Practice Set-4
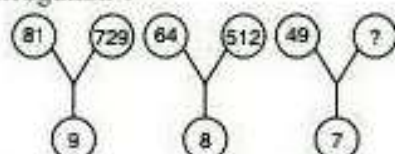
1. Which one number can be placed at the sign of interrogation ?

(A) 343
(B) 444
(C) 515
(D) 373

Directions—(Q. 2–6) Study the following information carefully and answer these questions.

P, Q, R, S, T, W and Z are seven students studying in three different institutes A, B and C. There are three girls among the seven students who study in each of the three institutes. Two of the seven students study BCA, two study Medicine and one each studies Aviation Technology, Journalism and MBA. R studies in the same college as P who studies MBA in college B. No girl studies Journalism or MBA. T studies BCA in college A and his brother W studies Aviation Technology in college C. S studies Journalism in the same college as Q. Neither R nor Z studies BCA. The girl who studies BCA does not study in college C.

2. Which of the following pairs of students study medicine ?

(A) RZ
(B) WZ
(C) PZ
(D) None of these

3. In which college does Q study ?

(A) A
(B) B
(C) C
(D) Data Inadequate

4. In which of the colleges do three of them study ?

(A) A
(B) B
(C) C
(D) A and B

5. What is the field of study of Z ?

(A) BCA
(B) Medicine
(C) MBA
(D) Aviation Technology

6. Which of the following three represents girls ?

(A) SQR
(B) SQZ
(C) QRZ
(D) None of these

Directions—(Q. 7 and 8) In each of the following number series, a wrong number is given, find out the number.

7. 2160, 360, 69, 18, 6, 3—

(A) 69
(B) 18
(C) 360
(D) 6

8. 7, 8, 18, 57, 228, 1165, 6996—

(A) 57
(B) 1165
(C) 228
(D) None of these

9. If ONE = 9, TWO = 9, THREE = 25, Then 'ELEVEN' = :

(A) 36
(B) 25
(C) 16
(D) 49

10. If A is the father of B and B is the mother of C and C is the daughter of D, then what is the relation between A and D—

(A) Son-in-law
(B) Father-in-law
(C) Sister-in-law
(D) Brother-in-law

Directions—Study the logic of the statement given and from the given choices, select the choice with closest logical similarity.

11. When water meets an obstacle, it flows around it and continues onward—

(A) Knowledge must be sound

(B) Flexibility is important for progress

(C) Cool minded people succeed most

(D) Obstacles must be overcome

Directions—(Q. 12–15) Fifty books belonging to different subjects viz. History (8), Geography (7), Literature (13), Psychology (8), Science (14) are placed on a shelf. They are arranged in an alphabetical order subject to condition that no two books of same subject are placed together so long as the books of other subjects are available, unless otherwise men-tioned all counting is done from left.

12. How many pairs (Science and Literature book respectively) are placed together on the shelf?

(A) 5

(B) 4

(C) 6

(D) None of these

13. How many pairs (science and Geography book respectively) are placed together on the shelf ?

(A) 5

(B) 6

(C) 7

(D) None of these

14. The last book of History is placed at what position from right ?

(A) 12th

(B) 13th

(C) 15th

(D) None of these

15. What is the position of History book which comes immediately after science book ?

(A) 32nd

(B) 33rd

(C) 36th

(D) None of these

16. If GANDHI is coded as 123456 and JAM is coded as 728. Then JAIHIND will be codified as—

(A) 7265634

(B) 7263456

(C) 7265728

(D) 6345672

Directions—This question is followed by two statements. Select a choice as follows—

(a) If I alone is sufficient to answer the question.

(b) If II alone is sufficient to answer the questions.

(c) If I and II are both required to answer the question.

(d) If both I and II are not sufficient to answer the question and more data is required.

17. 5,000 candidates appeared for the Central Services examination. What percentage of women candidates passed the examination ?

I. 357 women candidates passed the examination

II. 4050 male candidates appeared for the exam

(A) (a)

(B) (b)

(C) (c)

(D) (d)

Directions—(Q. 18 and 19) If TEMPERATURE is coded as 45685714975 then answer the following questions using this code.

18. METER will be coded as—

(A) 5 4 6 5 7

(B) 6 5 4 8 7

(C) 6 5 4 5 7

(D) 6 5 4 5 1

19. The most likely code for ATTEMPT is—

(A) 1 4 5 5 6 8 4

(B) 1 5 5 8 4 6 3

(C) 1 4 4 5 6 8 4

(D) 1 3 5 8 6 4 5

20. In the following series, how many consonants come before 9 ?

9A9F4T7U9S9TT9JJ3459DX9XZ9T9H

(A) 7

(B) 6

(C) 5

(D) None of these

21. In the following series how many consonants come before 3 ?

3A3F4T7U3S3TT3JJ3453DX3XZ3T3H

(A) 7

(B) 6

(C) 5

(D) None of these

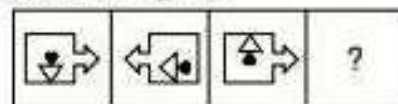**Directions**—(Q. 22–28) Complete the Series in the following figures.
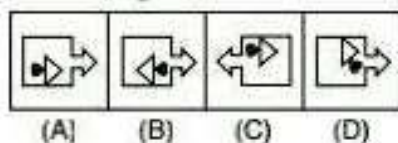
22. **Question figures**

Answer figures

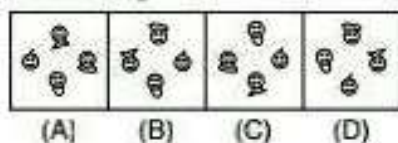

(A)   (B)   (C)   (D)
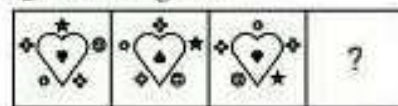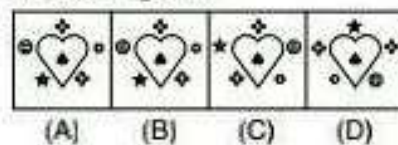
23. **Question figures**

Answer figures

(A)   (B)   (C)   (D)

24. **Question figures**

?

Answer figures

(A)   (B)   (C)   (D)

25. **Question figures**

?

Answer figures

(A)   (B)   (C)   (D)
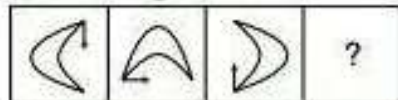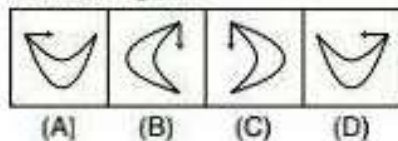
26. **Question figures**

?

Answer figures

(A)   (B)   (C)   (D)
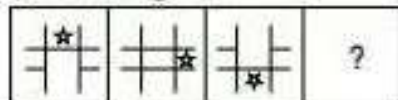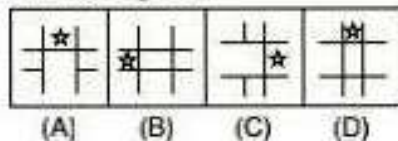
27. **Question figures**

?

Answer figures

(A)   (B)   (C)   (D)
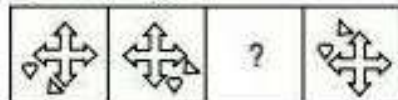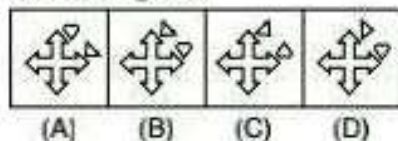
28. **Question figures**

?

Answer figures

(A)   (B)   (C)   (D)
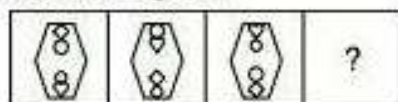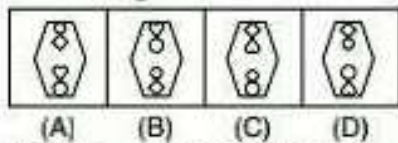
Directions—(Q. 29–31) In these questions, a piece of paper is folded and then cut as shown below. The dotted lines shown are the portion which have been folded. The curve arrow shows the directions of folding. And the number of scissors beneath the figure show the number of portions cut. From the given responses, indicate, how it will appear when opened ? The opening is in the same order as folding.

29. **Question figures**

Answer figures

(A)   (B)   (C)   (D)
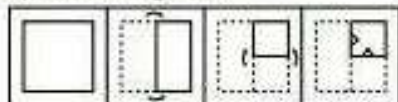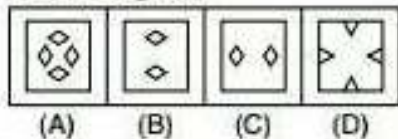
30. **Question figures**

Answer figures

(A)   (B)   (C)   (D)
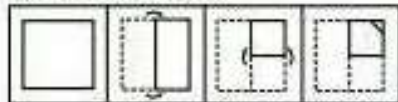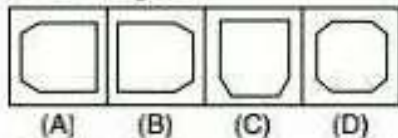
31. **Question figures**

Answer figures

(A)   (B)   (C)   (D)
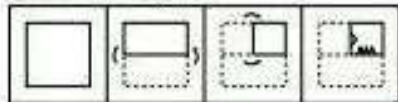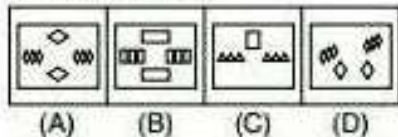
Directions—(Q. 32–35) Anil is the son of Bina. Chitra. who is Bina's sister has a son Deepak and a daughter Ela. Fateh is the maternal uncle of Deepak.

