

**TEST CODE
111017**



WGSE 2016

CLASS 10 Time :
120 Minutes

**World Genius Search
Examination™ - 2016**

Your WGSE Roll No

Student's Name

Student's Signature _____

INSTRUCTIONS TO THE CANDIDATE

1. **DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO.**
2. Fill and sign the Question Booklet. You can carry this booklet with you after you finish the test at the scheduled time.
3. Fill the information required in the answer sheet. Answer sheets with incomplete information may not be evaluated.
4. Do not seek clarification on any item in the test booklet from anyone including the test invigilator or the center supervisor. Use your best judgment.
5. This booklet consists of TWO PARTs as given below :

PART - 1:

SECTION-1: MATHEMATICS - 25 Questions, **SECTION-2: SCIENCE** - 25 Questions, **SECTION-3: ENGLISH** - 10 Questions, **SECTION-4: GENERAL KNOWLEDGE** - 10 Questions, **SECTION-5: LOGIC** - 10 Questions, and **SECTION-6: INFORMATION TECHNOLOGY** - 10 Questions.

PART - 2:

One subjective question from Mathematics or Science to be answered in a separate Answer Sheet

6. In case of any problem with your test booklet, inform the invigilator immediately. You will be provided with a replacement.
7. Use of standalone Calculator is allowed. Mobile phones are strictly prohibited.
8. Use **BLACK BALL POINT PEN** only for marking answers on the OMR sheet. Do not use gel pens or pencils.
9. **Each question carries 2 marks. Questions 1 to 90 will have one or more correct answers as per the directions given. Shading wrong bubbles make the answer wrong. There are no negative marks allotted to wrong answers.**
10. Use the margin in the **Question Booklet** for rough work. No other piece of paper is permitted to be used for rough work. Failure to follow instructions and examination norms will lead to disqualification.
11. Your **ADMIT CARD** should be returned to the invigilator with your answer sheet.

PLEASE WAIT FOR THE SIGNAL TO OPEN THE TEST BOOKLET

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PART – I: MULTIPLE CHOICE QUESTIONS

MATHEMATICS

Questions from 1 to 20 will have only one right answer. Shade the correct bubble.

1. Vidya's teacher asked her to solve the following question. She solved the same as follows. But her teacher said she made a mistake. Then the teacher asked Hypatia to find Vidya's mistake. Please help Hypatia to locate the mistake.

Question: Obtain all the zeros of the given polynomial $f(x) = 3x^4 + 6x^3 - 2x^2 - 10x - 5$, if two of its zeros are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$.

Answer:

$\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$ are two zeros of $f(x)$. Therefore,

$$\left(x - \sqrt{\frac{5}{3}}\right) \left(x + \sqrt{\frac{5}{3}}\right) = \left(x^2 - \frac{5}{3}\right) = \frac{1}{3}(3x^2 - 5) \text{ is a factor of } f(x).$$

Also, $3x^2 - 5$ is a factor of $f(x)$.

Let us now divide $f(x)$ by $3x^2 - 5$.

We have,

$$\begin{array}{r}
 3x^2 - 5 \overline{) 3x^4 + 6x^3 - 2x^2 - 10x - 5} \quad (x^2 + 2x + 1 \text{ ————— (a)} \\
 \underline{3x^4 + 0x^3 - 5x^2} \\
 6x^3 + 3x^2 - 10x - 5 \text{ ————— (b)} \\
 \underline{6x^3 + 0x^2 - 10x} \\
 3x^2 - 5 \\
 \underline{3x^2 - 5} \\
 0 \text{ ————— (c)}
 \end{array}$$

By division algorithm, we have

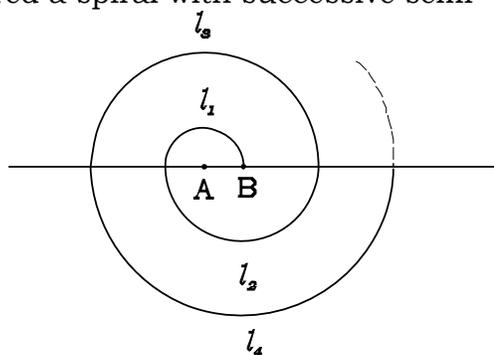
$$3x^4 + 6x^3 - 2x^2 - 10x - 5 = (3x^2 - 5)(x^2 - 2x + 1) \text{ ————— (d)}$$

$$\Rightarrow 3x^4 + 6x^3 - 2x^2 - 10x - 5 = (\sqrt{3}x + \sqrt{5})(\sqrt{3}x - \sqrt{5})(x + 1)^2$$

Hence, the zeros of $f(x)$ are $-\sqrt{\frac{5}{3}}, \sqrt{\frac{5}{3}}, -1$ and 1

