



Phase – I

Question Paper

Class - X

M.M:70

Time:70 Minutes

ENGLISH (10 Marks)

Q1. Change into Indirect Speech:

He said, “Be quite and listen to my words.”

- A) He urged them to be quite and listen to his words.
- B) He urged them and said be quite and listen to his words.
- C) He urged they should be quite and listen to his words.
- D) He said you should be quite and listen to his words.

Q2. Change into Passive Voice

It is time to write a letter.

- A) It is time to be written a letter.
- B) It is time for a letter to write.
- C) It is time for a letter to be written.
- D) It was time for a letter to be written.

Q3. Choose the option that best expresses the meaning of the given idiom/phrase:

‘See eye to eye’

- A) not agreeing with someone
- B) agreeing with someone
- C) differences
- D) None of them

- Q4. Fill in the blank by choosing the best option: (Q4. to Q9.)
Petrol is sold bylitre.
- A) a
 - B) an
 - C) the
 - D) some
- Q5. She was accustomed to _____ baffled by complexity.
- A) be
 - B) being
 - C) is
 - D) are
- Q6. You hungry after a long walk.
- A) must be
 - B) can't be
 - C) shall be
 - D) will be
- Q7. I visit the Grand Canyon _____ I go to Arizona.
- A) unless
 - B) where
 - C) once
 - D) whenever
- Q8. He faster than we did.
- A) run
 - B) ran
 - C) running
 - D) having run
- Q9. You had better him everything.
- A) tell
 - B) told
 - C) telling
 - D) to tell
- Q10. Identify the underlined clause by choosing the best option :
Listen to what I say.
- A) Principal Clause
 - B) Noun Clause
 - C) Adjective Clause
 - D) Adverb Clause

MATHEMATICS (20 Marks)

- Q11. If $a_1, a_2, a_3, \dots, a_n$ are in A.P with common difference $d \neq 0$, then the value of $\sin d (\operatorname{cosec} a_1 \operatorname{cosec} a_2 + \operatorname{cosec} a_2 \operatorname{cosec} a_3 + \dots + \operatorname{cosec} a_{n-1} \operatorname{cosec} a_n)$ will be:
- A) $\sec a_1 - \sec a_n$
B) $\tan a_1 - \tan a_n$
C) $\operatorname{cosec} a_1 - \operatorname{cosec} a_n$
D) $\cot a_1 - \cot a_n$
- Q12. $N = \{12, 18, 2, 6\}$ $P = \{1, 4, 2, 3\}$. If N and P are to be selected at random from sets N and P respectively. What is the probability that $\frac{N}{2P}$ will be a member of set P ?
- A) $\frac{5}{8}$
B) $\frac{1}{8}$
C) $\frac{3}{8}$
D) None of these
- Q13. Let α and β be the roots of the equation, $5x^2 + 6x - 2 = 0$. If $S_n = \alpha^n + \beta^n, n = 1, 2, 3, \dots$, then:
- A) $6S_6 + 5S_5 = 2S_4$
B) $6S_6 + 5S_5 + 2S_4 = 0$
C) $5S_6 + 6S_5 = 2S_4$
D) $5S_6 + 6S_5 + 2S_4 = 0$
- Q14. If $\frac{1}{x} + \frac{1}{2} = \frac{1}{x+2}$, then $x^{45} - 8x^{42} + x^3 + 3 = ?$
- A) 4
B) 6
C) 8
D) 11
- Q15. Minimum value of $36 \sec^2 \theta + 49 \operatorname{cosec}^2 \theta$:
- A) 125
B) 7
C) 169
D) None of these
- Q16. For any $\theta \in \left(\frac{\pi}{4}, \frac{\pi}{2}\right)$ the expression $3(\sin \theta - \cos \theta)^4 + 6(\sin \theta + \cos \theta)^2 + 4\sin^6 \theta$ equals:
- A) $13 - 4 \cos^2 \theta + 6 \sin^2 \theta \cos^2 \theta$
B) $13 - 4 \cos^6 \theta$
C) $13 - 4 \cos^2 \theta + 6 \cos^4 \theta$
D) $13 - 4 \cos^4 \theta + 2 \sin^2 \theta \cos^2 \theta$

