sharma became the Principal of the school in 2015.
c) I would like to talk to one of a managers.
d) Most of a people of Northern India do not know Telugu.

58) Fill in the blank with phrasal preposition from the option given below.
There is rehabilitation centre _____ my friend's office.
a) in addition to b) on top of c) in front of d) on account of

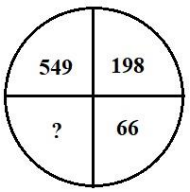
59) Improve the paragraph by changing its underlined portion.
It was a hot day, so I decide to prepare salad for lunch. Outside, the children had playing in the garden. Suddenly I hear a loud noise, followed by a scream. I run outside to see what happened.
a) have decided, playing, have hear, happen
b) decided, were playing, heard, ran, was happening
c) will decide, was playing, heard, will run, has happened
d) has decided, playing, hear, ran, happening

60) Consider the following statements.
1. I go visit my friend who lives in Gangtok, will you go there with me?
2. No, I don't think I should go there as I am not familiar with your friend.
Which of the these statement has a grammatical error.
a) Only 1 b) Only 2 c) Both 1 and 2 d) none of these

SECTION – D
APTITUDE

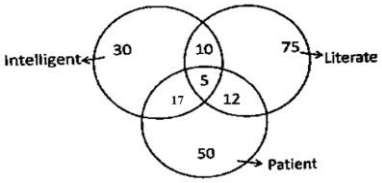
61) Read the following information carefully to answer the question that follow.
I. 'P + Q' means P is the father of Q II. 'P-Q' means P is the mother of Q.
III. 'P x Q' means P is the brother of Q. IV. 'P ÷ Q' means P is the sister of Q.
Which of the following means 'M' is the son of K?
a) M+ L÷ K b) L ÷ M + K c) M× L÷ K d) M× L - K

62) Find the missing number in (fig. 17)
a) 11 b) 12
c) 22 d) 33



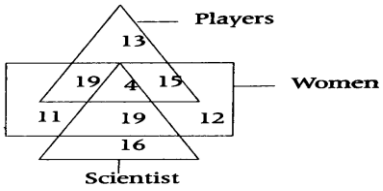
(fig. 17)

63) Study the following (fig. 18) carefully and identify the area which depicts such intelligent people who are not patient but literate?
a) 30 b) 5
c) 10 d) 12



(fig. 18)

64) In the following (fig. 19) how many women are scientist?
a) 23 b) 19
c) 12 d) 15



(fig. 19)

65) If CONTRIBUTE is written as ETBUIRNTOC, which letter will be in the sixth place when counted from the left if POPULARISE is written in that code?
a) L b) A c) I d) R

66) Anita is 8 ranks after Ritu, who ranks seventeenth in the class in the annual examinations. What is Anita's rank from the bottom, if there are 52 students in the class?
a) 43rd b) 28th c) 39th d) None of these

67) A and B are standing in a row. A is 20th from left side of the row and B is 22nd from right side of the row. If they interchange their positions A becomes 33rd from left. Find the total number of persons?

a) 54 b) 44 c) 55 d) 53

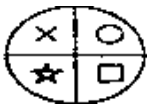
68) If in a certain language 'HEART' is written as '@8531', 'FEAST' us written as '#8541', then how will 'FARTHEST' be written in that language?

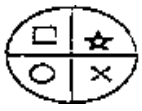
a) @8543#18 b) #5314@81 c) #531@841 d) 4531@845

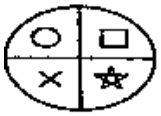
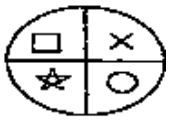
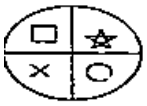
69) Find the missing figure in the series given (fig. 20, 21, 22, 23).

1)  (fig. 20)

2)  (fig. 21)

3)  (fig. 22)

4)  (fig. 23)

a)  b)  c)  d) 

70) If 1 is subtracted from the middle digit and 1 is added to the last digit of each the following numbers, then what will be the sum of the digits of the second highest number so formed?

248, 635, 432, 781, 645

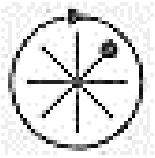
a) 11 b) 14 c) 15 d) 16

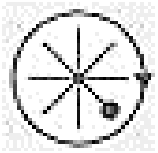
71) Which of the following letter – clusters will replace the question mark (?) in the given series.

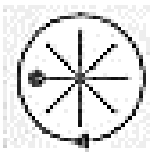
LAT, NDR, PGP, ? , TML

a) SKO b) RKN c) SJO d) RJN

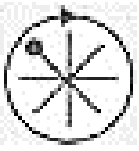
72) Find the missing figure which will replace the (?) in Problem (fig. 24, 25, 26, 27, 28) to complete the series.

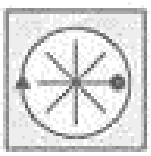
1)  (fig. 24)

2)  (fig. 25)

3)  (fig. 26)

4)  (fig. 27)

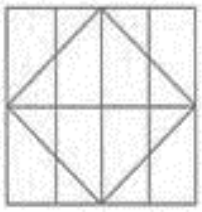
5)  (fig. 28)

a)  b)  c)  d) 

73) Count the number of triangles in the given (fig. 29)

a) 20 b) 22

c) 23 d) none of these



(fig. 29)

74) Pooja said to her friend, "Yesterday I attended the birthday party of the son of the only son-in-law of my mother's mother". How is Pooja related to the man, whose birthday party she attended?

a) niece b) daughter c) brother d) father

75) From the given options, choose the odd one out.

a) Bangladesh: Taka b) Brazil: Real c) Cyprus: Dollar d) India: Rupee