2. Vidya and Wisden made two similar triangles by cutting a big sheet of paper. The areas of these two similar triangles are 121 cm^2 and 64 cm^2 respectively. If the median of the first triangle is 12.1 cm , Find the corresponding median of the other (Wisden's) triangle.
 (a) 11 cm (b) 8.8 cm (c) 11.1 cm (d) 8.1 cm
3. Afreen was playing snakes & ladders with Vidya. She threw a dice. She wanted to get 3 for a ladder. Find the probability of getting a multiple of 3.
 (a) $\left(\frac{1}{6}\right)$ (b) $\left(\frac{1}{2}\right)$ (c) $\left(\frac{1}{3}\right)$ (d) $\left(\frac{1}{4}\right)$

4. As given in the following figure, Wisden structured a spiral with successive semi-circles, with centers alternately at A and B. Starting with center at A of radii 0.5 cm, 1.0 cm, 1.5 cm, 2.0 cm,, he kept semi circles on opposite sides, like mirror images to form the spiral.



What is the total length of such a spiral made up of thirteen consecutive semi-circles? (Take $\pi = \frac{22}{7}$)

- (a) 91 cm (b) 143 cm (c) 286 cm (d) 41 cm
5. A wire is kept in the form of a circle of radius 28 cm. Tony re-bent this wire into a square. What is the length of each side of this square?
 (a) 44 cm (b) 45 cm (c) 46 cm (d) 48 cm
6. The Teacher asked Hypatia to form a Question about circles. Here is her tricky Question. Please answer it.
 Two circles with centres P and Q cut each other at two distinct points A and B. The circles have the same radii and neither P nor Q falls within the intersection of the circles. What is the smallest range that includes all possible values of the angle AQP in degrees ?
 (a) Between 30 and 60 (b) Between 0 and 30
 (c) Between 0 and 60 (d) Between 60 and 75
7. The length, breadth and height of Sachin's bedroom are in the ratio 3 : 2 : 1. If the breadth and height are halved while the length is doubled; What happens to the total area of all four walls of his bedroom?
 (a) Remains the same (b) Decreases 13.64%
 (c) Decreases 15% (d) Decreases 30 %
8. A survey was conducted among 100 students to find out whether they took HOTPOT, the Hybrid Open Test conducted by World Genius Council under School Empowerment Program. The summarized information regarding Student participation for 3 months is given below:

Particulars	Readership
Students who took HOTPOT only in September	18
Students who took HOTPOT in July	48
Students who took HOTPOT in September but not in August	23
Students who took HOTPOT in July and August	10
Students who took HOTPOT in September and July	8
Students who did not take HOTPOT in any of these three months	24
Students who took HOTPOT in September	28

What is the number of surveyed people who took HOTPOT exactly two consecutive months (out of the three)?

- (a) 7 (b) 9 (c) 12 (d) 14

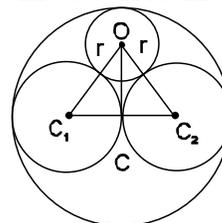
9. Vidya drew an equilateral triangle BPC inside a square ABCD. What is the value of the angle APD in degrees ?

- (a) 75 (b) 90 (c) 120 (d) 150

10. Wisden would like to know which of the following equations has real roots?

- (a) $3x^2 + 4x + 5 = 0$ (b) $x^2 + x + 4 = 0$
 (c) $(x - 1)(2x - 5) = 0$ (d) $2x^2 - 3x + 4 = 0$

11. Two circles of unit radius touch each other and each of them touches internally a circle of radius two, as shown in the figure alongside. What will be the radius of the smallest circle that touches all the three circles?



- (a) 5 (b) 2 (c) $\frac{3}{2}$ (d) $\frac{2}{3}$

12. Neeraja, Vidya & Hypatia were forming questions related to triangles. Vidya asked Neeraja – “If the perimeter of an isosceles right triangle is $(6 + 3\sqrt{2})$ m, then what will be the area of that triangle?” Neeraja answered rightly. What was her answer?

- (a) 4.5 m^2 (b) 5.4 m^2 (c) 9 m^2 (d) 81 m^2

13. Now Neeraja came with a counter question to Vidya: “If the elevation of the sun changes from 30° to 60° , what is the difference between the lengths of the shadows of a street light pole of 15 m at these two elevations of the Sun?” Vidya is smart. Can you tell us what is the correct answer?

