IMPORTANT INSTRUCTIONS

- The maximum marks are 300. Time allotted is **90 MINUTES.**
- There are five sections in the question paper having total **75 questions:**
  - Section – A : Maths (20 Questions)
  - Section – B : Science (20 Questions)
  - Section – C : English (15 Questions)
  - Section – D : Aptitude (10 Questions)
  - Section – E : General Knowledge (10 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

1) If A (2, 2), B (4, 4) and C (2, 6) are the vertices of a ΔABC and D, E and F are the mid-point of AB, BC and AC respectively, then

I. Find the area of ΔABC.

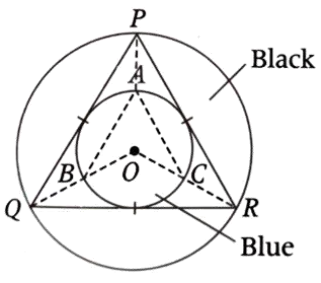
II. Find the area of ΔDEF.

III. Find the ratio of area of ΔDEF to ΔABC

	I	II	III		I	II	III
a)	8 sq units	2 sq units	1 : 4	b)	6 sq units	3 sq units	1 : 2
c)	4 sq units	1 sq units	1 : 4	d)	3 sq units	1 sq units	1 : 3

2) In an art class as shown in (fig. 1) Suneha sketched a design using geometrical shapes with the help of colours in the following way. Here, circles in black and blue are the circumcircle and incircle (of the equilateral ΔPQR) respectively. Then, $\angle$BAC is equal to

a) 120°
b) 30°
c) 60°
d) 90°



(fig. 1)

3) Mrs. Linda invested different amount at 8% and 9%, all at simple interest. Altogether, she invested ₹40000 and earns ₹7000 after two years. How much has she earned, if she had interchanged the invested amount?

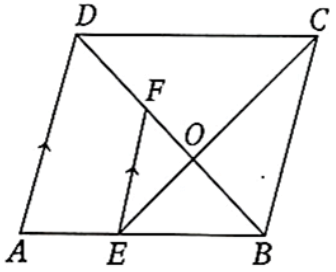
a) ₹ 7600 b) ₹ 6600 c) ₹ 5600 d) ₹ 4600

4) In a marriage ceremony of her daughter Yamini. Mukesh has to make arrangements for the accommodation of 180 persons. For this purpose, he plans to build a conical tent in such a way that each person have 5 sq m of the space on the ground and 30 m^3 of air to breadth. Find the height of the conical tent.

a) 20 m b) 13 m c) 18 m d) 16 m

5) In the given (fig. 2), ABCD is a parallelogram. E is a point on AB, CE intersects the diagonal BD at O and EF ∥ BC. If AE : EB = 2 : 3, then area of ΔABD : area of trapezium AEFD is

a) 16 : 25
b) 25 : 16
c) 9 : 25
d) 25 : 9



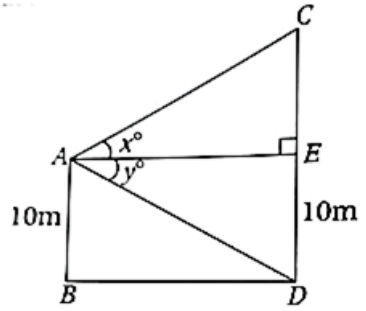
(fig. 2)

6) The next term of the sequence $\frac{1}{1+\sqrt{x}}, \frac{1}{1-x}, \frac{1}{1-\sqrt{x}}, is\ (x \neq 1)$.

a) $1 + 2\sqrt{x}$ b) $1 - 2\sqrt{x}$ c) $\frac{1-2\sqrt{x}}{1-x}$ d) $\frac{1+2\sqrt{x}}{1-x}$

7) In (fig. 3) from a window A, 10 m above the ground, the angle of elevation of the top C of a tower is x°, where $\tan x^\circ = \frac{5}{2}$, and the angle of depression of the foot D of the tower is y°, where $\tan y^\circ = \frac{1}{4}$. What is the height of the tower CD to the nearest metre?

