SUBJECT   : APTITUDE BUILDER (AB)
                          (SKILLING)
SUBJECT CODE   : 20UC3005
ACADEMIC YEAR : 2023-2024
BRANCH   : CSE
YEAR SEMESTER : IV YEAR EVEN SEMESTER
CAMPUS   : KLEF HYDERABAD

Syllabus : AB

Skilling: {Tests in skilling hours} 2 hours per week [24 hours]

CO-1:
01. Sentence completion
02. Idioms and phrases
03. One word Substitutes
04. Sentence improvement
05. Sentence Equivalence
06. Analogies

CO-2:
07. Attitude
08. Empathy Vs Sympathy
09. curriculum Vitae
10. Workplace Etiquette
11. Group Discussion
12. Persuasion and Negotiation
13. Conflict Resolution

CO-3:
14. Progressions,
15. Mensuration,
16. Quadratic Equations & Inequalities,
17. Logarithms,
18. Data Interpretation and Data Sufficiency

CO-4:
19. Ranking and Time Sequence
20. Symbols and Notations
21. Nonverbal Reasoning
22. Connectives
23. Blood relations and Data Sufficiency

CO-3

Progressions:

01. The 54th and 4th terms of an A.P. are — 61 and 64; find the 23rd term.
    A. 12
    B. 20 ¼
    C. 26 ½
    D. 16 ½

02. The first term of a series is 5, the last 45, and the sum 400: find the number of terms, and the common difference.
    A. $n = 14, d = 2\frac{1}{3}$
    B. $n = 15, d = 2\frac{2}{5}$
    C. $n = 16, d = 2\frac{2}{3}$
    D. $n = 17, d = 2\frac{2}{5}$

03. Find the sum of the geometric series $2 + 6 + 18 + 54 + \ldots$ where there are 6 terms in the series.
    A. 728
    B. 828
    C. 926
    D. 1016

04. Find the sum of the geometric series $8 - 4 + 2 - 1 + \ldots$ where there are 5 terms in the series.
    A. 7 ½
    B. 10 ¼
    C. 5 ½
    D. 8 ¼

05. How many terms are there in the geometric progression 2, 4, 8, . . ., 128?
    A. 5
    B. 6
    C. 7 ½
    D. 7

06. In the A.P. -3, -1/2, 2 …. The 11th term is
    A. 42
    B. -12
    C. 22
    D. 65

07. Does 210 falls in the AP: 21, 42, 63, 84…? If yes, then on which term?
    A. 12th
    B. 10th
    C. 5th
    D. 7th

08. Find the sum of the following infinite G. P.
    A. 1/2
    B. 1
    C. 1/3
    D. 1/5

09. Insert three geometric means between 2 and 81/8.
    A. 3, 9/2, - 27/4
    B. - 3, 9/2, 27/4
    C. 3, 9/2, 27/4
    D. 3, 9/2, 27/8

10. The arithmetic mean between two numbers is 75 and their geometric mean is 21. Find the numbers.
    A. 133 and 17
    B. 63 and 87
    C. 3 and 147
    D. 73 and 77

Mensuration:

11. One side of a rectangular field is 15 m and one of its diagonals is 17 m. Find the area of the field.
    A. 100 m^2
    B. 120 m^2
    C. 140 m^2
    D. 160 m^2

12. A lawn is in the form of a rectangle having its sides in the ratio 2:3. The area of the lawn is $\frac{1}{6}$ hectares. Find the length and breadth of the lawn.
    A. 30 m
    B. 40 m
    C. 50 m
    D. 60 m

13. Find the cost of carpeting a room 13 m long and 9 m broad with a carpet 75 cm wide at the rate of Rs. 12.40 per square metre.
    A. Rs. 1734.40
    B. Rs. 1834.40
    C. Rs. 1934.40
    D. Rs. 2034.40