- (a) 7.5 m (b) 15 m (c) $10\sqrt{3} \text{ m}$ (d) $\frac{15}{\sqrt{3}} \text{ m}$

14. The shop below Quana’s flat stores some quantity of rice. Wisden’s mother bought half the original quantity plus half a kg of rice from the shop. The second customer bought half the remaining quantity plus half a kg of rice. Then the third customer also bought half the remaining quantity plus half a kg of rice. Thereafter, no rice was left in the shop. Which of the following best describes the original quantity of rice; if you assume that the shop had x kg of rice in the beginning?

- (a) $2 \leq x \leq 6$ (b) $5 \leq x \leq 8$ (c) $9 \leq x \leq 12$ (d) $11 \leq x \leq 14$

15. Wisden and his family plans to drive from city A to station C, at the speed of 70 km per hour, to catch a train arriving there from B. He must reach C at least 15 minutes before the arrival of the train. The train leaves B, located 500 km south of A, at 8 : 00 am and travels at a speed of 50 km per hour. It is known that C is located between west and northwest of B, with BC at 60° to AB. Also, C is located between south and southwest of A with AC at 30° to AB.

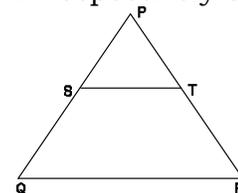
Latest by when, Wisden must leave A to catch the train?

- (a) 6 : 15 am (b) 6 : 30 am (c) 6 : 45 am (d) 7 : 00 am

16. Ten years ago, the ages of the members of a Sankari's joint family of eight people was added upto 231 years. Three years later, one member died at the age of 60 years and a child was born during the same year. After another three years, one more member died, again at 60 and a child was born during the same year. What is the current average age of this eight-member joint family now?
 (a) 23 years (b) 22 years (c) 21 years (d) 24 years
17. If A, B and C are interior angles of a triangle ABC, what is $\sin\left(\frac{B+C}{2}\right)$?
 (a) $\sin\frac{A}{2}$ (b) $\cos\frac{A}{2}$ (c) $-\sin\frac{A}{2}$ (d) $-\cos\frac{A}{2}$
18. Here comes Hypatia with another question! – “What is the maximum number of common tangents that can be drawn to two non-intersecting circles?” Answer her.
 (a) 4 (b) 3 (c) 2 (d) 1
19. After answering Hypatia's last question, Wisden thought for a moment and fired another Question – “An equilateral ΔABC is inscribed in a circle of radius r . What is the area of the largest square that can be inscribed inside it?” Hypatia was a bit puzzled. Please help her.
 (a) $r^2(2 - \sqrt{3})^2$ (b) $9r^2(2 - \sqrt{3})^2$ (c) $3r^2(2 - \sqrt{3})^2$ (d) $r^2(2 - 3\sqrt{3})^2$
20. It was the turn of Vidya. He asked this question to her class - A horse is tethered to one corner of a rectangular grassy field of 40 m by 24 m with a rope of length of 14 m. How much area of the field can the horse graze?
 (a) 154 m² (b) 308 m² (c) 150 m² (d) 615 m²

Questions from 21 to 25 will have more than one right answer. Shade all the correct bubbles.

21. Tony, Wisden and Vidya went for a picnic. They travelled 300 km by train and 200 km by taxi, it took him 5 hours 30 minutes. But if they travel 260 km by train and 240 km by taxi they will take 6 minutes longer. Find the speed of the train and that of the taxi.
 (a) 140 kmph (b) 100 kmph (c) 90 kmph (d) 80 kmph
22. In figure given below, S and T are points on the sides PQ and PR respectively of ΔPQR such that $PT = 2$ cm, $TR = 4$ cm and ST is parallel to QR . Find the ratio of the areas of ΔPST and ΔPQR .
 (a) 1 (b) 2 (c) 9 (d) 11



23. Hypatia comes with new ideas – she solved a question from her text book. But she skipped and jumped a few steps while solving it. Please locate which of the following (a), (b), (c) and (d) options indicate that she has jumped steps?

If $\sin \theta + \cos \theta = \sqrt{2} \sin(90^\circ - \theta)$, determine $\cot \theta$.

Answer:

We have,

$$\sin \theta + \cos \theta = \sqrt{2} \sin(90^\circ - \theta)$$

$$\Rightarrow \sin \theta + \cos \theta = \sqrt{2} \cos \theta$$

$$\begin{aligned} \Rightarrow \sin \theta &= \sqrt{2} \cos \theta - \cos \theta \dots \dots \dots \text{(a)} \\ \Rightarrow \sin \theta &= (\sqrt{2} - 1) \cos \theta \dots \dots \dots \text{(b)} \\ \Rightarrow \tan \theta &= (\sqrt{2} - 1) \dots \dots \dots \text{(c)} \\ \Rightarrow \cot \theta &= \frac{1}{\sqrt{2}-1} \dots \dots \dots \text{(d)} \quad \left[\because \cot \theta = \frac{1}{\tan \theta} \right] \\ \Rightarrow \cot \theta &= \frac{(\sqrt{2}+1)}{(\sqrt{2}-1)(\sqrt{2}+1)} = \frac{\sqrt{2}+1}{2-1} = \sqrt{2} + 1 \end{aligned}$$

24. After studying Trigonometric Ratios and Trigonometric Identities, Hypatia listed four proofs she solved. But while listing them as (a), (b), (c) and (d) options below, she intentionally made mistakes in some of the four proofs to test your knowledge. Among the following proofs, which are listed correctly without any mistake/s?