- Q17. Two towers stand on a horizontal plane P and Q, where $PQ = 30$ m are two points on the line joining their feet. As seen from P, the angle of elevation of the tops of the towers are 30° and 60° but as seen from Q are 60° and 45° . The distance between the towers is equal to :
- A) $15(4 + \sqrt{3})$
 B) $15(4 - \sqrt{3})$
 C) $15(3 + \sqrt{3})$
 D) $15(2 + \sqrt{3})$
- Q18. A child consumed an ice-cream of inverted right-circular conical shape from the top and left only 12.5% of the cone for her mother. If the height of the ice-cream cone was 8 cm, what was the height of the remaining ice-cream cone?
- A) 2.5 cm
 B) 3 cm
 C) 3.5 cm
 D) 4 cm
- Q19. Let S_1 be a square of side a . Another square S_2 is formed by joining the mid-points of the sides of S_1 . The same process is applied to S_2 to form yet another square S_3 and so on. If A_1, A_2, A_3, \dots be the areas and P_1, P_2, P_3, \dots be the perimeters of S_1, S_2, S_3, \dots respectively, then what is the ratio $\frac{P_1 + P_2 + P_3 + \dots}{A_1 + A_2 + A_3 + \dots}$ equal to:
- A) $\frac{2(\sqrt{2}+2)}{a}$
 B) $\frac{2(\sqrt{2}-2)}{a}$
 C) $\frac{(\sqrt{2}+2)}{a}$
 D) None of these
- Q20. An open box is made from a square lamina of side 12cm, by cutting equal squares at the corners and folding up the remaining flaps. The volume of this box may be:
- A) 135 c.c.
 B) 140 c.c.
 C) 145 c.c.
 D) 125 c.c.
- Q21. Let $A(h, k), B(1, 1)$ and $C(2, 1)$ be the vertices of a right angled triangle with AC as its hypotenuse. If the area of the triangle is 1 sq. unit, then the set of values ' k ' can take is given by:
- A) $\{1, 3\}$
 B) $\{0, 2\}$
 C) $\{-1, 3\}$

D) $\{-3, -2\}$

Q22. If the area of the triangle formed by the points $O(0, 0)$, $A(a^{x^2}, 0)$ and $B(0, a^{6x})$ is $\frac{1}{2a^5}$ sq. units, then $x =$

A) $\{1, 5\}$

B) $\{-1, 5\}$

C) $\{1, -5\}$

D) $\{-1, -5\}$

Q23. Find the last two digits of 3^{1997} :

A) 19

B) 81

C) 63

D) 27

Q24. In a triangle the length of two altitudes are 12cm and 15cm respectively. Then, how many integer values of third altitude are possible?

A) 54

B) 55

C) 57

D) None of these

Q25. A line from one vertex A of an equilateral $\triangle ABC$ meets the opposite side BC in P and the circumcircle of $\triangle ABC$ in Q. If $BQ = 4$ cm and $CQ = 3$ cm, then PQ is equal to:

A) 7cm

B) $\frac{4}{3}$ cm

C) $\frac{12}{7}$ cm

D) 2cm

Q26. Chord AB and CD of a circle intersect at E and are perpendicular to each other. Segments AE, EB and ED are of length 2cm, 6cm, and 3cm respectively. Then, what is the length of the diameter of the circle?