a) 135 m
b) 75 m
c) 59 m
d) 110 m



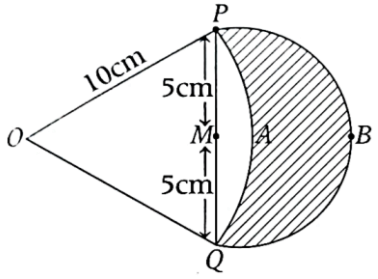
(fig. 3)

8) A toy is the form of a cone mounted on a hemisphere of radius 3.5 cm. The total height of the toy is 15.5 cm. Find the total surface area.

a) 214.5 cm^2 b) 225.7 cm^2 c) 220 cm^2 d) 230 cm^2

9) In (fig. 4), are shown two arcs PAQ and PBQ. Arc PAQ is a part of circle with centre O and radius P while arc PBQ is a semicircle drawn on PQ as diameter with M. OP = PQ = 10 cm. Find the area of shaded portion.

a) $25\left(\sqrt{3} + \frac{\pi}{6}\right)cm^2$
b) $30\left(\sqrt{3} + \frac{\pi}{4}\right)cm^2$
c) $25\left(\sqrt{3} - \frac{\pi}{6}\right)cm^2$
d) $30\left(\sqrt{3} - \frac{\pi}{4}\right)cm^2$



(fig. 4)

10) Choose the correctly marked pair.

a) $\frac{sin^2\theta - cos^2\theta}{cos\theta\ tan\theta + sin\theta\ \cot\theta} \rightarrow sin\theta + \cos\theta$

b) $\frac{sin^2\theta - cos^2\theta}{cos\theta\ tan\theta - sin\theta\ \cot\theta} \rightarrow sin\theta - \cos\theta$

c) Both (a) and (b)

d) None of the above

11) State 'T' for true and 'F' for false.

I. If the square of sum of the zeroes of a quadratic polynomial is 4 times the product of them, then the zeroes are equal in magnitude.

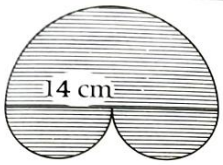
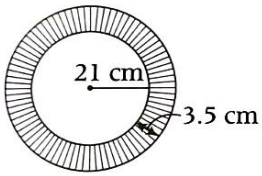
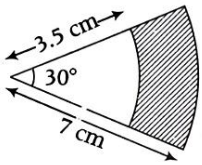
II. A quadratic polynomial, the sum of whose zeroes is 0 and one zero is 4, then the linear term of the polynomial doesn't exist.

III. If the sum of the zeroes of a cubic polynomial is 5 and the sum of the product of two zeroes is 8, then the sum of the square will be 10.

Codes

	I	**II**	**III**		**I**	**II**	**III**
a)	T	F	T	b)	F	T	F
c)	T	F	F	d)	T	T	F

12) Match the following:

	LIST – I		**LIST - II**
I.		i	500.5 cm^2
II.		ii	9.625 cm^2
III.		iii	462 cm^2

	I	**II**	**III**		**I**	**II**	**III**
a)	i	iii	ii	b)	i	ii	iii
c)	iii	ii	i	d)	iii	i	ii

13) Match the following:

Column – I		**Column - II**	
(P)	The volume of a cube, which curved surface area is 384cm^2	(i)	462 cm^2
(Q)	The total surface area of a hemi-sphere with radius is 7cm.	(ii)	66 cm^3
(R)	The volume of a cone with radius is 3 cm and height is 7cm.	(iii)	512 cm^3
(S)	The volume of a right circular cylinder with base area is 154cm^2 and height is 10 cm.	(iv)	1540 cm^3

a) (P)→(i), (Q)→(ii), (R)→(iii), (S)→(iv)

b) (P)→(ii), (Q)→(iv), (R)→(iii), (S)→(i)

c) (P)→(iii), (Q)→(i), (R)→(ii), (S)→(iv)

d) (P)→(ii), (Q)→(iii), (R)→(i), (S)→(iv)

14) The sum of n terms of the three arithmetic progression are S_1, S_2, S_3. The first term of each arithmetic progression is unity. The common differences are 1, 2, 3 respectively, then which of the following options is correct?