14. If the diagonal of a rectangle is 17 cm long and its perimeter is 46 cm, find the area of the rectangle.
    A. 100 cm^2
    B. 120 cm^2
    C. 140 cm^2
    D. 160 cm^2

15. The length of a rectangle is twice its breadth. If its length is decreased by 5 cm and breadth is increased by 5 cm, the area of the rectangle is increased by 75 sq.cm. Find the length of the rectangle.
    A. 10 cm
    B. 20 cm
    C. 30 cm
    D. 40 cm

16. Find the volume and surface area of a cuboid 16 m long, 14 m broad and 7 m high.
    A. Volume = 1268 m^3 Surface area = 568 cm^2
    B. Volume = 1368 m^3 Surface area = 668 cm^2
    C. Volume = 1468 m^3 Surface area = 768 cm^2
    D. Volume = 1568 m^3 Surface area = 868 cm^2

17. Find the length of the longest pole that can be placed in a room 12 m long, 8 m broad and 9 m high.
    A. 16 m
    B. 17 m
    C. 18 m
    D. 19 m

18. The volume of a wall, 5 times as high as it is broad and 8 times as long as it is high, is 12.8 cu. metres. Find the breadth of the wall.
    A. 38 m
    B. 40 m
    C. 42 m
    D. 44 m

19. Find the number of bricks, each measuring 24 cm x 12 cm x 8 cm, required to construct a wall 24 m long, 8 m high and 60 cm thick, if 10 % of the wall is filled with mortar?
    A. 36000
    B. 45000
    C. 54000
    D. 63000

20. Water flows into a tank 200 m x 150 m through a rectangular pipe 1.5 m x 1.25 m
@ 20 kmph. In what time (in minutes) will the water rise by 2 metres?
A. 86 min
B. 96 min
C. 104 min
D. 106 min

Quadratic Equations & Inequalities:

21. Find the nature of roots of $2x^2 + x + 3 = 0$.
A. roots are real
B. roots are real, rational and unequal
C. roots are real, rational and equal
D. roots are conjugate complex numbers

22. Find he nature of the roots of $4x^2 - 20x + 25 = 0$.
A. roots are real
B. roots are real, rational and unequal
C. roots are real, rational and equal
D. roots are conjugate complex numbers

23. Find the nature of the roots of $3x^2 + 7x + 2 = 0$.
A. roots are real
B. roots are real, rational and unequal
C. roots are real, rational and equal
D. roots are conjugate complex numbers

24. For what values of x the expression $-7x^2 + 8x - 9$ is negative?
A. for all $x \in R, f(x)$ is negative
B. for all $x \in R, f(x)$ is positive
C. for all $x \in R, f(x) = 0$
D. for all $x \in R, f(x) \geq 0$

25. For what values of x the expression $x^2 - 5x + 14$ is positive?
A. for all $x \in R, f(x)$ is negative
B. for all $x \in R, f(x)$ is positive
C. for all $x \in R, f(x) = 0$
D. for all $x \in R, f(x) \geq 0$

26. For what values of x the expression $x^2 - 4x - 32$ is positive?
A. $f(x) > 0$ for $x > 8$ and $x < -4$
B. $f(x) > 0$ for $x > 6$ and $x < -4$
C. $f(x) > 0$ for $x > 4$ and $x < -8$
D. $f(x) > 0$ for $x > 12$ and $x < -8$

27. Find the quadratic equation whose one root is $3 - i\sqrt{2}$.
    A. $x^2 - 6x + 11 = 0$
    B. $x^2 - 5x + 11 = 0$
    C. $x^2 - 4x + 12 = 0$
    D. $x^2 - 6x + 12 = 0$

28. Find the quadratic equation whose one root is $1 + \sqrt{5}$.
    A. $x^2 - x - 4 = 0$
    B. $x^2 - 2x - 4 = 0$
    C. $x^2 - 3x - 4 = 0$
    D. $x^2 - 4x - 5 = 0$