- (a) If $\cos \theta + \sin \theta = \sqrt{2} \cos \theta$, show that $\cos \theta - \sin \theta = \sqrt{2} \sin \theta$
 (b) If $\sec \theta + \tan \theta = p$, show that $\frac{p^2+1}{p^2-1} = \sin \theta$
 (c) If $\operatorname{cosec} \theta - \sin \theta = l$ and $\sec \theta - \cos \theta = m$, prove that $l^2 m^2 (l^2 + m^2 + 3) = 1$
 (d) If $\operatorname{cosec} \theta - \sin \theta = m$ and $\sec \theta - \cos \theta = n$, prove that $(m^2 n)^{2/3} + (mn^2)^{2/3} = 1$

25. Richa is just back from Melbourne with her parents. She uses her experience in Australia to frame a new question - Cities A and B are two cities under different time zones in Australia. A is located 3000 km East of B. The table below describes the schedule of an airline operating non-stop flights between A and B. All the time given is local time of respective cities and on the same day.

Departure		Arrival	
City	Time	City	Time
B	8.00 am	A	3.00 pm
A	4.00 pm	B	8.00 pm

Assume that planes cruise at the same speed in both directions. However, the effective speed is influenced by a steady wind blowing from East to West at 50 km per hour. What is the time difference between A and B ? What is the planes cruising speed in km per hour ?

- (a) 1 hour and 30 minutes (b) 1 hour (c) 600 (d) 550

SCIENCE

Questions from 26 to 45 will have only one right answer. Shade the correct bubble.

26. Quana pours a solution to a jar containing crushed egg shells. A gas is produced in the jar. During her experiment, she passes this gas through lime water and lime water turns milky. Please tell us which of the following was there in the solution?

- (a) NaCl (b) HCl (c) LiCl (d) KCl

27. Quana continued her experiments under Hypatia's guidance. During her other experiment, she saw when ethanoic acid reacts with ethanol, a sweet smelling

product is formed. Can you tell her the functional group in the product from the following options.

- (a) aldehyde (b) ketone (c) alcohol (d) ester

28. Which of the following elements is not present in stainless steel?

- (a) Iron (b) Tungsten (c) Chromium (d) Nickel

29. After answering the above question rightly, Quana put another question to Hypatia - Two elements have similar properties because they have the same number of valence electrons. Which are they?

- (a) C and Cl (b) Ca and Ga (c) Si and S (d) S and O

30. Which chamber of your heart has the thickest wall?

- (a) left atrium (b) right atrium (c) left ventricle (d) right ventricle

31. Which of the following is a plant hormone?

- (a) Insulin (b) Thyroxin (c) Oestrogen (d) Cytokinin

32. Hypatia was in the Physics laboratory with Wisden. She placed a square of side 3cm at a distance of 25cm from a concave mirror of focal length 10cm . The centre of the square is at the axis of the mirror and the plane is normal to the axis. Can you say what is the area enclosed by the image of the square?

- (a) 4 cm^2 (b) 6 cm^2 (c) 16 cm^2 (d) 36 cm^2

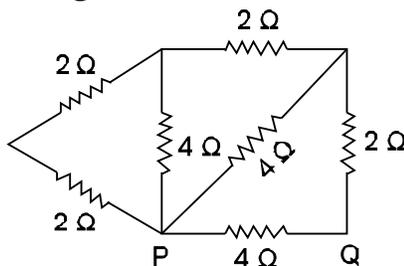
33. While continuing hectic experiments, Wisden took a rectangular glass plate of 6 cm thick which is silvered at one face. An object held 8 cm in front of its first face, forms an image of 12 cm behind the silvered face. What is the refractive index of this glass plate?

- (a) 0.4 (b) 0.8 (c) 1.2 (d) 1.6

34. Neeraja's backyard is full of plants & trees. She used to enjoy birds sitting on the trees and overhead electric wires. This morning she saw a bat is dead and is hanging on the overhead electric wire passing through her backyard. Can you tell us how the bat is electrocuted?