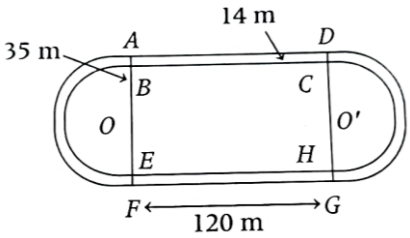
a) $S_1 + S_3 = 2S_2$ b) $S_1 - S_3 = S_2$ c) $S_1 + S_2 = S_3$ d) $S_1 + S_3 = S_2$

Directions [Q15) and Q16)] In (fig. 5) if a pool has to be constructed with a boundary of width 14m consisting of two straight sections 120 m long joining semi-circular ends whose inner radius is 35m.

15) Then, the area of the boundary is

a) $7056\ m^2$ b) $7000\ m^2$

c) $7500\ m^2$ d) $7050\ m^2$



(fig. 5)

16) If the cost of flooring the boundary by tiles is ₹ 50 per sq m, then the cost incurred will be

a) ₹ 352800 b) ₹ 350000

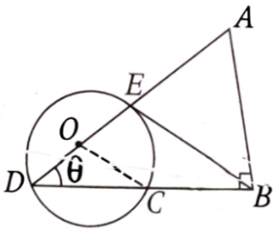
c) ₹ 375000 d) ₹ 352500

17) The median of the variables $x + 4, x - \frac{7}{2}, x - \frac{5}{2}, x - 3, x - 2, x + \frac{1}{2}, x - \frac{1}{2}$ and $x + 5$, where $x > 0$, is

a) $x - 3$ b) $x - 2$ c) $x + \frac{5}{4}$ d) $x - \frac{5}{4}$

18) In the given (fig. 6), a circle with centre O is given. Diameter DE is produced to A and chord DC is produced to B, to form a ΔABD, right angled at B. If $\angle$EDC = θ, then match the following correctly.

List I		**List II**	
(A)	$\angle DAB$	i	θ
(B)	$\angle CEB$	ii	$90^\circ - \theta$
(C)	$\angle DOC$	iii	$2\angle DEC$



(fig. 6)

Codes

	A	**B**	**C**		**A**	**B**	**C**
a)	ii	i	iii	b)	i	ii	iii
c)	iii	i	ii	d)	ii	iii	i

19) Match the following:

List I		**List II**	
(P)	$3^{2x+2} = 82(3^x - 1) + 73$	i.	8
(Q)	$\sqrt{16 + 6\sqrt{16 + 6\sqrt{16 + \cdots \infty}}}$	ii.	$\{-2, 2\}$
(R)	$4\left(x^2 + \frac{1}{x^2}\right) + 4\left(x + \frac{1}{x}\right) - 7 = 0, x \neq 0$	iii.	$\left\{-2, \frac{-1}{2}\right\}$

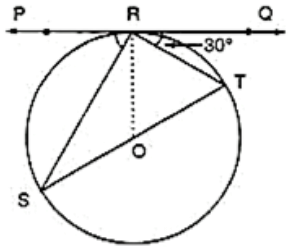
Codes

	P	**Q**	**R**		**P**	**Q**	**R**
a)	ii	i	iii	b)	i	ii	iii
c)	iii	i	iii	d)	iii	ii	i

20) In (fig. 7) below, PQ is tangent at point R of the circle with centre O. If $\angle TRQ = 30^{\circ}$, find $\angle PRS$.

a) 60° b) 45°

c) 75° d) 90°



(fig. 7)

SECTION – B
SCIENCE

21) **Assertion (A)** : In a reaction. $Mg(s) + CuSO_4(aq) \rightarrow MgSO_4(aq) + Cu(s)$
Mg is a reductant but itself gets oxidised.