A) $\sqrt{65}$

B) $\frac{\sqrt{65}}{2}$

C) $\frac{\sqrt{63}}{2}$

D) None of these

- Q27. Positive integers from 5 to 40 are arranged in four groups of 9 integers each in a particular order. The highest possible mean of the medians of these groups is:
- A) 29
 - B) 22.5
 - C) 28.5
 - D) 19
- Q28. A semi-circle of diameter 14cm has three chords of equal length connecting the two end points of the diameter so as to form a trapezoid inscribed within a semicircle. What is the value of the area enclosed by the trapezoid?
- A) $\left(\frac{157 \times \sqrt{3}}{4}\right) \text{ cm}^2$
 - B) $(49 \times \sqrt{3}) \text{ cm}^2$
 - C) $\left(\frac{147 \times \sqrt{3}}{4}\right) \text{ cm}^2$
 - D) $\left(\frac{100}{\sqrt{3}}\right) \text{ cm}^2$
- Q29. The length and the width of a swimming pool are 50 metres and 15 metres respectively. If the depth of the swimming pool at one end is 10 metres and the other end 20 metres, then find the volume of water in the swimming pool?
- A) 10000 m³
 - B) 11250 m³
 - C) 15000 m³
 - D) 8000 m³
- Q30. The sum of the roots of the equation, $x^2 + |2x - 3| - 4 = 0$, is:
- A) 2
 - B) -2
 - C) $-\sqrt{2}$
 - D) $\sqrt{2}$

SOCIAL STUDIES (10 Marks)

- Q31. When was the Second Round Table Conference organized?
- A) 1930
 - B) 1931
 - C) 1932
 - D) 1929

- Q32. From which language the word 'liber' is derived?
- A) Arabic
 - B) French
 - C) Latin
 - D) German
- Q33. In which state Durg iron ore mine is located?
- A) Bihar
 - B) Chattisgarh
 - C) Jharkhand
 - D) Madhya Pradesh
- Q34. Which one is an example of public sector industry?
- A) Dabur Industries
 - B) Tata Motors
 - C) SAIL
 - D) TISCO
- Q35. Identify the type of soil on the basis of the given information :
- It is the most widely spread soil.
- The entire Northern Plains are made of this.
- A) Black Soil
 - B) Alluvial Soil
 - C) Laterite Soil
 - D) Arid Soil
- Q36. In which sector do workers enjoy job security?
- A) Unorganised sector
 - B) Organised sector
 - C) Private sector
 - D) Agriculture sector
- Q37. Which one is an example of informal source of credit?
- A) Banks
 - B) Cooperative societies
 - C) Traders
 - D) None of the above

Q38. Match the following :

Political Parties

States

a) Biju Janata Dal

1) Punjab

b) Janata Dal (Secular)

2) Bihar

c) Shiromani Akali Dal

3) Odisha

d) Lok Janshakti Party

4) Karnataka

A) a – 3, b – 4, c – 1, d – 2

B) a – 4, b – 3, c – 2, d – 1

C) a – 1, b – 2, c – 3, d – 4

D) a – 3, b – 4, c – 2, d – 1

Q39. A ladder like formation in which all the caste groups are placed from the highest to the lowest caste is known as:

A) Caste discrimination

B) Pyramid

C) Caste hierarchy

D) Caste formation

Q40. Which one of the following language was recognized as the only official language of Sri Lanka in 1956?

A) Sinhala

B) Tamil

C) Hindi

D) Urdu

APTITUDE (10 Marks)

Study the following information to answer the questions given below:

An exhibition is open for public since 9 a.m. till 3 p.m. and again since 4 p.m. till 10 p.m. In a day, there are 12 batches of 1 hour each. The entry ticket bears a pass code made up of seven words, which changes every hour following a particular rule. The pass code 4 p.m. to 10 p.m. are the same as those for respective hours during 9 a.m. to 3 p.m., i.e., the pass code for 4 p.m. to 5 p.m. is the same as that of 9 a.m. to 10 a.m. and so on. Following is an illustration of the code and steps of rearrangement for subsequent clock hours.

First batch : 9 a.m. to 10 a.m. (4 p.m. to 5 p.m.)

Pass code : dig more and you will find water

Second batch : 10 a.m. to 11 a.m. (5 p.m. to 6 p.m.)