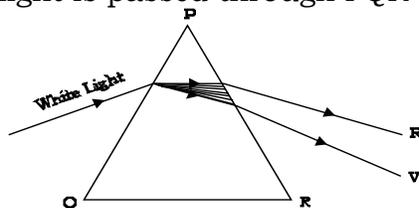
- (a) The bat sat on the wire while raining
 (b) The bat touched two wires together
 (c) Someone killed the bat and hanged on wire
 (d) Very high voltage on the wire due to lightening

35. Vidya has made the following network. What is the resistance between P and Q in Vidya's network?

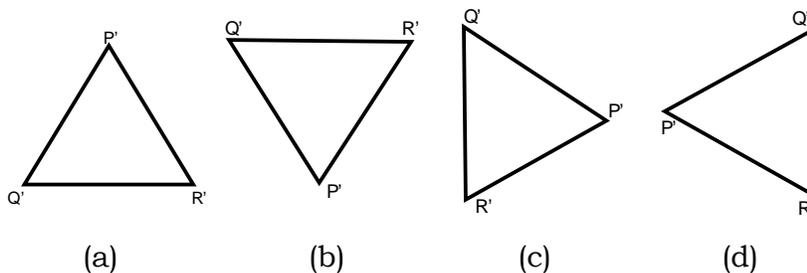


- (a) $8\ \Omega$ (b) $4\ \Omega$ (c) $2\ \Omega$ (d) $1\ \Omega$

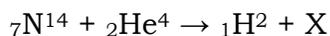
36. Richa doubled the length and cross-section of a wire. What happens to the resistance of the wire?
- (a) Increases eight times (b) Decreases four times
(c) Becomes four times (d) Remains unchanged
37. Neeraja's bicycle has a dynamo. Which of the following is performed by a dynamo?
- (a) Converts Mechanical energy into sound energy
(b) Converts Mechanical energy into electrical energy
(c) Converts Electrical energy into mechanical energy
(d) Converts Electrical energy into sound energy
38. Wisden says that a long straight wire carries heavy current. An electron is travelling parallel to the wire in the opposite direction to the current. The electron experiences a force f when its distance from the wire is 1 m. If the electron was travelling in a direction perpendicular to the wire, What will be the force on it when it is 1 m from the wire?
- (a) f (b) $2f$ (c) $f/2$ (d) zero
39. Hypatia is very fond of Physics. She used two identical prisms PQR and P' Q' R' for her experiment. White light is passed through PQR as shown below.



She placed the other prism in front of the above prism to yield white light again. Which of the following position of P' Q' R' will yield white light?



40. Hypatia would like you to say which of the following colour of light undergoes the least deviation while passing through a glass prism?
- (a) Red (b) Blue (c) Yellow (d) Green
41. Vidya explains that during certain process, carbon dioxide is reduced to carbohydrates. Which of the following process is responsible for the reduction of carbon dioxide to carbohydrates?
- (a) digestion (b) respiration (c) photosynthesis (d) excretion
42. Afreen wrote the following nuclear reaction in her notebook. Name the element X in the given reaction.



- (a) ${}_8\text{O}^{16}$ (b) ${}_7\text{N}^{14}$ (c) ${}_9\text{F}^{17}$ (d) ${}_{10}\text{Ne}^{17}$

43. Richa adds dilute hydrochloric acid to iron fillings. What is the result of her experiment?
 (a) Hydrogen gas and iron chloride are produced
 (b) Chlorine gas and iron hydroxide are produced
 (c) No reaction takes place
 (d) Iron salt and water are produced
44. Which of the following is not an ore of aluminium?
 (a) Cryolite (b) Feldspar (c) Bauxite (d) Azurite
45. Which has the highest boiling point?
 (a) ethane (b) methanol (c) ethanol (d) ethanoic acid

Questions from 46 to 50 will have more than one right answer. Shade all the correct bubbles.