Reason (R) : Oxidant is reduced by accepting electrons and reductant is oxidised by losing electrons.

a) Both A and R are true and R is the correct explanation of A

b) Both A and R are true, but R is not the correct explanation of A

c) A is true, but R is false

d) A is false, but R is true

22) Ananya bears a healthy baby in a hospital. After few hours of her delivery doctor advised her that 'mother's milk is very important for baby and it is good for mother's health too'. Ananya obeyed doctor and fed her baby.
A hormone is produced by B in her body during feeding her infant. Identify A and B

a) A - Adrenaline, B - thyroid b) A - Prolactin, B – pituitary

c) A- Oestrogen, B - ovary d) A – Progesterone, B - hypothalamus

23) If a person suffering from long-sightedness uses spectacles of power + 1 dioptre, then the near point of the person is

a) 20 cm b) 33.33 cm c) 35 cm d) 45 cm

24) Which of the following is not a STD?

a) Wart b) Syphilis c) Gonorrhoea d) Covid 19

25) Consider the following statements and choose the incorrect one.

a) Refractive index decreases with increase in temperature

b) Refractive index depends on the angle of incidence

c) Refractive index of a denser medium is the ratio of angle of incidence and angle of emergence

d) Bending of light when it changes its medium of propagation is known as refraction of light

26) Which of the following option is correct regarding the image formation in case of concave mirror?

a) It always form a real image

b) It always form virtual image

c) The image is certainly real if object is virtual

d) The image is certainly virtual if object is real

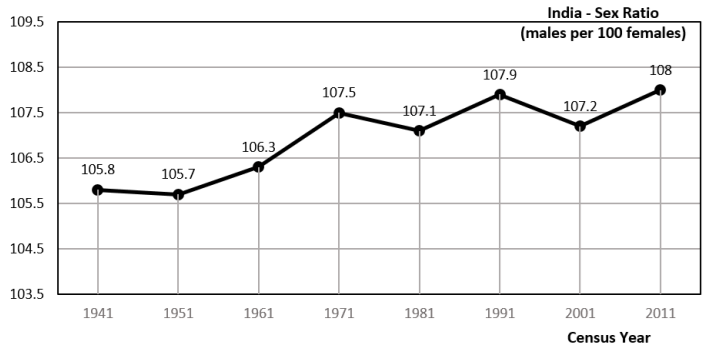
27) Match the important chemicals given in Column A with the chemical formulae given in Column B and choose the appropriate answer using the codes given below the columns.

Column – I		**Column - II**	
(P)	Plaster of Pairs	I.	$Ca(OH)_2$
(Q)	Gypsum	II.	$CaSO_4.\ 1/2H_2O$
(R)	Bleaching Powder	III.	$CaSO_4.\ 2H_2O$
(S)	Slaked lime	IV.	$CaOCl_2$
(T)	Quicklime	V.	CaO

Codes

	P	**Q**	**R**	**S**	**T**		**P**	**Q**	**R**	**S**	**T**
a)	III	II	IV	I	V	b)	II	III	IV	I	V
c)	II	III	IV	I	IV	d)	II	III	V	I	IV

28) In (fig. 8) the graph below represents the sex ratio in India:



(fig. 8)

For a healthy society

a) Female-Male sex ratio must be maintained.
b) Prenatal sex determination has been prohibited by law.
c) both a) and b)
d) neither a) nor b)

29) State [T] for True and [F] for False.

I. Purification of blood by an artificial liver is called hemodialysis.
II. Inflammation in glomeruli of kidney is a disorder, called glomerulonephritis.
III. Filtering out nitrogenous waste from the blood is called osmoregulation.
IV. Bowman's capsule containing a bunch of capillaries called nephron.
V. Renal calculi is a disorder caused by the formation of stone or insoluble mass of crystallized salts.

Choose the correct code from the following options.

Codes

	I	**II**	**III**	**IV**	**V**		**I**	**II**	**III**	**IV**	**V**
a)	T	F	T	F	T	b)	F	T	T	T	F
c)	F	T	F	T	T	d)	F	T	F	F	T

30) If the potential difference across the ends of a conductor is doubled, the current flowing though it gets.

a) doubled b) half c) four times d) no change

31) When we feel stressed or excited, X hormone is secreted by Y site. What is X and Y?

(A) X - Melatonin Y – Pineal gland
(B) X - Vasopressin Y - Hypothalamus
(C) X - Adrenaline Y – Adrenal gland
(D) X - Oxytocin Y – Adrenal gland

32) Which of the following statements are true about the brain?