Pass code : and dig find you water will more

Third batch : 11 a.m. to 12 noon (6 p.m. to 7 p.m.)

Pass code : find and will you more water dig and so on.

- Q41. If the pass code for 5 p.m. to 6 p.m. is 'out in above over the field end', what will be the pass code for 1 p.m. to 2 p.m. ?
- A) the field end the over out in above
 - B) field end the over out above in
 - C) field the end over out above in
 - D) the field end over out above in

In the following question, a group of three interrelated words is given. Choose the word from the given alternatives, that belong to the same group.

- Q42. Botany : Zoology : Cardiology
- A) Morphology
 - B) Seismology
 - C) Pedology
 - D) Taxonomy
- Q43. Five friends P, Q, R, S and T read a newspaper. The one who reads first gives it to R. The one who reads last had taken it from P. T was neither the first nor the last one to read, There were two readers between Q and P. Who reads the newspaper at last?
- A) P
 - B) Q
 - C) R
 - D) S
- Q44. Kashvi facing towards rising sun turned to her left and walks for 60m. She then turned to west and walked for 15m. Then she turned towards left at an angle of 45° and reached 95m from her original position. How much total distance did she travel?
- A) 95m
 - B) 115m
 - C) 155m
 - D) 175m
- Q45. One morning at 8 A.M. Navneet and Ravneet were standing on a lawn with their back towards each other at the distance of 100m. Navneet's shadow fell exactly towards his left hand side. After 15 minutes, Ravneet turns 135° anticlockwise. Towards which direction is Ravneet facing now?
- A) North-East
 - B) North-West
 - C) East
 - D) South-East
- Q46. The third day before 1st January 2019 was Saturday. Which day will the fourth day of March 2020 be ?
- A) Friday
 - B) Saturday
 - C) Wednesday
 - D) Thursday

- Q47. At what time between 3 P.M. and 4 P.M. the angle between the minute and hour hands be nine degrees, the minute hand being ahead of the hour hand?
- A) 3h 15m 45s
 - B) 3h 16m
 - C) 3h 16m 30s
 - D) 3h 18m
- Q48. Find the missing number in the given sequence.
- 1, 2, 2, 4, _____, 4, 2
- A) 1
 - B) 2
 - C) 3
 - D) 4
- Q49. A certain number of horses and an equal number of men are going somewhere. Half of the owners are on their horses back while the remaining ones are walking along leading their horses. If the number of legs walking on the ground is 70, then how many horses are there?
- A) 14
 - B) 12
 - C) 10
 - D) 16
- Q50. Complete the following Analogy:
- 182 : ? : : 210 : 380
- A) 156
 - B) 342
 - C) 270
 - D) 240

PHYSICS (07 Marks)

- Q51. A convex lens of focal length 20cm produces images of the same magnification 2 when an object is kept at two distances x_1 and x_2 ($x_1 > x_2$) from the lens. The ratio of x_1 and x_2 is :
- A) 5 : 3
 - B) 2 : 1
 - C) 3 : 1
 - D) 4 : 3
- Q52. There are two charged particles A & B. Both have equal negative charge but A has less mass as compared to B. If the both have same linear momentum and enter into a perpendicular magnetic field then:
- A) curved path of A and B will be the same
 - B) they will move undeflected
 - C) curved path of A is more curved than that of B
 - D) path of B is more curved