32. How is Anil related to Deepak ?
   (A) Cousin   (B) Brother
   (C) Nephew   (D) Uncle

33. How is Ela related to Fateh ?
    (A) Sister   (B) Wife
    (C) Daughter   (D) Niece

34. How many nephews does Fateh have ?
    (A) Nil   (B) 3
    (C) 1   (D) 2

35. How is Fateh related to Bina's daughter ?
    (A) Paternal Uncle   (B) Maternal Uncle
    (C) Nephew   (D) Data Inadequate

Directions—(Q. 36–41) For answering questions. study diagram which is represented as follows and select the appropriate choice.

ABDE represents Artists

FGHI represents Scientists

JKLM represents Administrators

OPQN represents healthy people
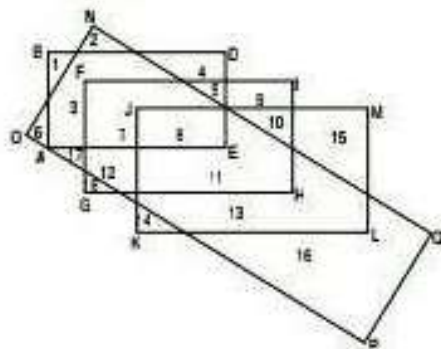
36. Artists who are scientists and administrator and who are healthy are represented by—
    (A) 11   (B) 5
    (C) 7   (D) 8

37. Scientists who are administrators but not healthy are represented by—
    (A) 15   (B) 12
    (C) 14   (D) 10

38. Scientists who are also artists but in not good state of health belong to the area—
    (A) 4   (B) 5
    (C) 9   (D) 10

39. Persons in area 7 are—
    (A) Artists who are scientists and healthy
    (B) Artists who are scientists but not healthy
    (C) Scientists who are healthy
    (D) Artists who are healthy

40. Select the choice which contains only non-healthy group areas—

    (A) 5, 10, 14   (B) 1, 3, 4
    (C) 14, 18, 6   (D) 4, 15, 16

41. Select the true statement—
    (A) A person who is administra-tor scientist and artist is definitely healthy
    (B) All scientists are healthy
    (C) All artists who are scientists are healthy
    (D) All administrators who are scientists are healthy

Directions—(Q. 42–45) In the following questions the select the choice of letters which completes the first word and begins the second. The letters in the bracket end the first word and begin the second. Number of dots in bracket indicate number of letters required.

42. BO (. .) CALL
    (A) NE   (B) SS
    (C) RE   (D) WL

43. STU (. . . .) IST
    (A) PIDT   (B) DYST
    (C) DENT   (D) UCKT

44. CORN (. .) RATIC
    (A) ES   (B) ET
    (C) ER   (D) ST

45. CEN (. . .) END
    (A) TER   (B) TRE
    (C) AME   (D) PRE

Directions—(Q. 46 and 47) Find the **missing term** in each of the following number series.

46. 4, 2, 6, 6, 3, 9. 8, 4. 12, 10, 5, ?
    (A) 15   (B) 20
    (C) 10   (D) 5

47. 3, 4, 12. 48. 4, 5, 20. 100, 5, 6, 30, 180, 6, 7, 42, ?
    (A) 304
    (B) 298
    (C) 294
    (D) None of these

48. If all the letters in the English alphabet are written in reverse order, which letter is exactly in the middle of 20th letter from right and 21st letter from left ?
    (A) O   (B) N
    (C) M   (D) None of these

49. There are some boys and cows at a place. If total number of heads is 15 and total number of legs is 46, then how many boys and how many cows are there ?
   (A) 8 boys and 7 cows
   (B) 9 boys and 6 cows
   (C) 7 boys and 8 cows
   (D) 6 boys and 9 cows

50. Which one number can be placed at the sign of interrogation ?

   (A) 25
   (B) 47
   (C) 37
   (D) None of these

Answers with Explanations

1. (A) As, $81 \times 9 = 729$
   and $64 \times 8 = 512$
   same as, $49 \times 7 = 343$

For Solution Q. 2 to 6

Institute	Student
A	T(BCA)
	S (Journalism)
	Q(BCA) (Girl)
B	P(MBA)
	R (Medicine (Girl)
C	W (Aviation Technology)
	Z (Medicine) (Girl)

2. (A)   3. (A)   4. (A)   5. (B)   6. (C)

7. (A)
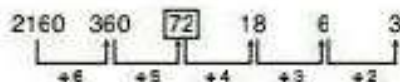
8. (C)
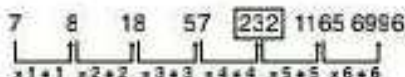
9. (A) As, ONE $= (3)^2 = 9$
   TWO $= (3)^2 = 9$
   and THREE $= (5)^2 = 25$
   Same as,
   ELEVEN $= (6)^2 = 36$

10. (B)

Hence, A is D's father-in-law.

11. (B)   12. (A)   13. (B)   14. (C)   15. (C)

16. (A) As, G A N D H I and J A M
   ↓ ↓ ↓ ↓ ↓ ↓   ↓ ↓ ↓
   1 2 3 4 5 6   7 2 8

   Same as, J A I H I N D
   ↓ ↓ ↓ ↓ ↓ ↓ ↓
   7 2 6 5 6 3 4

17. (A) Required percentage of passed women candidates
   $= \dfrac{357}{5000} \times 100\%$
   $= 7.14\%$

18. (C) T E M P E R A T U R E
   ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
   4 5 6 8 5 7 1 4 9 7 5

   and M E T E R
   ↓ ↓ ↓ ↓ ↓
   6 5 4 5 7

19. (C) A T T E M P T
   ↓ ↓ ↓ ↓ ↓ ↓ ↓
   1 4 4 5 6 8 4

20. (C) S9, T9, X9, Z9, T9.

21. (B) S3, T3, J3, X3, Z3. T3.

22. (B) In every next figure the main design's '♡' outer elements are moving clockwise and the element '☺' gets a water image in every next figure.

23. (C) In every next figure the main design appears in opposite direction and the inner elements of this design moves 90° clockwise every time.

24. (A) In every next figure all four elements move in clockwise direction and first two elements appear in opposite direction and after that all four elements appears in opposite direction.

25. (D) In every next figure the element '⌒' moves 90° clockwise and the another element '↑' also moves 90° anticlockwise.

26. (B) The designs appear in opposite direction in figure 1 to 3 and 2 to 4.

27. (B) In every next figure the elements '△' and '♡' move one step anticlockwise.

28. (A)   29. (A)   30. (D)   31. (A)

For Solution Q. 32 to 35

From relation diagram—

32. (A)   33. (D)   34. (D)   35. (D)   36. (D)

37. (D)   38. (B)   39. (A)   40. (A)   41. (A)

42. (C)   43. (C)   44. (C)   45. (B)

46. (A) $4 + 2 = 6,$ $6 + 3 = 9$
       $8 + 4 = 12,$ $10 + 5 = 15$

47. (C)
   $3 \times 4 = 12,$ $4 \times 5 = 20$
   $5 \times 6 = 30,$ $6 \times 7 = 42$
   $4 \times 12 = 48,$ $5 \times 20 = 100$
   $6 \times 30 = 180, 7 \times 42 = \boxed{294}$

48. (C)

49. (C) Let the number of cows are A and the number of boys are B. Then—
   $$4A + 2B = 46$$
   and $A + B = 15$
   $\therefore$ $A = 15 - B$
   $\therefore 4(15 - B) + 2B = 46$
   $\Rightarrow 60 - 4B + 2B = 46$
   $\Rightarrow$ $2B = 14$
   $\therefore$ $B = 7$
   and $A = 8$

50. (C) As,
   $5 \times 6 + 3 \times 3 = 39$
   and $5 \times 7 + 16 = 51$
   Same as, $? = 25 + 12 = 37$

Part—II
English Language

Directions—(Q. 1–3) Some part of the sentences have errors and some are correct. Find out which part of a sentence has an error and blacken the oval (●) corresponding to the appropriate letter (A), (B), (C). If a sentence is free from error, blacken the oval corresponding to (D) in the Answer Sheet.

1. Could you please give me / a postal address /
        (A)   (B)
   of the Indian Embassy in New York. No error
           (C)   (D)

2. Short stories and poems / of varying quality /
        (A)   (B)
   appears in dailies and periodicals.   No error
           (C)   (D)

3. One of the / most dangerous disease / is AIDS.
      (A)   (B)   (C)
                                     No error
                                       (D)

Directions—(Q. 4–7) Sentences are given with blanks to be filled with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four and indicate it by blackening the appropriate oval (●) in the Answer Sheet.

4. Throughout his career, his perfor-mance has fairly been ....
   (A) consistence   (B) consistent
   (C) consisting   (D) constituted

5. I convey my thanks .... the members of the club.
   (A) for   (B) of
   (C) to   (D) about

6. The government.................... on this issue.
   (A) is divided   (B) are divided
   (C) is being divided (D) divided

7. The student is yet to .... his home task.
   (A) completion   (B) compete
   (C) complete   (D) continue

Directions—(Q. 8–10) Out of the four alternatives, choose the one which best expresses the meaning of the given word and mark it in the Answer Sheet.