I. The main thinking part of brain is hindbrain

II. Centre of hearing, smell, memory, sight, etc. are located in forebrain

III. Involuntary actions like salivation, vomiting, blood pressure are controlled by the medulla the hindbrain.

IV. Cerebellum does not control the posture and balance of the body.

a) I and II b) I, II and III c) II and III d) III and IV

33) Consider the following statements and choose the incorrect one.

I. Prism is a homogeneous transparent medium consisting two rectangular and three triangular faces

II. Planets do not twinkle like stars because they do not emit light like stars do

III. Stars near the horizon twinkle more than those that are overhead.

IV. Sun rises early and sets late due to atmospheric refraction.

a) I and II b) II and III c) I and III d) none of these

34) Which of the following is incorrect about female hormones?

a) Progesterone is responsible for regulation of uterus changes in menstrual cycle

b) Oxytocin regulates ejection of milk in females during lactation

c) Testosterone is mainly responsible for development of female sex organs

d) Prolactin regulates production of mammary glands in females

35) "Bees are able to see ultra-violet light but human beings cannot".

I. Retina of bees contain cone cells which are sensitive to ultra-violet light

II. Human beings do not have cone cells which are sensitive of ultra-violet light

III. Retina of bees contain rod cells which are sensitive to ultra-violet light

IV. Human beings consist of rod cells only

a) I and II b) III and IV c) Only II d) Only III

36) A cross between pea plant with white flowers (v v) and pea plant with violet flowers (V V) resulted in F_2 progeny. In which ratio of violet (V V) and white (v v) flowers will be :

a) 1 : 1 b) 2 : 1 c) 3 : 1 d) 1 : 3

37) Farmers use potassium chloride on agricultural land. It is because

I. It removes excess acidity in the soil

II. It kills harmful bacteria in the soil

III. It provides potassium which is essential for healthy plant growth

IV. It reacts with salts in the soil releasing ammonia

a) I and III b) Only III c) I, II and III d) All of these

38) Some food items are given below

I. Potato wafers II. Dark green vegetables

III. Biscuits (butter) IV. Fired peanuts

Which of these become oxidised and inedible if placed for a few hours in open?

a) I, II and III b) III and IV c) I, III and IV d) All of these

39) An element X on reaction with oxygen forms oxide X_2O. This oxide dissolves in water and turns red litmus to blue. The element X is

a) Metal b) Non-Metal c) Metalloid d) Data insufficient

40) Match the property of metal given in Column A with the related metal given in Column B and choose the correct answer using the codes given below the columns.

Column – I		**Column - II**	
(P)	Melt at palm	I.	Sodium
(Q)	Poor conductor of heat	II.	Gold
(R)	Most ductile	III.	Mercury
(S)	Stored in kerosene	IV.	Caesium

Code

	P	**Q**	**R**	**S**		**P**	**Q**	**R**	**S**
a)	IV	III	I	II	b)	III	IV	I	II
c)	IV	III	II	I	d)	III	IV	II	I

SECTION – C
ENGLISH

Read the text and answer the questions that follow.

Artificial intelligence (AI) has significantly transformed various industries, including healthcare and finance. In healthcare, AI enables early disease detection, customized treatment plans, and support in complex surgeries. Meanwhile, the financial sector uses AI for fraud detection, algorithmic trading, and enhancing customer service. Despite these advancements, the rapid development of AI raises ethical concerns, such as data privacy violations, job displacement, and biases in decision-making. As AI becomes more integrated, the issues of accountability and transparency grow increasingly critical. Experts believe that responsible AI development could bridge gaps in access to services and improve efficiency across systems. The solution lies in maintaining a balance between fostering innovation and enforcing regulation to ensure ethical AI deployment.

41) How has AI transformed the healthcare industry?
   a) By improving disease prediction and treatment personalization
   b) By organizing sports events
   c) By increasing hospital infrastructure
   d) By eliminating manual work completely

42) What is a key concern about rapid AI development?
   a) High operational costs
   b) Unemployment in the tech industry
   c) Ethical issues like data privacy and biases
   d) Lack of international recognition

43) Which of these is a use of AI in the financial sector?
   a) Developing medical tools
   b) Fraud detection and customer service automation
   c) Managing public relations
   d) Creating educational content

44) Why is accountability important in AI integration?
   a) To reduce its cost of implementation
   b) To address issues like transparency and biases in decision-making
   c) To accelerate AI adoption in all sectors
   d) To minimize human intervention in processes