29. A train travels 360 kilometres at a consistent speed. It would have taken 1 hour less to travel the same distance if the pace had been increased by 5 km/h. Determine the train's speed.
    A. 30 km/hr
    B. 40 km/hr
    C. 50 km/hr
    D. 60 km/hr

30. If one the roots of the equation $px^2 + qx + r = 0$ is three times the other, then which one of the following relations is correct ?
    A. $p = q + r$
    B. $q^2 = 24\ pr$
    C. $p + q + r = 1$
    D. $3q^2 = 16\ pr$

Logarithms:

31. Evaluate $\log_5 3 \times \log_{27} 25$
    A. 1/3
    B. 2/3
    C. 3/4
    D. 5/6

32. Evaluate $\log_9 27 - \log_{27} 9$
    A. 1/3
    B. 2/3
    C. 3/4
    D. 5/6

33. Simplify: $\left(\log\frac{75}{16} - 2\log\frac{5}{9} + \log\frac{32}{243}\right)$
    A. $\log 2$
    B. $\log 3$
    C. $\log 4$
    D. $\log 5$

34. Find the value of x which satisfies the relation
    $\log_{10} 3 \times \log_{10}(4x + 1) = \log_{10}(x + 1) + 1$
    A. 5/2
    B. 5/4
    C. 7/2
    D. 7/4

35. Simplify: $\left[\dfrac{1}{\log_{xy}(xyz)} + \dfrac{1}{\log_{yz}(xyz)} + \dfrac{1}{\log_{zx}(xyz)}\right]$
    A. 2
    B. 3
    C. 4
    D. 5

36. If $\log_{10} 2 = 0.30103$, find the value of $\log_{10} 50$.
    A. 1.69897
    B. 2.69897
    C. 3.69897
    D. 4.69897

37. The value of $\log_{10}(0.0001)$ is:
    A. $\dfrac{1}{4}$
    B. $-\dfrac{1}{4}$
    C. -4
    D. 4

38. The value of $\log_{0.01} 1000$ is:
    A. $\dfrac{1}{3}$
    B. $-\dfrac{1}{3}$
    C. $\dfrac{3}{2}$
    D. $-\dfrac{3}{2}$

39. If $\log_x y = 100$ and $\log_2 x = 10$, then the value of y is:
    A. 2^{10}
    B. 2^{100}
    C. 2^{1000}
    D. 2^{10000}

40. If $\log 2 = 0.30103$, the number of digits in 4^{50} is
    A. 30
    B. 31
    C. 100
    D. 200

Data Interpretation and Data Sufficiency:

41. The following table gives the sales of batteries manufactured by a company over the years.

Number of Different Types of Batteries Sold by a Company Over the Years
(Numbers in Thousands)

Year	Types of Batteries					
	4AH	7AH	32AH	35AH	55AH	Total
1992	75	144	114	102	108	543
1993	90	126	102	84	126	528
1994	96	114	75	105	135	525
1995	105	90	150	90	75	510
1996	90	75	135	75	90	465
1997	105	60	165	45	120	495
1998	115	85	160	100	145	605

1. What was the approximate percentage increase in the sales of 55AH batteries in 1998 compared to that in 1992?
   A. 28%
   B. 31%
   C. 33%
   D. 34%