8. Hard
   (A) difficult   (B) simple
   (C) common   (D) easy

9. Humorous
   (A) witty   (B) innovative
   (C) fashionable   (D) timid

10. Gather

    (A) scatter   (B) disperse

    (C) congregate   (D) separate

Directions—(Q. 11–13) Choose the word opposite in meaning to the given word and mark it is in the Answer Sheet.

11. Slave

    (A) surf   '(B) landlord

    (C) master   (D) tenant

12. Deep

    (A) shallow   (B) hollow

    (C) steep   (D) low

13. Egoist

    (A) spiritless   (B) selfless

    (C) senseless   (D) soulless

Directions—(Q. 14–16) Four alternatives are given for the Idiom/ Phrase **bold** in the sentence. Choose the alternative which best expresses the meaning of the Idiom/Phrase and mark it in the Answer Sheet.

14. I have told you **time and again** not to make this mistake.

    (A) always   (B) often

    (C) sometimes   (D) rarely

15. He handled the situation with an **iron fist**.

    (A) strictly   (B) leniently

    (C) softly   (D) wayward

16. She is leaving the country **for good**.

    (A) for the time being

    (B) for good times

    (C) temporarily

    (D) permanently

Directions—(Q. 17–19) A sentence/part of the sentence is **bold**. Below are given alternatives to the **bold** sentence/part of the sentence at (A). (B) and (C) which may improve the sentence. Choose the correct alternative. In case no improvement is needed, your answer is (D).

17. It has been raining **since** morning.

    (A) from   (B) for

    (C) during   (D) No improvement

18. I am neither a poet **nor philosopher**.

    (A) not philosopher

    (B) nor the philosopher

    (C) nor a philosopher

    (D) No improvement

19. He was **hung** for murder.

    (A) hang   (B) hanged

    (C) hanging   (D) No improvement

Directions—(Q. 20–22) Out of the four alternatives, choose the one which can be substituted for the given words/sentences and indicate it by blackening the appropriate oval (●) in the Answer Sheet.

20. An act of violence to take control of a plane.

    (A) Hold as hostage   (B) Abduct

    (C) Hijack   (D) Kidnap

21. One who is all powerful.

    (A) Omnipotent   (B) Omniscient

    (C) Absolute   (D) Almighty

22. That which cannot be believed.

    (A) Inaudible   (B) Incredible

    (C) Absolute   (D) Invincible

Directions—(Q. 23–25) Four words are given in each question, out of which only one word is correctly spelt. Find the correctly spelt word and mark your answer in the Answer Sheet.

23. (A) Eleution   (B) Elocation

    (C) Elocution   (D) Elocutiun

24. (A) Juxtaposition   (B) Justaposition

    (C) Jaxtaposition   (D) Jaustaposition

25. (A) Hazardous   (B) Hazardos

    (C) Hazzardous   (D) Hazardus

Directions—(Q. 26–30) A part of the sentence is **bold**. Below are given alternatives to the **bold** part at (A), (B) and (C) which may improve the sentence. Choose the correct alternative. In case no improvement is needed, your answer is (D).

26. The train left before he **has reached** the station.

    (A) reaches   (B) will reach

    (C) reached   (D) No improvement

27. We must start now **unless** it will be too late.

    (A) but   (B) or

    (C) until   (D) No improvement

28. Don't worry. there is **less** time for the train to arrive.
    - (A) many
    - (B) enough
    - (C) more
    - (D) No improvement

29. I was mad **on** him.
    - (A) at
    - (B) towards
    - (C) for
    - (D) No improvement

30. He decided to **reveal** the corruption in his department to the media.
    - (A) expose
    - (B) show
    - (C) disclose
    - (D) No improvement

Directions—(Q. 31–35) Out of the four alternatives choose the one which can be substituted for the given words/sentence.

31. A large food basket with a cover
    - (A) hamper
    - (B) knapsack
    - (C) satchel
    - (D) container

32. Stealing goods while shopping
    - (A) shop-lifting
    - (B) burglary
    - (C) plagiarism
    - (D) window-shopping

33. Place for keeping birds
    - (A) aquarium
    - (B) gymnasium
    - (C) aviary
    - (D) aerodrome

34. That cannot be overcome
    - (A) insurmountable
    - (B) invincible
    - (C) inseparable
    - (D) insoluble

35. Number of things or portions close together without order or arrangement.
    - (A) huddle
    - (B) assembly
    - (C) mass
    - (D) gathering

Directions—(Q. 36–40) There are four different words out of which one is correctly spelt. Find the correctly spelt word and indicate it by blackening the appropriate oval (⬤).

36. (A) Perseverence
    (B) Perseverance
    (C) Perseveranse
    (D) Peseverance

37. (A) Recommendaton
    (B) Recomendation
    (C) Recommendation
    (D) Recammendation

38. (A) Grievence
    (B) Greivence
    (C) Grievance
    (D) Grrievance

39. (A) Dictionery
    (B) Dicctionary
    (C) Dictionary
    (D) Dictionnery

40. (A) Appalled
    (B) Apalled
    (C) Appaled
    (D) Apallad

Directions—(Q. 41–50) You have a passage with 10 questions following the passage. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Everyone keeps looking for signs of water. Then one day the men see patches of green grass. There are pools of water in the hollows. Men and animals begin to hurry. for they know that rain has fallen nearby. Farther on. they find enough grass for pasture and enough water in the hollows for their animals. Chief Omar gives the signal to make camp.

Again the camels kneel. And again the men unload them. Quickly they put up their tents, with the openings facing east. They spread rugs and blankets on the ground and place pillows on them.

A blanket divides the tent into two rooms. Then they unload the dishes and pots and bags of food and water. And once more the nomads are at home.

Meanwhile the thirsty animals take a long drink at the water holes. The goats drink first. Next come the sheep. Then come the camels. They are the thirstiest of all. They drink and drink. They have travelled for days without water. But at last they, too, turn away.

Rain has fallen here, and there will be pasture for many weeks. The animals will grow fat on the green grass. Then the men will choose the animals they want to sell. After they shear the sheep and fill the bags with wool, they will go to the big town on the oasis.

Again the nomads break camp and move on. They pitch their tents on the sand at the edge of the oasis. The first days in town are exciting days. There is the excitement of seeing shops and streets and crowds of people. The men must sell their animals and wool. and buy supplies. They bargain at the bazaars, and they drink coffee in the cool shade and listen to the sound of flowing water.

But soon the men become restless. They begin to miss the freedom and the quiet of the great open desert. Then one morning the black tents are gone. Far out from the oasis a caravan moves slowly out of sight.

41. What signs of water did the men see ?
    (A) The hollows
    (B) Grass and the hollows
    (C) Pools of water
    (D) Patches of green grass and pools of water in the hollows

42. "They drink and drink." Who does 'they' refer to ?
    (A) The animals
    (B) The camels
    (C) The sheep
    (D) The goats

43. Which of the following statements is not true ?
    (A) The nomads put up tents when they make camp.
    (B) They spread rugs and blankets on the ground.
    (C) A blanket divides the tent into two rooms.
    (D) The nomads collect the dishes and pots and bags of food and water.

44. Why do the nomads go to the big town ?
    (A) To do shopping
    (B) To sell their animals and wool, and buy supplies
    (C) To drink coffee
    (D) To listen to the sound of flowing water

45. The nomads.......... the big town on the oasis.
    (A) liked
    (B) didn't like
    (C) avoided
    (D) remembered

46. Why did the nomads not stay in the big town ?
    (A) Because they felt ill at ease with strangers in the big town.
    (B) Because they were not able to drive a hard bargain with traders in the big town.
    (C) Because they found the big town a little too crowded and noisy for comfort.
    (D) Because they felt restless, and missed the freedom and the quiet of the great open desert.

47. Which is the order in which the thirsty animals take a long drink at the water holes ?
    (A) Goats, Sheep, Camels
    (B) Sheep, Goats, Camels
    (C) Camels, Sheep, Goats
    (D) Camels, Goats, Sheep

48. What does the word 'shear' mean in the passage ?
    (A) Cut the sheep
    (B) Cut off the sheep's wool
    (C) Wash the sheep
    (D) Tend the sheep

49. Which word in the passage means *a place for camels to feed* ?
    (A) Pools
    (B) Hollows
    (C) Pasture
    (D) Oasis

50. Which of the following statements best sums up the main idea of the passage ?
    (A) Water is more precious than gold in the desert.
    (B) The camel is the ship of the desert.
    (C) Men and animals are always on the move in the desert.
    (D) The big towns are concrete deserts.

Answers with Explanations

1. (D)
2. (C) 'appear' in place of 'appears'.
3. (B) 'diseases' in place of 'disease'.

4. (B)	5. (C)	6. (B)	7. (C)	8. (A)
9. (A)	10. (C)	11. (C)	12. (A)	13. (B)
14. (B)	15. (A)	16. (D)	17. (D)	18. (C)
19. (B)	20. (C)	21. (A)	22. (B)	23. (C)
24. (A)	25. (A)	26. (C)	27. (C)	28. (B)
29. (C)	30. (C)	31. (A)	32. (A)	33. (C)
34. (B)	35. (A)	36. (B)	37. (C)	38. (C)
39. (C)	40. (A)	41. (D)	42. (B)	43. (D)
44. (B)	45. (B)	46. (D)	47. (A)	48. (B)
49. (C)	50. (D)			

Part – III
Quantative Aptitude

1. The simplified value of $\sqrt{\dfrac{1 \cdot 21 \times 0 \cdot 9}{1 \cdot 1 \times 0 \cdot 11}}$ is—
    (A) 2
    (B) 3
    (C) 9
    (D) 11

2. By what least number $25 \times 20 \times 9 \times 12 \times 30$ should be multiplied to make it a perfect square number ?