46. Which of the following reactions will take place?
 (a) $\text{Zn} + \text{FeSO}_4 \rightarrow \text{ZnSO}_4 + \text{Fe}$ (b) $2\text{KI} + \text{Cl}_2 \rightarrow 2\text{KCl} + \text{I}_2$
 (c) $\text{Zn} + \text{MgSO}_4 \rightarrow \text{ZnSO}_4 + \text{Mg}$ (d) $\text{Mg} + \text{CuSO}_4 \rightarrow \text{MgSO}_4 + \text{Cu}$
47. Which among the following are correct while discussing about the generation of electricity from water?
 (a) Water won't get exhausted (b) No environmental pollution
 (c) Renewable source of energy (d) Nuclear energy is better
48. At the end of their session in the lab a short while ago, Hypatia gave four matched equations to Quana and asked: "Which of the following are correctly matched?"
 (a) Vinegar \rightarrow carboxylic acid (b) $\text{C}_2\text{H}_6 \rightarrow$ alkane
 (c) Ethanol \rightarrow alcohol (d) Methanol \rightarrow ketone
49. Afreen says that Copper does not react with dilute HCl. But it reacts with HCl in the presence of air or oxygen. What are the reasons for her statement?
 (a) Copper is ranked lower than hydrogen in the activity series
 (b) HCl is not an oxidising agent
 (c) Air or oxygen oxidises the copper metal to copper (+2) ion
 (d) Her statement is wrong
50. Which of the following are displacement reactions?
 (a) $\text{NaOH} + \text{HNO}_3 \rightarrow \text{NaNO}_3 + \text{H}_2\text{O}$ (b) $\text{Cu} + 2\text{AgNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + 2\text{Ag}$
 (c) $2\text{Hg} + \text{O}_2 \rightarrow 2\text{HgO}$ (d) $\text{FeCl}_3 + 3\text{NaOH} \rightarrow 3\text{NaCl} + \text{Fe}(\text{OH})_3$

ENGLISH

Questions under this section will have only one right answer. Shade the correct bubble. Choose the grammatically correct options.

51. She said, "If you work hard, you will take good marks."
 (a) My teacher advised if I work hard I could take good marks.
 (b) My teacher advises if you work hard you will take good marks

- (c) My teacher advises if I work hard I will take good marks
(d) My teacher advised that I worked hard I would take good marks

52. She never understood me, whenever I said something.

- (a) Whenever I said something, I never understood by her
(b) Whenever I said something, I had never understood by her
(c) Whenever I said something, I was being never understood by her
(d) Whenever I said something I was never understood by her

53. The possessive pronoun in the sentence - "I played the guitar but my brother played his piano." is

- (a) I (b) my (c) their (d) his

54. Indian government will bring tougher anti-terror laws. - Which word is a nominative noun in this sentence?

- (a) bring (b) Indian (c) anti-terror (d) government

55. Don't make so much noise. Quana _____ to study for her WGSE!

- (a) try (b) tries (c) tried (d) is trying

56. My math teacher wasn't happy yesterday. I _____ to bring my calculator to class.

- (a) Was forgetting (b) Have forgotten (c) forget (d) forgot

Note: In each of the questions, a word has been used in sentences in four different ways. Choose the option corresponding to the sentence in which the usage of the word is **incorrect or inappropriate**

57. **Run**

- (a) I must run fast to catch up with him.
(b) Our team scored a goal against the run of play.
(c) You can't run over him like that.
(d) The newly released book is enjoying a popular run.

58. **Round**

- (a) The police fired a round of tear gas shells.
(b) The shop is located round the corner.
(c) We took a ride on the merry-go-round.
(d) I shall proceed further only after you come round to admitting it.

59. **Buckle**

- (a) After the long hike our knees were beginning to buckle.
(b) The horse suddenly broke into a buckle.
(c) The accused did not buckle under police interrogation.
(d) Sometimes, an earthquake can make a bridge buckle.

60. **File**

- (a) You will find the paper in the file under C.
- (b) I need to file an insurance claim.
- (c) The cadets were marching in a single file.
- (d) When the parade was on, a soldier broke the file.

GENERAL KNOWLEDGE

Questions under this section will have only one right answer. Shade the correct bubble.

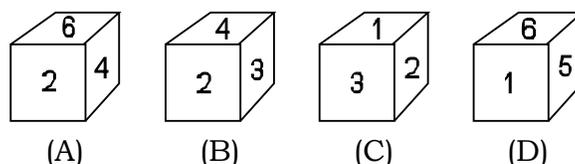
61. Hypatia's uncle is serving Indian Navy. Which inert gas is used by deep sea Navy divers for breathing with substitution for nitrogen in the air?
(a) Argon (b) Xenon (c) Helium (d) Krypton
62. Vidya's mother complained the smell of LPG in her kitchen, this morning. The chemical (ethyl mercaptan) added to the otherwise odourless LPG cooking gas for imparting a detectable smell. Which element is contained in the chemical compound added?
(a) bromine (b) fluorine (c) chlorine (d) sulphur
63. Production of chlorofluorocarbons (CFC) gas which is proposed to be banned in India. Which of the following domestic products use CFC?
(a) Television (b) Refrigerator (c) Tube light (d) Cooking gas
64. We use different clocks at home on various devices. Which clock is used to measure small time intervals accurately?
(a) Analog clock (b) Quartz clock (c) Atomic clock (d) Digital clock
65. Earth has many seasons. Which of the following causes Earth's seasons?
(a) The revolving earth's rotation around the sun
(b) The varying amount of sunspot activity
(c) The earth's orbit around the sun as an ellipse rather than a circle
(d) The 24-hour a day rotation around the sun
66. Wisden has high caliber on right observations. He says if you do not know the right answer of a multiple choice question, opt for the longest answer! It will be right.
Check whether it is correct. Opt the right option of the question given:
The children of a colour-blind mother and a normal father will be
(a) Normal daughters and colour blind and carrier sons
(b) Normal sons and carrier daughters
(c) Colour blind sons and carrier daughters
(d) Colour blind sons and daughters
67. Which of the following is the process of science? (You might have seen that Question No.66 was dealing with this process)
(a) Observation > Experiments > Hypothesis
(b) Hypothesis > Observations > Experiments
(c) Observation > Hypothesis > Experiments
(d) Experiments > Observations > Hypothesis