45) What is the suggested way to ensure ethical AI deployment?
   a) Completely banning AI technologies
   b) Striking a balance between innovation and regulation
   c) Allowing unrestricted AI advancements
   d) Relying on AI for all decision-making processes

WORD AND STRUCTURE KNOWLEDGE

46) Which of the following is the best way to combine these sentences?
Technology is evolving rapidly. It affects every aspect of human life.
a) Technology, which is evolving rapidly, affects human life in every way.
b) Every aspect of human life is affected by the rapid evolution of technology.
c) Technology affects every part of life and is evolving fast.
d) Rapid technology evolution affects human lives.

47) Four words are given, out of which only one is correctly spelt. Find the correctly spelt word.
a) Consciensious b) Conscintious c) Conscientious d) Consceintious

48) Fill in the blank with the correct word from the options given below that make the sentence meaningful.
The speaker's argument was so _____ that even the most skeptical audience members were convinced.
a) incoherent b) persuasive c) irrelevant d) redundant

49) Choose one word from the options given below that matches the definitions correctly.
Choose the word that most nearly means "to prevent from happening"
a) Facilitate b) Hinder c) Promote d) Eliminate

50) Which of the phrase (a),(b) and (c) given below the sentence should replace the underlined phrase to make the sentence grammatically correct? If the sentence is correct, as it is, mark (d) as the answer.
He is one of the players who <u>has scored the most goals this season</u>.
a) have scored the most goals this season b) had scored the most goals this season
c) scores the most goals this season d) No correction required

51) 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.
'The committee rejected the proposal after a heated discussion.'
a) The proposal is rejected after a heated discussion by the committee.
b) The proposal was rejected after a heated discussion by the committee.
c) The proposal had been rejected after a heated discussion by the committee.
d) The proposal has been rejected after a heated discussion by the committee.

52) Given below are four alternatives for the given idiom. Choose the most appropriate option.
"A blessing in disguise"
a) A good thing that appears bad at first b) A curse that turns into a blessing
c) A fortune that is hidden d) An unexpected loss

53) In the following questions, three of the groups are alike, while one is different. Find the odd one out.
a) Shakespeare, Dickens, Chaucer, Aristotle b) Mercury, Venus, Earth, Mars
c) Venus, Neptune, Mars, Jupiter d) Square, Circle, Rectangle, Triangle

54) Given below is the sentence in indirect speech. Out of four options suggested, select the one which best expresses the same in Direct Speech.
Standing up from their seats, the guests said, "it is time for us to go."
a) The guests stood up from their seats and announced that it was time for them to go.
b) The guests announced that it is time for them to go by standing up from their seats.
c) The guests, while standing up, announced that it is their time to go.
d) The guests revealed they have to leave by standing up.

55) Sentence given with blanks to be filled in with an appropriate word. Four alternatives are suggested for the question. Choose the correct alternative.
The author's argument was _____ by several experts in the field, making it difficult to dispute.
a) endorsed b) endorsing c) endorsement d) endorse

SECTION – D
APTITUDE

56) If 'Lily' is called 'Lotus', 'Lotus' is called 'Rose'. 'Rose' is called 'Sunflower' and 'Sunflower' is called 'Marigold', then which will be the national flower of India?
a) Lily b) Rose c) Lotus d) Sunflower

Directions [Question: 57) & 58)]: Answer the following questions on the basis of the given conditions:
In a certain code language,
'Use blue pen' means @ 4 27 © @
'Pink white blue' means @ 7 © @ 6 ↑
'Pink pen love' means 2 7 6 ↑ # %

57) Which word in that language means 'love'?
a) 27 b) 6 ↑ c) # % d) @ 7

58) Which of the following represents 'pink' in that language?
a) 6 ↑ b) @ 7 c) © @ d) 27

59) Which group of numbers has the same property of the numbers as in the given set?
Given set : (16 : 289 : 5832)
a) (21: 448 : 7849) b) (15 :256 : 4931)
c) (12 : 437 : 2413) d) (13 : 196 : 3375)

Directions [Question: 60) to 62)] Read the following information carefully to answer the questions that follows. Five persons A, B, C, D and E are sitting in a row. B and E are not the immediate neighbours of A. Two persons are sitting in between D and E. D is sitting to the left of B but not on the extreme left. C is sitting to the right of A.