(A) 5   (B) 4
(C) 3   (D) 2

3. Three taps can fill a cistern in 18 minute, 15 minute and 10 minute respectively. The cistern being empty, all the three taps are kept open. After 3 minute, the first tap is closed. Counting time from that moment, the cistern will be full in—

(A) 5 minute   (B) 1 minute
(C) 3 minute   (D) 2 minute

4. A can do a piece of work in 4 days, B in 12 days and C in 6 days. If A is assisted by both B and C on every third day, the total work can be done in—

(A) 6 days   (B) 3 days
(C) 5 days   (D) 4 days

5. A piece of wire is in the shape of an equilateral triangle, each of whose sides is 4.4 cm. If it is re-bent to form a circular ring, the radius of the ring so formed is—

$$\left(\text{taking } \pi = \frac{22}{7} \right)$$

(A) 5.1   (B) 3.2
(C) 2.1   (D) 1.5

6. If the ratio of the volumes of two right circular cones is 2 : 3 and the ratio of the radii of their bases is 1 : 2, then the ratio of their heights will be—

(A) 3 : 4   (B) 8 : 3
(C) 4 : 3   (D) 3 : 8

7. A tradesman marks his goods 30% more than the cost price. If he allows a discount of 20%, on the marked price, then his gain per cent is—

(A) 15   (B) 10
(C) 6   (D) 4

8. The marked price of an article is ₹ 300. The shopkeeper gives a discount of 10% on the marked price and still gains 25%. Then the cost price of the article is—

(A) ₹ 216   (B) ₹ 203.50
(C) ₹ 237.50   (D) ₹ 215

9. A machine is marked at ₹ 7.500. The shopkeeper allows successive discounts of 8%, 5% and 2% on it. The net selling price is—

(A) ₹ 6,400·30   (B) ₹ 6,423·90
(C) ₹ 6,427·50   (D) ₹ 6,415·40

10. A grocer mixed sugar at ₹ 12 per kg with sugar at ₹ 9 per kg in a certain ratio and sold the mixture at ₹ 11 per kg to have a gain of $\frac{1}{8}$th of his total investment. The ratio of two types of sugar in the mixture is—

(A) 7 : 20   (B) 9 : 12
(C) 1 : 2   (D) 3 : 4

11. ₹ 53 is divided among A, B, C in such a way that A gets ₹ 7 more than what B gets and B gets ₹ 8 more than what C gets. Ratio of their shares is—

(A) 5 : 3 : 1   (B) 25 : 18 : 10
(C) 9 : 7 : 3   (D) 30 : 16 : 13

12. The ratio of speeds of two trains, one travelling at 45 km/hour and the other at 10 m/sec is—

(A) 5 : 4   (B) 2 : 3
(C) 3 : 4   (D) 4 : 3

13. In 6 days of a week, 250 boys attended for the first four days and 260 boys for the last three days. The average attendence in this week is 255. The number of students present on Thursday was—

(A) 260   (B) 250
(C) 240   (D) 280

14. The average of all the prime numbers between 1 and 20 is—

(A) 9.625   (B) 9.75
(C) 8.66   (D) 10.625

15. A dealer sells a radio at a gain of 10%. If he had bought it at 10% less and sold it for ₹ 132 less, he would have still gained 10%. The cost price of the radio is—

(A) ₹ 1,100   (B) ₹ 1,200
(C) ₹ 1,300   (D) ₹ 1,320

16. If the cost price of 15 articles is equal to the selling price of 10 articles, then the gain percentage is—

(A) 45   (B) 50
(C) 55   (D) 60

17. A man sold two articles for ₹ 1,200 each. In one, he gained 20% and on the other, he lost 20%. His total loss was—

(A) ₹ 400   (B) ₹ 300

(C) ₹ 200   (D) ₹ 100

18. If 70% of the students in a school are boys and the number of girls be 504, the number of boys is—

(A) 1176   (B) 1008

(C) 3024   (D) 1208

19. A rebate of 7·5% is allowed if an electric bill is paid in due time. A man gets a rebate of ₹ 16·50. The amount of the bill is (in ₹)—

(A) 160   (B) 215

(C) 240   (D) 220

20. The number of seconds taken by a 500 m. long train with speed 63 km per hour to cross a man walking at 3 km per hour in the same direction is—

(A) 20   (B) 25

(C) 30   (D) 35

21. A train X leaves Howrah at 6 a.m. and reaches Asansol at 10 a.m. Another train Y leaves Asansol at 8 a.m. and reaches Howrah at 11.30 a.m. The two trains cross one another at—

(A) 8.44 a.m.   (B) 8.56 a.m.

(C) 9.27 a.m.   (D) 9.42 a.m.

22. In what time will ₹ 8,000, at 3% simple interest per annum produce the same income as ₹ 6,000 does in 5 years at 4% simple interest ?

(A) 3 years   (B) 4 years

(C) 5 years   (D) 6 years

23. A man borrows some money at 3% simple interest per annum and lends it to somebody at 5% interest to be compounded annually. By this he makes a profit of ₹ 541 at the end of 3 years. The money he borrowed was—

(A) ₹ 8,000   (B) ₹ 6,762

(C) ₹ 6,000   (D) ₹ 8,070

Directions—(Q. 24 and 25) The adjoining pie-chart represents the proposed outlay of the fifth five year plan (in crore rupees) of 40,000. Examine the chart and answer the question.

Agriculture
Irrigation and Power
Industries and Minerals
Education
Roads and Communication

24. The amount (in crore Rupees) proposed on Education is greater than that on Roads and Communication by—

(A) 1000   (B) 2000

(C) 3000   (D) 1500

25. ₹12,000 (crores) is proposed on—

(A) Education

(B) Irrigation and Power

(C) Roads and Communication

(D) Agriculture

26. The marked price is 20% higher than cost price. A discount of 20% is given on the marked price. By this type of sale, there is—

(A) no loss no gain   (B) 4% gain

(C) 4% loss   (D) 2% loss

27. A chair listed at ₹ 350 is available at successive discounts of 25% and 10%. The selling price of the chair is—

(A) ₹ 240·25   (B) ₹ 242·25

(C) ₹ 236·25   (D) ₹ 230·25

28. A tradesman marks his goods at such a price that after allowing a discount of 15%, he makes a profit of 20%. What is the marked price of an article whose cost price is ₹ 170 ?

(A) ₹ 220   (B) ₹ 200

(C) ₹ 240   (D) ₹ 260

29. In two types of stainless steel, the ratio of chromium and steel are 2 : 11 and 5 : 21 respectively. In what proportion should the two types be mixed so that the ratio of chromium to steel in the mixed type become 7 : 32 ?

(A) 1 : 2   (B) 1 : 3

(C) 2 : 3   (D) 3 : 4

30. A sum of ₹7,000 is divided among A, B, C in such a way that the shares of A and B are in the ratio 2 : 3 and those of B and C are in the ratio 4 : 5. The share of B is—
   (A) ₹1,600
   (B) ₹2,000
   (C) ₹2,400
   (D) ₹3,000

31. Tea worth ₹126 per kg and ₹135 per kg are mixed with a third variety in the ratio 1 : 1 : 2. If the mixture is worth ₹153 per kg, the price of the third variety per kg will be—
   (A) ₹169·5
   (B) ₹170·0
   (C) ₹175·5
   (D) ₹180·0

32. In the afternoon, a student read 100 pages at the rate of 60 pages per hour. In the evening, when she was tired, she read 100 more pages at the rate of 40 pages per hour. What was her average rate of reading, in pages per hour ?
   (A) 48
   (B) 50
   (C) 60
   (D) 70

33. The mean weight of 34 students of a school is 42 kg. If the weight of the teacher be included, the mean rises by 400 gram. Find the weight of the teacher (in kg)—
   (A) 66
   (B) 56
   (C) 55
   (D) 57

34. A cricketer has a mean score of 60 runs in 10 innings. Find out how many runs are to be scored in the eleventh innings to raise the mean score to 62 ?
   (A) 80
   (B) 81
   (C) 83
   (D) 82

35. A trader purchases a watch and a wall clock for ₹390. He sells them making a profit of 10% on the watch and 15% on the wall clock. He earns a profit of ₹51·50. The difference between the original prices of the wall clock and the watch is equal to—
   (A) ₹110
   (B) ₹100
   (C) ₹80
   (D) ₹120

36. A salesman expects a gain of 13% on his cost price. If in a month his sale was ₹7,91,000, what was his profit ?
   (A) ₹91,000
   (B) ₹97,786
   (C) ₹85,659
   (D) ₹88,300

37. A merchant fixed the selling price of his articles at ₹700 after adding 40% profit to the cost price. As the sale was very low at this price level, he decided to fix the selling price at 10% profit. Find the new selling price—
   (A) ₹450
   (B) ₹490
   (C) ₹500
   (D) ₹550

38. A saves 20% of his monthly salary. If his monthly expenditure is ₹6,000, then his monthly savings is—
   (A) ₹1,200
   (B) ₹4,800
   (C) ₹1,500
   (D) ₹1,800

39. From 2008 to 2009, the sales of a book decreased by 80%. If the sales in 2010 were the same as in 2008, by what percent did it increase from 2009 to 2010 ?
   (A) 80%
   (B) 100%
   (C) 120%
   (D) 400%