68. Vidya went with Afreen and Quana to Nehru Planetarium, Mumbai to watch five planets together on the sky. Now she wonders how many geo-stationary satellites are required to cover the whole of Earth?
 (a) 3 (b) 4 (c) 5 (d) 6
69. Hypatia says she would like to learn Mathematical Biology at her graduation. Which organization offers courses in Mathematical Biology?
 (a) Bhabha Atomic Research Centre (b) Geological Institute of India
 (c) Indian Institute of Science (d) Tata Institute of Fundamental Research
70. Wisden and Vidya strongly support Delhi Government's traffic control mechanism to control air pollution as Delhi has very high air pollution. Which city among the following has least air pollution?
 (a) Lucknow (b) Patna (c) Hyderabad (d) Bengaluru

LOGIC

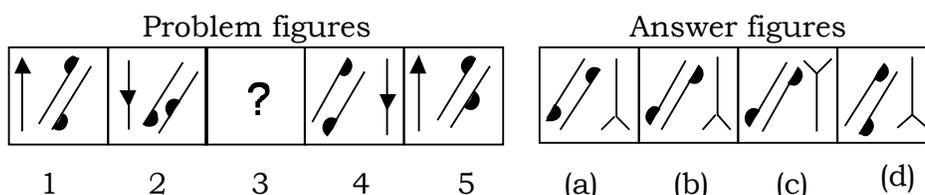
Questions under this section will have only one right answer. Shade the correct bubble.

71. Four positions of the same dice are given below.



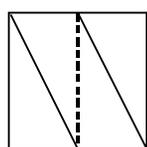
Which number is opposite to number 2?

- (a) 4 (b) 6 (c) 5 (d) 3
72. Which answer option will replace the question mark in the problem figures?

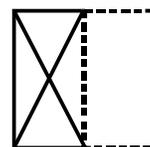
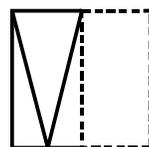
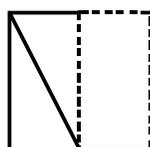
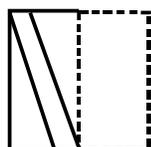


73. A square transparent sheet with a pattern is given. Figure out from the four alternatives as to how the pattern would appear when the transparent sheet is folded at the dotted line.

Transparent Sheet



Response Figures



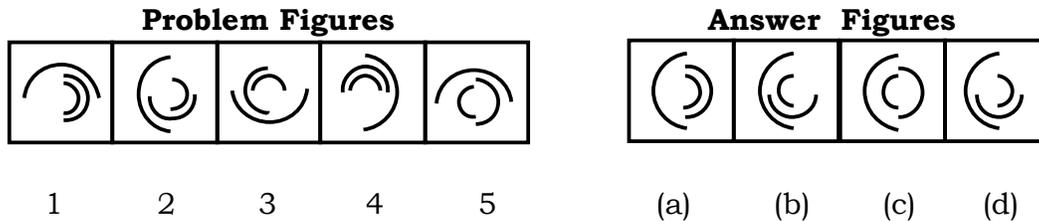
(a)

(b)

(c)

(d)

74. **Directions:** The following question consists of five figures marked 1, 2, 3, 4 and 5 called the Problem Figures followed by four other figures marked a, b, c and d called the Answer Figures. Select a figure from amongst the Answer Figures which will continue the same series as established by the five Problem Figures.



75. **Directions:** There is a blank space in the question in which only one of the four given alternatives satisfy the same relationship as it is found between the two terms on the other side of the sign : : .

Find the correct alternative to fill in the blank space.