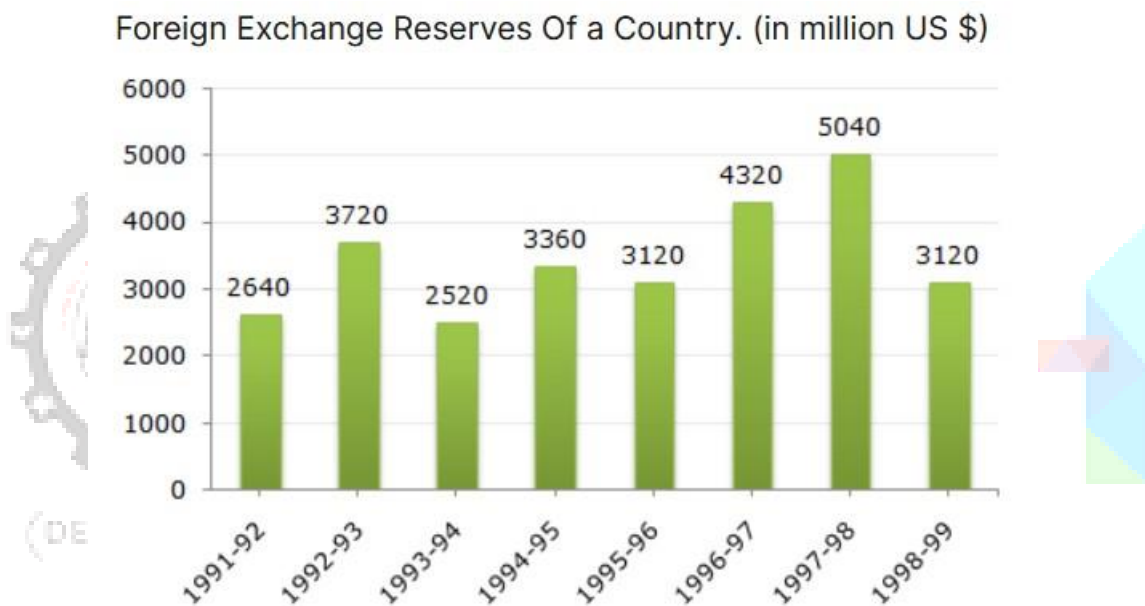2. The total sales of all the seven years is the maximum for which battery?
   A. 4AH
   B. 7AH
   C. 32AH
   D. 35AH

3. What is the difference in the number of 35AH batteries sold in 1993 and 1997?
   A. 24000
   B. 28000
   C. 35000
   D. 39000

4. The percentage of 4AH batteries sold to the total number of batteries sold was maximum in the year?
   A. 1994
   B. 1995
   C. 1996
   D. 1997

5. In case of which battery there was a continuous decrease in sales from 1992 to 1997?
   A. 4AH
   B. 7AH
   C. 32AH
   D. 35AH

42. The bar graph given below shows the foreign exchange reserves of a country (in million US $) from 1991 - 1992 to 1998 - 1999.

Foreign Exchange Reserves Of a Country. (in million US $)

Year	Reserves
1991-92	2640
1992-93	3720
1993-94	2520
1994-95	3360
1995-96	3120
1996-97	4320
1997-98	5040
1998-99	3120

01. The ratio of the number of years, in which the foreign exchange reserves are above the average reserves, to those in which the reserves are below the average reserves is?
    A. 2:6
    B. 3:4
    C. 3:5
    D. 4:4

02. The foreign exchange reserves in 1997-98 was how many times that in 1994-95?
    A. 0.7
    B. 1.2
    C. 1.4
    D. 1.5

03. For which year, the percent increase of foreign exchange reserves over the previous year, is the highest?
    A. 1992-93
    B. 1993-94
    C. 1994-95
    D. 1996-97

04. The foreign exchange reserves in 1996-97 were approximately what percent of the average foreign exchange reserves over the period under review?
    A. 95%
    B. 110%
    C. 115%
    D. 125%

05. What was the percentage increase in the foreign exchange reserves in 1997-98 over 1993-94?
    A. 100
    B. 150
    C. 200
    D. 620

REFERENCE BOOKS:
  01. Quantitative Aptitude by R S Agarwal, S Chand Publications.
  02. Quantitative Aptitude by Abhijit Guha, Mc Graw Hill publications.
  03. Verbal and Non-Verbal Reasoning, R. S. Aggarwal, S Chand Publications.
  04. A modern approach to Logical reasoning GL Barrons, McGraw Hill.

WEB LINKS : www.indiabix.com, www.freshersworld.com