40. The speed of a bus is 72 km/hr. The distance covered by the bus in 5 seconds is—
   (A) 50 m
   (B) 74·5 m
   (C) 100 m
   (D) 60 m

41. Two men start together to walk a certain distance, one at 4 km/h and another at 3 km/h. The former arrives half an hour before the latter. Find the distance—
   (A) 6 km
   (B) 9 km
   (C) 8 km
   (D) 7 km

42. A person invests ₹12,000 as fixed deposit at a bank at the rate of 10% per annum simple interest. But due to some pressing needs he has to withdraw the entire money after 3 years, for which the bank allowed him a lower rate of interest. If he gets ₹3,320 less than what he would have got at the end of 5 years, the rate of interest allowed by the bank is—
   (A) $7\frac{8}{9}$ %
   (B) $8\frac{7}{9}$ %
   (C) $7\frac{5}{9}$ %
   (D) $7\frac{4}{9}$ %

43. The compound interest on ₹30,000 at 7% per annum for a certain time is ₹4,347. The time is—
   (A) 2 years
   (B) 2·5 years
   (C) 3 years
   (D) 4 years

44. A prism has as the base a right-angled triangle whose sides adjacent to the right angles are 10 cm and 12 cm long. The height of the prism is 20 cm. The density of the material of the

30. A sum of ₹ 7,000 is divided among A, B, C in such a way that the shares of A and B are in the ratio 2 : 3 and those of B and C are in the ratio 4 : 5. The share of B is—
   (A) ₹ 1,600   (B) ₹ 2,000
   (C) ₹ 2,400   (D) ₹ 3,000

31. Tea worth ₹ 126 per kg and ₹ 135 per kg are mixed with a third variety in the ratio 1 : 1 : 2. If the mixture is worth ₹ 153 per kg, the price of the third variety per kg will be—
   (A) ₹ 169·5   (B) ₹ 170·0
   (C) ₹ 175·5   (D) ₹ 180·0

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   (C) 60   (D) 70

33. The mean weight of 34 students of a school is 42 kg. If the weight of the teacher be included, the mean rises by 400 gram. Find the weight of the teacher (in kg)—
   (A) 66   (B) 56
   (C) 55   (D) 57

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   (A) 80   (B) 81
   (C) 83   (D) 82

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   (A) ₹ 110   (B) ₹ 100
   (C) ₹ 80   (D) ₹ 120

36. A salesman expects a gain of 13% on his cost price. If in a month his sale was ₹ 7,91,000, what was his profit ?
   (A) ₹ 91,000   (B) ₹ 97,786
   (C) ₹ 85,659   (D) ₹ 88,300

37. A merchant fixed the selling price of his articles at ₹ 700 after adding 40% profit to the cost price. As the sale was very low at this price level, he decided to fix the selling price at 10% profit. Find the new selling price—
   (A) ₹ 450   (B) ₹ 490
   (C) ₹ 500   (D) ₹ 550

38. A saves 20% of his monthly salary. If his monthly expenditure is ₹ 6,000, then his monthly savings is—
   (A) ₹ 1,200   (B) ₹ 4,800
   (C) ₹ 1,500   (D) ₹ 1,800

39. From 2008 to 2009, the sales of a book decreased by 80%. If the sales in 2010 were the same as in 2008, by what percent did it increase from 2009 to 2010 ?
   (A) 80%   (B) 100%
   (C) 120%   (D) 400%

40. The speed of a bus is 72 km/hr. The distance covered by the bus in 5 seconds is—
   (A) 50 m   (B) 74·5 m
   (C) 100 m   (D) 60 m

41. Two men start together to walk a certain distance, one at 4 km/h and another at 3 km/h. The former arrives half an hour before the latter. Find the distance—
   (A) 6 km   (B) 9 km
   (C) 8 km   (D) 7 km

42. A person invests ₹ 12,000 as fixed deposit at a bank at the rate of 10% per annum simple interest. But due to some pressing needs he has to withdraw the entire money after 3 years, for which the bank allowed him a lower rate of interest. If he gets ₹ 3,320 less than what he would have got at the end of 5 years, the rate of interest allowed by the bank is—
   (A) $7\frac{8}{9}$ %   (B) $8\frac{7}{9}$ %
   (C) $7\frac{5}{9}$ %   (D) $7\frac{4}{9}$ %

43. The compound interest on ₹ 30,000 at 7% per annum for a certain time is ₹ 4,347. The time is—
   (A) 2 years   (B) 2·5 years
   (C) 3 years   (D) 4 years

44. A prism has as the base a right-angled triangle whose sides adjacent to the right angles are 10 cm and 12 cm long. The height of the prism is 20 cm. The density of the material of the

prism is 6 gm/cubic cm. The weight of the prism is—

(A) 3·4 kg   (B) 4·8 kg

(C) 6·4 kg   (D) 7·2 kg

45. Three circles of radii 4 cm, 6 cm and 8 cm touch each other pair-wise externally. The area of the triangle formed by the line-segments joining the centres of the three circles is—

(A) $6\sqrt{6}$ sq cm

(B) $24\sqrt{6}$ sq cm

(C) $144\sqrt{13}$ sq cm

(D) $12\sqrt{105}$ sq cm

46. The radius of the base of a right circular cone is doubled. To keep the volume fixed, the height of the cone will be—

(A) half of the previous height

(B) one-third of the previous height

(C) one-fourth of the previous height

(D) $\frac{1}{\sqrt{2}}$ times of the previous height

47. The base of a cone and a cylinder have the same radius 6 cm; they have also the same height 8 cm. The ratio of the curved surfaces of the cylinder to that of the cone is—

(A) 4 : 3   (B) 5 : 3

(C) 8 : 5   (D) 8 : 3

48. The ratio of length of each equal side and the third side of an isosceles triangle is 3 : 4. If the area of the triangle is $18\sqrt{5}$ square unit, the third side is—

(A) $8\sqrt{2}$ unit   (B) 12 unit

(C) 16 unit   (D) $5\sqrt{10}$ unit

49. In a circle of radius 21 cm, an arc subtends an angle of 72° at the centre. The length of the arc is—

(A) 13·2 cm   (B) 19·8 cm

(C) 21·6 cm   (D) 26·4 cm

50. The x-intercept of the graph of $7x - 3y = 2$ is—

(A) $\frac{2}{5}$ (B) $\frac{2}{7}$

(C) $\frac{3}{4}$ (D) $\frac{3}{7}$

Answers with Explanations

1. (B) $\sqrt{\dfrac{1·21 \times 0·9}{1·1 \times 0·11}} = \sqrt{\dfrac{121 \times 9}{11 \times 11}}$

$$= \sqrt{\dfrac{121 \times 9}{121}}$$

$$= \sqrt{9}$$

$$= \sqrt{3 \times 3}$$

$$\Rightarrow \qquad = 3$$

2. (D) $25 \times 20 \times 9 \times 12 \times 30$ should be multiplied by 2 to make a perfect square i.e., square of 18.

3. (C)

4. (B) A's 2 day's work $= \left(\dfrac{1}{4} \times 2\right)$

$$= \dfrac{1}{2}$$

(A + B + C)'s 1 day's work

$$= \dfrac{1}{4} + \dfrac{1}{12} + \dfrac{1}{6}$$

$$= \dfrac{6}{12} = \dfrac{1}{2}$$

Work done in three days

$$= \left(\dfrac{1}{2} + \dfrac{1}{2}\right)$$

$$= 1$$

Now, 1 work is done in 3 days.

∴ Whole work is done in $3 \times 1 = 3$ days.

5. (C) Perimeter of equilateral triangle = Circumference of circular ring

$$3 \times \text{Side} = 2\pi r$$

$$3 \times 4·4 = 2 \times \dfrac{22}{7} \times r$$

$$r = \dfrac{3 \times 4·4 \times 7}{44}$$

$$r = 3 \times 0·1 \times 7$$

$$r = 2·1 \text{ cm}$$

6. (B) Since $r_1 : r_2 = 1 : 2$

and $V_1 : V_2 = 2 : 3$ (given)

$$\dfrac{V_1}{V_2} = \dfrac{2}{3}$$

$$\therefore \quad \frac{\frac{1}{3}\pi r_1^2 h_1}{\frac{1}{3}\pi r_2^2 h_2} = \frac{2}{3}$$

$$\frac{r_1^2 h_1}{r_2^2 h_2} = \frac{2}{3}$$

$$\frac{(1)^2 h_1}{(2)^2 h_2} = \frac{2}{3}$$

$$\frac{h_1}{h_2} = \frac{2 \times 4}{3}$$

$$\frac{h_1}{h_2} = \frac{8}{3}$$

$$h_1 : h_2 = 8 : 3$$

7. (D) Let C. P. be ₹ 100. Then, Marked Price = ₹ 130

$$S.P. = (100 - 20)\% \text{ of } ₹ 130$$

$$= \frac{80}{100} \times 130 = ₹ 104$$

$$\therefore \text{ Profit } \% = (104 - 100)\%$$

$$= 4\%$$

8. (A) Marked Price = ₹ 300

Discount = 10%

10% of 300

$$\Rightarrow \quad \frac{10}{100} \times 300 = ₹ 30$$

$$S.P. = 300 - 30$$

$$= ₹ 270$$

$$C.P. = \frac{100}{(100 + \text{Profit }\%)} \times S.P.$$

$$= \frac{100}{(100 + 25)} \times 270$$

$$= ₹ 216$$

9. (B) 98% of 95% of 92% of 7500

$$\frac{98}{100} \times \frac{95}{100} \times \frac{92}{100} \times 7500$$

$$= ₹ 6423 \cdot 90$$

10. (A)

11. (B) Suppose C gets ₹ x.