- Q53. If the wire is stretched to make it 0.1% longer, then its resistance will:
- A) decrease by 0.2%
 - B) decrease by 0.05%
 - C) increase by 0.05%
 - D) increase by 0.2%
- Q54. A wire of length l made of material resistivity d is cut into two equal parts. The resistivity of the two parts is equal to:
- A) $d/2$
 - B) $2d$
 - C) d
 - D) $4d$
- Q55. In an experiment, a convex lens of focal length 15cm is placed coaxially on an optical bench in front of a convex mirror at a distance of 10cm from it. It is found that an object and its image coincide, if the object is placed at a distance of 20cm from the lens. The focal length of the convex mirror is:
- A) 27.5cm
 - B) 20.0cm
 - C) 25.0cm
 - D) 30.5cm
- Q56. In an inertial frame of reference which is at rest, the magnetic force on a moving charged particle is \vec{F} . Its value in another inertial frame of reference which have constant velocity equal to 20m/s in a fixed direction with respect to the first inertial frame of reference, will be:
- A) the same
 - B) changed due to change in the amount of charge
 - C) changed due to change in velocity of charged particle
 - D) changed due to change in field direction
- Q57. The nearer point of hypermetropic eye is 50cm. The lens to be used for its correction should have the power
- A) + 2.0 D
 - B) - 1.5 D
 - C) + 2.5 D
 - D) + 0.5 D

CHEMISTRY (07 Marks)

- Q58. When P reacts with caustic soda, the products are PH_3 and NaH_2PO_2 . The reaction is an example of:
- A) Oxidation
 - B) Both Oxidation and Reduction
 - C) Neutralization
 - D) Reduction

- Q59. Which of the following factors does not affect the metallic character of an element?
- A) Atomic size
 - B) Ionisation potential
 - C) Electronegativity
 - D) Melting point
- Q60. The OH group of an alcohol or the -COOH group of a carboxylic acid can be replaced by -Cl using :
- A) phosphoruspentachloride
 - B) hypochlorous acid
 - C) chlorine
 - D) hydrochloric acid
- Q61. Which one of the following is the strongest base?
- A) NaOH
 - B) KOH
 - C) Ca(OH)_2
 - D) Mg(OH)_2
- Q62. The reaction between sodium and water can be made less vigorous by:
- A) lowering the temperature
 - B) adding a little alcohol
 - C) amalgamating sodium
 - D) adding a little acetic acid
- Q63. Fear or excitement, generally causes one to breathe rapidly and it results in the decrease of CO_2 concentration in blood. In what way will it change the pH of blood?
- A) pH will increase
 - B) pH will decrease
 - C) No change
 - D) pH will adjust to 7
- Q64. One of the following is an endothermic reaction. This is a:
- A) combination of carbon and oxygen to form carbon monoxide
 - B) combination of nitrogen and oxygen to form nitrogen monoxide
 - C) combination of glucose and oxygen to form carbon dioxide and water
 - D) combination of zinc and hydrochloric acid to form zinc chloride and hydrogen

BIOLOGY (06 Marks)

- Q65. In Hydra and Amoeba, ammonia is the main nitrogenous waste. Lizards, snakes, birds and insects excrete mostly uric acid but crocodiles and alligators excrete mainly ammonia though they are reptiles. So we can generalize that:
- A) there is no uniform pattern of removal of nitrogen wastes
 - B) aquatic and land animals excrete urea
 - C) animals that fly excrete uric acid
 - D) nitrogen waste excretion is closely related to the availability of water in the environment
- Q66. The main function of an Abscisic Acid in plants is to:
- A) inhibit growth
 - B) promote cell division
 - C) increase the length of the cells
 - D) promote growth in stem
- Q67. Fertilization occurs in human female, when sperm and ovum reach simultaneously at:
- A) Cervix
 - B) Vagina
 - C) Uterus
 - D) Fallopian Tube
- Q68. Which one of the following is involved in the formation of endosperm?
- A) Antipodal cell
 - B) Polar Nucleus
 - C) Synergid cell
 - D) Egg cell
- Q69. Amrita Devi Bishnoi National Award is rendered for
- A) water conservation
 - B) wildlife conservation
 - C) soil conservation
 - D) none of these
- Q70. The species of plant or animal which is found exclusively in particular area and is not found naturally anywhere else is known as:
- A) Endemic species
 - B) Epidemic species
 - C) Endomorphic species
 - D) Ectomorphic species