Telephone : Ring : : :

- (a) Door : Knock (b) Gate : Open (c) Door : Wood (d) Lock : Key
76. In a queue of children, Afreen is fifth from the left and Quana is sixth from the right. When they interchange their places among themselves, Afreen becomes thirteenth from the left. Then, what will be Quana's position from the right?
- (a) 4th (b) 14th (c) 8th (d) 15th
77. From a point, Sachin started walking towards east and walked 35 m. He then turned towards his right and walked 20 m and he again turned right and walked 35 m. Finally he turned to his left and walked 20 m and he reached his destination. Now, how far is he from his starting point?
- (a) 55 m (b) 50 m (c) 20 m (d) 40 m

Directions: (Q. 78 to 80): Read the following to answer the questions.

Four friends Wisden, Vidya, Hypatia, and Afreen are studying together in Class 10. Wisden and Vidya are good in Hindi but poor in English. Wisden and Hypatia are good in Sanskrit but poor in Geography. Afreen and Vidya are good in Maths as well as Sanskrit.

78. Which of the following pair of friends is good in Sanskrit and Hindi?
- (a) Hypatia - Afreen (b) Wisden - Vidya
(c) Afreen - Wisden (d) Vidya - Hypatia
79. Which of the following pair of friends is good in Maths and Sanskrit?
- (a) Wisden and Afreen (b) Wisden and Hypatia
(c) Hypatia and Afreen (d) Afreen and Vidya
80. Which of the following friend is good in Sanskrit only but poor in Geography?
- (a) Wisden (b) Vidya (c) Hypatia (d) Afreen

INFORMATION TECHNOLOGY

Questions under this section will have only one right answer. Shade the correct bubble.

81. Under MS Access, which key uniquely identifies each record?
(a) primary key (b) key record (c) unique key (d) field name
82. Under MS Access, which of the following is not a legitimate section for form objects?
(a) Form detail (b) Group header (c) Form header (d) Page footer
83. Two tables can be linked with relationship so that the data integrity can be enforced. Where can you find Relationship Command?
(a) Home Tab (b) Create Tab (c) External Data Tab (d) Database Tab
84. Which is not the function of the Operating System?
(a) Memory management (b) Disk management
(c) Application management (d) Virus Protection
85. The operating system allows the user to organize the computer's contents in a hierarchical structure of directories that include all of the following except:
(a) Files (b) Folders (c) Drives (d) System
86. Where the recently used application file list appears in the Windows operating system?
(a) Setting menu (b) Documents menu
(c) Run dialog box (d) Programs menu
87. Frames from one LAN can be transmitted to another LAN using a
(a) Router (b) Bridge (c) Repeater (d) Modem
88. ICMP (Internet Control Message Protocol) is
(a) a TCP /IP protocol used to dynamically bind a high level IP Address to a low-level physical hardware address
(b) a TCP /IP high level protocol for transferring files from one machine to another
(c) a protocol used to monitor computers
(d) a protocol that handles error and control messages
89. With an IP address of 100, you currently have 80 subnets. What subnet mask should you use to maximize the number of available hosts?
(a) 192 (b) 224 (c) 240 (d) 252
90. What is a function inside another function under MS Excel called?
(a) NESTED (b) ROUND (c) SUM (d) TEXT

TURN TO NEXT PAGE FOR PART - II

PART – II – SUBJECTIVE QUESTION

Note: All the candidates should answer the following subjective question on the separate Answer Sheet provided for it. The Answer for the Subjective Question will be evaluated when the candidate scores 90 percentile or above in Part – I (90 MCQs) to add bonus points to his / her score. Use the separate PART – II Answer Sheet to answer the following question.

91. Frame a question using ALL the four given parameters. Please solve the question you have framed with its detailed answer.

The Parameters are:

1. Application of any formula related to circle
2. Application of Pythagoras Theorem
3. Application of Coordinate Geometry
4. Application of Linear Equations in two variables

Important: Please make sure that you apply all the given parameters in a single Question and its answer.

END OF DOCUMENT

HOT POT – Do it at home!
Hybrid Open Test – Power of Thought

Hypatia's mother saw an advertisement on TV saying that a new brand of toothpaste called WHITEGLOW is offering 100 grams free along with 500 grams of toothpaste. Hypatia's family use 500 grams of toothpaste for a month. Her mother bought 500 grams of WHITEGLOW and she got 100 grams free. Her family started using it from 1st January, 2016. Though their usage pattern did not change and they had no guests, both the tubes got emptied by Indian Republic day.

Yesterday, Hypatia told Vidya that it was the toothpaste company's business tactics to increase sales though they gave 600 grams. She said that the company has used mathematical manipulation to get the tubes emptied fast. Can you tell us what the mathematical manipulation was?

Mail us your answers to worldgeniuscouncil@gmail.com Please mention your WGC ID (roll number) in the subject line. Right answers will be appreciated.

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