Then, B gets ₹ (x + 8) and A gets ₹ (x + 15)

Then,

$$x + (x + 8) + (x + 15) = 53$$

$$\Rightarrow \qquad x = 10$$

$$\therefore A : B : C$$

$$= (10 + 15) : (10 : 8) : 10$$

$$= 25 : 18 : 10$$

12. (A) $$\frac{45 \times \frac{5}{18}}{10} = \frac{45 \times 5}{18 \times 10}$$

$$= \frac{5}{4} \Rightarrow 5 : 4$$

13. (B)

14. (A) The average of prime numbers between 1 to 20 will be

$$= \frac{2 + 3 + 5 + 7 + 11 + 13 + 17 + 19}{8}$$

$$= \frac{77}{8}$$

$$= 9 \cdot 625$$

15. (D)

16. (B) Let the C. P. of 15 articles be ₹ 1

$$\therefore \text{ Cost Price of 1 article} = ₹ \frac{1}{15}$$

Since the S. P. of 10 articles

$$= C.P. \text{ of 15 articles}$$

$$= ₹ 1$$

$$\therefore \quad S.P. \text{ of 1 article} = ₹ \frac{1}{10}$$

$$\therefore \qquad \text{Gain} = \frac{1}{10} - \frac{1}{15}$$

$$= \frac{3 - 2}{30}$$

$$= ₹ \frac{1}{30}$$

$$\therefore \quad \text{Per cent of gain} = \frac{\frac{1}{30} \times 100}{\frac{1}{15}}$$

$$= \frac{15 \times 100}{30}$$

$$= 50\%$$

17. (D) For one article,

$$S.P. = ₹ 1200$$

and Gain = 20%

$$\therefore \qquad C.P. = S.P. \times \frac{100}{100 + \% \text{ of gain}}$$

$$= \frac{1200 \times 100}{100 + 20}$$

$$= \frac{1200 \times 100}{120}$$

$$= ₹ 1000$$

For other article, S. P. 1200
and loss 20%

$$\therefore \quad C.P. = \frac{1200 \times 100}{100 - 20}$$

$$= \frac{1200 \times 100}{80}$$

$$= ₹ 1500$$

∴ Total C. P. for both articles

$$= ₹ (1000 + 1500)$$

$$= ₹ 2500$$

and total S. P. for both articles

$$= ₹ (1200 + 1200)$$

$$= ₹ 2400$$

∵ C. P. is greater than S. P.

∴ There is a loss in it and actual loss

$$= ₹ (2500 - 2400)$$

$$= ₹ 100$$

18. (A) Let the total no. of students be x. % of boys $\qquad = 70\%$

∴ Per cent of girls

$$= (100 - 70)\%$$

$$= 30\%$$

No. of girls is 504

$$\therefore \quad 30\% \text{ of } x = 504$$

$$\frac{30}{100} \times x = 504$$

$$x = \frac{504 \times 100}{30}$$

$$x = 1680$$

So, the total no. of students is 1680

∴ No. of boys

$$= \text{Total students} - \text{No. of girls}$$

$$= 1680 - 504$$

$$= 1176$$

19. (D) Let the amount of the bill be ₹ x.

$$\therefore \quad 7·5\% \text{ of } x = ₹ 16·50$$

$$\frac{7·5}{100} \times x = 16·50$$

$$x = \frac{16·50 \times 100}{7·5}$$

$$x = 220$$

∴ The amount of the bill is ₹ 220.

20. (C)

21. (B) Let the distance between Howrah and Asansol be x km and let the trains meet y hours after 8 a.m.

Clearly, X covers x km in 4 hours and Y covers x km in $\left(\frac{7}{2}\right)$ hours.

$$\therefore \quad \text{Speed of X} = \frac{x}{4} \text{ km/h}$$

$$\text{and} \quad \text{Speed of Y} = \frac{2x}{7} \text{ km/h}$$

Distance covered by X train in $(y + 2)$ hours + distance covered by Y train in y hours $= x$

$$\therefore \quad \frac{x}{4}(y + 2) + \frac{2x}{7} \times y = x$$

$$\Rightarrow \quad \frac{y + 2}{4} + \frac{2y}{7} = 1$$

$$\Rightarrow \quad y = \frac{14}{15} \text{ hours}$$

$$= \left(\frac{14}{15} \times 60\right) \text{ min}$$

$$= 56 \text{ min}$$

Hence, the trains meet at 8.56 a.m.

22. (C) S. I. in second case

$$= \frac{P \times T \times R}{100}$$

$$= \frac{6000 \times 5 \times 4}{100}$$

$$= ₹ 1200$$

$$\therefore \quad \text{Time in I case} = \frac{S.I. \times 100}{P \times R}$$

$$= \frac{1200 \times 100}{8000 \times 3}$$

$$= 5 \text{ years}$$

23. (A) Simple interest $= \frac{PRT}{100}$

Let Principal be ₹ x.

$$\therefore \quad S.I. = \frac{x \times 3 \times 3}{100}$$

$$= \frac{9x}{100}$$

$$\text{and} \quad \text{Amount} = x + \frac{9x}{100}$$

$$= \frac{109x}{100}$$

And, now C. I. for 3 years at 5% compounded annually

$$A = P\left(1 + \frac{R}{100}\right)^n$$

$$= x\left(1 + \frac{5}{100}\right)^3$$

$$A = x\left(\frac{105}{100}\right)^3$$

$$= x\left(\frac{21}{20}\right)^3$$

$$A = x \cdot \frac{9261}{8000}$$

According to the questions,

$$\frac{9261x}{8000} - \frac{109x}{100} = 541$$

$$\frac{9261x - 8720x}{8000} = 541$$

$$\frac{541x}{8000} = 541$$

$$x = \frac{541 \times 8000}{541}$$

$$x = 8000$$

∴ Principal will be ₹ 8000.

24. (C) Amount on Education

$$= \frac{81}{360} \times 40000$$

$$= ₹ 9000$$

Amount on Roads and Communication

$$= \frac{54}{360} \times 40000$$

$$= ₹ 6000$$

∴ The amount proposed on Education is greater than on Roads and Communication by,

$$= 9000 - 6000$$

$$= ₹ 3000 \text{ (in crore)}$$

25. (D) Amount on Education

$$= \frac{81}{360} \times 40000$$

$$= ₹ 9000$$

Amount on Irrigation and Power

$$= \frac{45}{360} \times 40000$$

$$= ₹ 5000$$

Amount on Roads and Communication

$$= \frac{54}{360} \times 40000$$

$$= ₹ 6000$$

Amount on Agriculture

$$= \frac{108}{360} \times 40000$$

$$= ₹ 12000$$

26. (C) Let the C. P. be ₹ x

$$\text{Marked Price} = \frac{x \times 120}{100}$$

$$= ₹ \frac{6x}{5}$$

$$\text{S. P.} = \frac{6x}{5} \times \frac{80}{100}$$

$$= ₹ \frac{24x}{25}$$

$$\text{Loss} = x - \frac{24x}{25} = ₹ \frac{x}{25}$$

$$\therefore \quad \text{Loss \%} = \frac{x}{25} \times \frac{100}{x}\% = 4\%$$

27. (C) Equivalent discount

$$= \left(r_1 + r_2 - \frac{r_1 \times r_2}{100}\right)\%$$

[Here $r_1 = 25$ and $r_2 = 10$]

$$= \left[25 + 10 - \frac{25 \times 10}{100}\right]\%$$

$$= 32 \cdot 5\%$$

∴ S. P. of the chair

$$= ₹ \frac{350 \times 67 \cdot 5}{100}$$

$$= ₹ 236 \cdot 25$$

28. (C) S. P. of the goods

$$= ₹ 170 \times \frac{120}{100}$$

$$= ₹ 204$$

If M. P. be ₹ x

then $\dfrac{x \times 85}{100} = 204$

$$\therefore \quad x = \frac{204 \times 100}{85}$$

$$= ₹ 240$$

29. (A) Quantity of chromium in I

$$= \frac{2}{13} \text{ part}$$

Quantity of chromium in II

$$= \frac{5}{26} \text{ part}$$

Quantity of chromium in mixture of both parts

$$= \frac{7}{39}$$

Reqd. ratio

$$= \left(\frac{5}{26} - \frac{7}{39}\right) : \left(\frac{7}{39} - \frac{2}{13}\right)$$

$$= \frac{-14 + 15}{78} : \frac{7 - 6}{39}$$

$$= \frac{1}{78} : \frac{1}{39}$$

$$= 39 : 78$$

$$= 1 : 2$$

30. (C) $\because$ A : B = 2 : 3 = 8 : 12

and B : C = 4 : 5 = 12 : 15

$\therefore$ A : B : C = 8 : 12 : 15

$\therefore$ Share of B $= \dfrac{12}{(8 + 12 + 15)} \times ₹\,7.000$

$$= 12 \times 20$$

$$= ₹\,2400$$

31. (C) Let the price of 3rd variety be ₹ x per kg

$\because$ 126 + 135 + 2x = 4 × 153

$\Rightarrow$ 261 + 2x = 612

$\Rightarrow$ 2x = 612 – 261

$\Rightarrow$ 2x = 351

$\therefore$ x = ₹ 175·50

32. (A) Reqd. average rate of reading

$$= \frac{\text{Total pages}}{\text{Total time}}$$

$$= \frac{(100 + 100) \text{ pages}}{\left(\frac{100}{60} + \frac{100}{40}\right) \text{hr}}$$