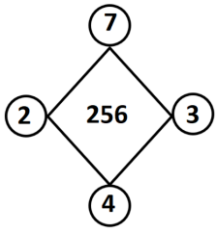
60) Who is sitting in the middle?
a) A b) B c) C d) Either B and C

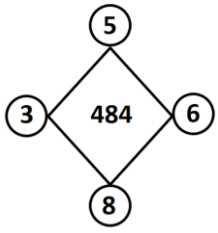
61) Who among the following sits at extreme end of the row?
a) C and E b) B and E c) E and D d) A and E

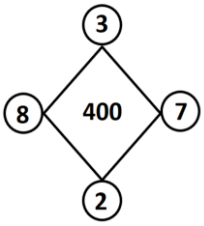
62) A and B are sisters. A is the mother of D. B has a daughter C, who is married to F. G is the husband of A. How is B related to F?
a) Sister-in-law b) Mother-in-law c) Mother d) Sister

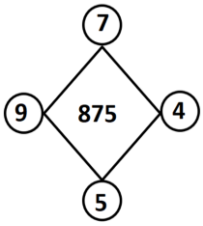
63) Shyam starts from point A and travels 4 km in East direction to reach point B, now he takes turn and travels 3 km in North direction to reach point C, now he turns towards West and travels another 4 km, finally he turns towards South and travels another 3 km to reach point E. Calculate the shortest distance between points A and E and in which direction is he from starting point?
a) 3 km, South-West b) 4 km South-West
c) 3 km, South-East d) None of these

64) Choose the set which is different from others.

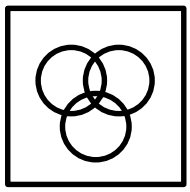
a) 

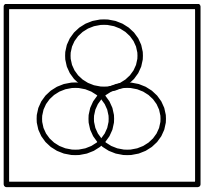
b) 

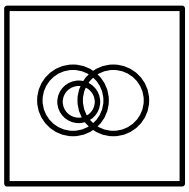
c) 

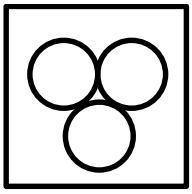
d) 

65) In a class of 40 students, 10% are girls. Out of the remaining students, 35% play cricket, 75% play football and some play both cricket and football. Which one of the following diagrams best represents this fact?

a) 

b) 

c) 

d) 

SECTION – E
GENERAL KNOWLEDGE

66) Recently, where was the Financial Action Task Force (FATF) meeting held?
a) China b) France c) Indonesia d) Singapore

67) Which country hosts the 46th session of the UNESCO World Heritage Committee?
a) Australia b) France c) India d) Russia

68) Recently, where was the 'Global Conclave on Plastic Recycling and Sustainability (GCPRS)' inaugurated?
a) Hyderabad b) Bengaluru c) New Delhi d) Chennai

69) Sentinel Nuclear Missile, recently seen in news, was developed by which country?
a) USA b) Russia c) India d) France

70) Which state assembly recently introduced a new legislative practice by launching "Zero Hour"?
a) Manipur b) Himachal Pradesh c) Odisha d) West Bengal

71) What is the total financial outlay recently approved by the Union Cabinet for "Mission Mausam"?
a) Rs 1,000 crore b) Rs 2,000 crore c) Rs 3,000 crore d) Rs 4,000 crore

72) Where is the headquarters of Federal Bank located?
a) Kerala b) Tamil Nadu c) Gujarat d) Wes Bengal

73) Who among the following is the Supreme Commander of Indian armed forces?
a) President of India b) Vice President of India
c) Prime Minister of India d) Defense Minister of India

74) Which sport's competition is known as the "ATP Challenger Tour"?
a) Table Tennis b) Taekwondo c) Tennis d) Triathlon

75) A rabbit is swallowed by a snake, which in turn by a falcon. What is the position of snake in this food chain?
a) Producer b) Primary Consumer
c) Secondary consumer d) Tertiary Consumer