$$= \frac{2 \times 60 \times 40}{(40 + 60)}$$

$$= 48 \text{ page/hour.}$$

33. (B) $\because$ Total wt. of 34 students

$$= 34 \times 42 \text{ kg}$$

$$= 1428 \text{ kg}$$

Total wt. 34 students with teacher

$$= 35 \times 42 \cdot 4$$

$$= 1484 \text{ kg}$$

$\therefore$ Weight of the teacher

$$= 1484 - 1428$$

$$= 56 \text{ kg.}$$

34. (D) No. of runs of 11th innings

$$= 11 \times 62 - 10 \times 60$$

$$= 682 - 600$$

$$= 82$$

35. (A) Let the C. P. of watch be ₹ x

$\therefore$ C. P. of clock = ₹ $(390 - x)$

$\because$ $x \times \dfrac{10}{100} + (390 - x) \times \dfrac{15}{100}$

$$= 51 \cdot 50$$

$\Rightarrow$ 10x + (390 – x) × 15 = 5150

$\Rightarrow$ 5x = 5850 – 5150

$$= 700$$

$$x = 140$$

$\therefore$ Reqd. difference = (390 – 140) – (140)

$$= ₹\,390 - 280$$

$$= ₹\,110$$

36. (A) $\because$ C. P. = 791000 × $\dfrac{100}{113}$

$$= ₹\,700000$$

$\therefore$ Reqd. Profit = 700000 × $\dfrac{13}{100}$

$$= ₹\,91000$$

37. (D) M. P. = ₹ 700

and C. P. = 700 × $\dfrac{100}{140}$

$$= ₹\,500$$

$\therefore$ S. P. at 10% profit $= 500 \times \dfrac{110}{100}$

$= ₹\ 550$

38. (A)

Let his monthly salary be ₹ 100

His monthly saving $= ₹\ 20$

$\therefore$ Reqd. monthly saving $= \dfrac{20}{100} \times 6000$

$= ₹\ 1200$

39. (D) Let the sale in 2008 be ₹ x

$\therefore$ The sale in 2009 $= \dfrac{x \times 20}{100}$

$= ₹\ \dfrac{x}{5}$

and the sale in 2010 $= ₹\ x$

$\therefore$ Reqd. % increase $= \dfrac{x - \dfrac{x}{5}}{\dfrac{x}{5}} \times 100\%$

$= 4 \times 100\%$

$= 400\%$

40. (C) Speed of the bus $= 72$ km/hr

$= \dfrac{72 \times 5}{18}$

$= 20$ m/sec

$\therefore$ Reqd. distance $= 20 \times 5$

$= 100$ m

41. (A) Let the distance be x km

$\because$ $\dfrac{x}{3} - \dfrac{x}{4} = \dfrac{1}{2}$ hr

$\Rightarrow$ $\dfrac{x}{12} = \dfrac{1}{2}$

$\therefore$ $x = 6$ km

42. (D) The interest obtained at the end of 5 years

$= ₹\ \dfrac{12000 \times 10 \times 5}{100}$

$= ₹\ 6000$

The interest obtained at the end of 3 years

$= 6000 - 3320$

$= ₹\ 2680$

$\therefore$ Reqd. Rate of interest at 5 years

$= \dfrac{2680 \times 100}{12000 \times 3}\%$

$= \dfrac{67}{9}\% = 7\dfrac{4}{9}\%$

43. (A) If the time is n years, then

$4347 = 30000 \left[\left(1 + \dfrac{7}{100} \right)^{n} - 1 \right]$

$\Rightarrow \left(1 + \dfrac{7}{100} \right)^{n} = \dfrac{4347}{30,000} + 1$

$= \dfrac{1449 + 10,000}{10,000}$

$\Rightarrow \left(\dfrac{107}{100} \right)^{n} = \dfrac{11,449}{10,000}$

$= \left(\dfrac{107}{100} \right)^{2}$

$\therefore$ $n = 2$ years

44. (D) $\because$ Vol. of the prism

$= \dfrac{1}{2} \times 10 \times 12 \times 20$

$= 1200$ cm^3

$\Rightarrow$ Density of the prism

$= 6$ gm/cm^3

$\therefore$ Weight of the prism

$= \dfrac{1200 \times 6}{1000}$ kg

$= 7.2$ kg

45. (B) $\because$ AB $= 10$, BC $= 14$, CA $= 12$

$\therefore$ Area of $\triangle$ ABC

$= \sqrt{18 \, (18 - 10) \, (18 - 14) \, (18 - 12)}$

$= \sqrt{18 \times 8 \times 4 \times 6}$

$= 24\sqrt{6}$ cm^2
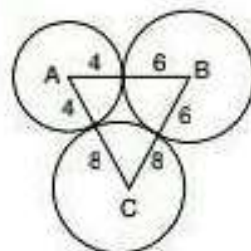
46. (C) Let the initial radius be r

then $V = \frac{1}{3}\pi r^2 h$ [when radius $= 2r$]

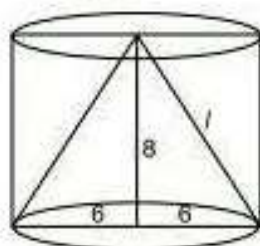then $V = \frac{1}{3}\pi (2r)^2 H$

$= \frac{1}{3}\pi \times 4r^2 H$

$\therefore \quad 4H = h$

$\therefore \quad H = \frac{h}{4}$

(One-fourth of the previous height)

47. (C) Curved surface of cone

$= \pi r l$

$= \pi \times 6 \times \sqrt{64+36}$

$= 60\pi$

and curved surface of cylinder

$= 2\pi r h$
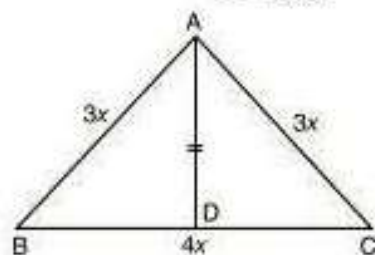
$= 2\pi \times 6 \times 8 = 96\pi$

$\therefore$ Reqd. ratio $= 96\pi : 60\pi$

$= 8 : 5$

48. (B) $AD = \sqrt{9x^2 - 4x^2}$

$= \sqrt{5}x$

$\therefore$ Area of $\Delta = \frac{1}{2} 4x \times \sqrt{5} x$

$= 18\sqrt{5}$

$\Rightarrow 2\sqrt{5} x^2 = 18\sqrt{5}$

$\Rightarrow x^2 = \frac{18\sqrt{5}}{2\sqrt{5}} = (3)^2$

$\therefore \quad x = 3$

$\therefore$ Third side $= 4x = 4 \times 3$

$= 12$ units

49. (D) The length of the arc

$= 2\pi \times r \times \frac{72°}{360°}$
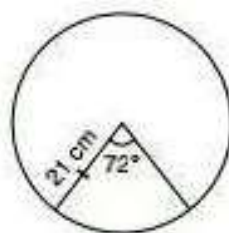
$= 2 \times \frac{22}{7} \times 21 \times \frac{1}{5}$

$= 26·5$ cm

50. (B)
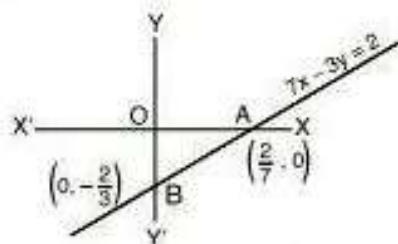
$\therefore \quad x\text{-intercept} = \frac{2}{7}$

Part—IV
General Awareness

1. The malaria parasite responsible for malignant malaria is—

(A) plasmodium malariae

(B) plasmodium falciparum

(C) plasmodium vivax

(D) plasmodium ovale

2. The effects of the Kalinga war on Asoka are found in—

(A) Pillar edicts   (B) 13th rock edicts

(C) excavations   (D) None of these

3. Urea is synthesized in the—

(A) Liver   (B) Lung

(C) Spleen   (D) Kidney

4. The ultimate source of energy in a hydroelectric power station is—
   (A) solar energy
   (B) the potential energy of water
   (C) the kinetic energy of water
   (D) the electro-chemical energy of water

5. In cricket, the two sets of wickets are—
   (A) 24 yards apart
   (B) 18 yards apart
   (C) 20 yards apart
   (D) 22 yards apart

6. Which of the following belongs to the branch of Geology ?
   (A) Meteorology
   (B) Cartography
   (C) Palaeontology
   (D) Cosmology

7. The Forward Bloc was founded by—
   (A) Subhash Chandra Bose
   (B) Jaiprakash Narayan
   (C) Acharya Narendra Dev
   (D) Ram Manohar Lohia

8. Which amongst the following does not contain nitrogen element ?
   (A) Superphosphate of lime
   (B) Urea
   (C) Indian saltpeter
   (D) Chilli saltpeter

9. The event of Boston Tea Party is related with—
   (A) Joining of USA in Second World War
   (B) French Revolution
   (C) American Civil War
   (D) American War of Independence

10. The country consisted of largest number of islands is—
    (A) Papua New Guinea
    (B) Phillipines
    (C) Japan
    (D) Indonesia

11. Related to computers, what is meant by 'software' ?
    (A) floppy discs
    (B) computer programs
    (C) computer circuitry
    (D) human brain

12. The Union Public Service Commission (UPSC)......the All India Service Personnel.
    (A) dismisses   (B) elects
    (C) selects   (D) appoints

13. The famous novel 'Pride and Prejudice' was written by—
    (A) Jane Austen   (B) George Eliot
    (C) Leo Tolstoy   (D) Charles Dickens

14. The names of six sporting coaches were recommended for the Dronacharya Awards for 2012. The awards were presented on 29th August 2012 at Rashtrapati Bhawan by—
    (A) Rahul Gandhi
    (B) P. Chidambaram
    (C) Pranab Mukherjee
    (D) Dr. Manmohan Singh

15. Who can remove a judge of High Court ?
    (A) President on the resolution of Parliament passed by special majority
    (B) President on his own
    (C) Governor on the advice of Chief Minister
    (D) President on the advice of Chief Justice of India

16. Who among the following is known as "the silver-tongued orator" ?
    (A) Gopal Krishna Gokhale
    (B) Surendranath Banerjee
    (C) Womesh Chandra Bonnerjee
    (D) Dada Bhai Naoroji

17. Deforestation accelerates soil erosion and also affects the sub-surface water flow. These two factors adversely affect the—
    (A) human resources   (B) ecosystem
    (C) climate   (D) local vegetation

18. World Environmental Day is celebrated on—
    (A) August 5   (B) June 5
    (C) July 5   (D) November 5

19. The largest tribe in India is—
    (A) Garos   (B) Todas
    (C) Gonds   (D) Chenchus

20. The largest country in Africa is—
    (A) South Africa   (B) Sudan
    (C) Algeria   (D) Egypt

21. Litmus is extracted from—
    (A) Turmeric   (B) Bark of Cinchona
    (C) Lichens   (D) Mushroom

22. Standing in front of a special mirror, a man finds his image small head and body but legs of actual size. The shapes of mirror parts are—
    (A) concave and plane
    (B) concave and convex
    (C) convex and plane
    (D) plane and convex

23. Hydroponics is—
    (A) plant growth in liquid culture medium
    (B) plant growth in mineral deficient soil
    (C) soil conservation
    (D) plant growth under laboratory conditions

24. The name of Miss Medha Patkar is associated with—
    (A) Jnanpith Awards
    (B) Nari Vimochan Andolan
    (C) Narmada Bachao Andolan
    (D) Lalit Kala Academy

25. Nucliedes having the same atomic numbers are known as—
    (A) Isotones   (B) Isotopes
    (C) Isomers   (D) Isobars

26. When prices of goods increase, purchasing power of money—
    (A) fluctuates   (B) decreases
    (C) increases   (D) remains constant

27. In MS-DOS the command that is used to clear the screen is—
    (A) Wipe   (B) Cls
    (C) Clear   (D) Clear screen

28. Micro economics deals with—
    (A) total units   (B) individual units
    (C) partial unit   (D) marginal units

29. Glass is a—
    (A) polymeric mixture
    (B) gel
    (C) super-cooled liquid
    (D) micro-crystalline solid

30. Where Gandhiji learned the art of Satyagraha as a practice ?
    (A) Ireland   (B) England
    (C) Scotland   (D) South Africa

31. The famous ruler of the western Chalukyan dynasty was—
    (A) Pulakesin II   (B) Pulakesin I
    (C) Ravikirthi   (D) Mangalesha

32. The time taken for the sunlight to reach the earth is about—
    (A) 10 minute 3.3 second
    (B) 6 minute 5.5 second
    (C) 8 minute 16.6 second
    (D) 9 mintue 8.8 second

33. In which of the following places was the last Winter Olympics Games held ?
    (A) Salt Lake City (USA)
    (B) Albertville
    (C) Lillehammer
    (D) Calgary

34. Humidity can be measured by—
    (A) Hydrometer   (B) Hygrometer
    (C) Pyrometer   (D) Lactometer

35. The sour taste of vinegar is due to—
    (A) Lactic acid   (B) Citric acid
    (C) Acetic acid   (D) Tartaric acid

36. The burning of fossil fuel produces—
   (A) Soil pollution   (B) Water pollution
   (C) Air pollution   (D) All of the above

37. Which Chola ruler built a new capital, Gangaikonda Cholapuram ?
   (A) Rajendra I   (B) Vijayalala
   (C) Aditya   (D) Rajaraja I

38. Where is Head Office of State Bank of India ?
   (A) Mumbai   (B) Delhi
   (C) Kolkata   (D) Chennai

39. Paper was invented in—
   (A) India   (B) Egypt
   (C) Greece   (D) China

40. A uniform magnetic field is represented by—
   (A) closed curves   (B) parallel lines
   (C) convergent lines   (D) divergent lines

41. Which of the following was a protectorate State of India ?
   (A) Arunachal Pradesh
   (B) Nagaland
   (C) Meghalaya
   (D) Sikkim

42. Yuan is the currency of—
   (A) Yugoslavia   (B) Japan
   (C) China   (D) Italy

43. The nuclear plant disaster in Chernobyl took place in—
   (A) 1996   (B) 1980
   (C) 1989   (D) 1992

44. Pick the odd man out—
   (A) ACCESS   (B) UNIX
   (C) MS-DOS   (D) WINDOWS 98

45. Radioactivity is the disintegration of the—
   (A) nucleus   (B) ion
   (C) molecule   (D) atom

46. The oldest church (St. Thomas church) in India is located in the State of—
   (A) Assam   (B) Goa
   (C) Kerala   (D) West Bengal

47. Apple fruit is a—
   (A) compound samara
   (B) succulent pome
   (C) succulent pepo
   (D) succulent drupe

48. Perfectly inelastic demand of a commodity means—
   (A) the cost of a commodity changes but the demand remains unchanged
   (B) the price of the commodity does not change with the change in its demand
   (C) the demand of a commodity does not change with the change in its price
   (D) the demand of some other commodity changes with the change in the price of one commodity

49. The methods of protection of home-industries in International trade includes all the following except—
   (A) Import-taxes   (B) Tariff
   (C) Quota   (D) De-licencing

50. The National Integration Council (NIC) is chaired by—
   (A) President of India
   (B) Prime Minister
   (C) Finance Minister
   (D) Home Minister

Answers with Explanations

1. (A) Plasmodium malariae is a parasite protozoa that causes malaria in humans.

2. (B)   3. (A)

4. (C) In a hydroelectric power station, kinetic energy of water is eventually converted into electrical energy.

5. (D)   6. (C)   7. (A)

8. (A) Superphosphate of lime is also called calcium super-phosphate. It is the mixture of calcium dihydrogen phosphate $[Ca(H_2PO_4)_2]$ and Gypsum $[2(CaSO_4.2H_2O]$. Obviously, there is no nitrogen in it.

9. (D)

10. (B) Phillipines consists of 7109 Islands.

11. (B) Software is defined as the totality of programs usable on a computer, together with the documentation associated with a computer or program, such as manuals, diagrams and operating instructions.

12. (C)   13. (A)

14. (C) President Pranab Mukherji presented the country's highest sports awards like Rajiv Gandhi Khel Ratna Awards, Arjun Awards, Dhyanchand Awards and Dronacharya Awards to sports persons and the coaches at Ashoka Hall in Rashtrapati Bhavan on August 29, 2012.

15. (A)

16. (*) Srinivasa Shastri was an Indian politician, and known as 'Silver tongued orator' because of his subtle oratory and excellent command on English and Sanskrit Language. Options are wrong.

17. (A)   18. (B)   19. (C)

20. (C) Africa is made up of over fifty sovereign nations, Algeria is largest country by Area (2381740 km^2)

21. (C)   22. (C)

23. (B) Hydroponic is a method of cultivating plants by growing them in gravel, through which water containing dissolved inorganic nutrient salts is pumped.

24. (C) Medha Patker is an Indian Social activist, she is known for role in Narmada Bachao Andolan.

25. (B) Isotope is a term used one or two or more atoms with in the same atomic number that contain different numbers of Neutrons.

26. (B)   27. (B)

28. (B) Micro economics deals with smaller things like an individual peoples decisions and small communities. In common parlance

it can be said that micro-economics deals with individual units.

29. (C) Glass is a super-colled liquid in the form of non-crystalline solid. Hence, glass has neither some crystalline structure nor some definite boiling point. Glass has neither some definite chemical composition, nor some molecular formula, since it is a mixture and not a compound. Average composition of an ordinary glass is :

$$Na_2SiO_3.CaSiO_3.4SiO_2$$

30. (D)

31. (*) No king given in the options belongs to Western Chalukyas. Hence, no answer can be given.

32. (C)

33. (D) The last (2010) Winter Olympic Games were held in Vancouver, Calgary, Canada.

34. (B)   35. (C)   36. (C)   37. (A)

38. (A) Registered Head Office of State Bank of India is located at State Bank Bhawan, M.C. Road, Nariman Point, Mumbai 400 021.

39. (D) Papermaking processes is said to be developed in China during the early second century A.D. by Han Court eunuch Cai Lun.

40. (B)   41. (D)   42. (C)   43. (C)

44. (A)

45. (D) The spontaneous emission of a particle by an atomic nucleus. The emitted particle may be of alpha particle (a helium nucleus consisting of two protons and two neutrons.)

46. (C) St. Thomas Catholic Church is the oldest Church in India. It is located at Palayur, at a distance of 28 km from Thrissur in Kerala.

47. (B)

48. (C) Perfectly inelastic demand means quantity demanded is completely uneffected by a price change.

49. (D)   50. (D)