VIII 1 mark Questions (Cubes and Cuberoots/Exponents & Powers)

1) Give an example of Hardy-Ramujan number.
2) Which number is cube of itself.
3) What is one's digit of Cube of 3331?
4) Which positive number is the smallest perfect cube?
5) Is 243 a perfect cube?
6) What should be added to 124 to make it a perfect cube?
7) Write True or false:
   (i) Cube of any odd number is even
   (ii) A perfect cube does not end with two zeros.
   (iii) If Square of a number ends with 5, then its cube ends with 25
   (iv) There is no perfect cube which ends with 8.
8) Which of the following is not a perfect cube?
   (i) 216 (ii) 128
9) $\sqrt[3]{512}$ = ___
10) $(-7)^3$ = ___
11) $\left(\frac{2}{3}\right)^3$ = ___
12) $\left(5\frac{2}{7}\right)^3$ = ___
13) $(3.1)^3$ = ___
14) How many perfect cubes are there from 1 to 100?
15) Is 500 a perfect cube?
16) Which of the following numbers must be subtracted from 345 to get a perfect cube?
17) Which of the following numbers is a perfect cube?
18) Which of the following numbers must be subtracted from 345 to get a perfect cube?
   (a) 121 (b) 131 (c) 2 (d) 24
19) Which of the following numbers is a perfect cube?
   (a) 343 (b) 443 (c) 543 (d) 643
20) Which of the following numbers must be multiplied to

392 to get a perfect cube ?
(a) 2 (b) 3 (c) 4 (d) 7

21) By which of the following numbers 21296 must be divided to get a perfect cube?
(a) 2 (b) 4 (c) 5 (d) 7

22) What is the volume of a cube whose each side is 4cm?
(a) $24 cm^3$ (b) $48 cm^3$ (c) $64 cm^3$ (d) $125 cm^3$

23) Which of the following numbers is a perfect cube?
(a) 141 (b) 294 (c) 216 (d) 496

24) Which of the following numbers is a perfect cube?
(a) 1152 (b) 1331 (c) 2016 (d) 739

25) $\sqrt[3]{512}$ = ? (a) 6 (b) 7 (c) 8 (d) 9

26) $\sqrt[3]{125 \times 64}$ = (a) 100 (b) 40 (c) 20 (d) 30

27) $\sqrt[3]{\frac{64}{343}}$ = (a) $\frac{4}{9}$ (b) $\frac{4}{7}$ (c) $\frac{8}{7}$ (d) $\frac{8}{21}$

28) $\sqrt[3]{\frac{-512}{729}}$ = (a) $-\frac{7}{9}$ (b) $-\frac{8}{9}$ (c) $\frac{7}{9}$ (d) $\frac{8}{9}$

29) By what least number should 648 be multiplied to get a perfect cube ?
(a) 3 (b) 6 (c) 9 (d) 8

30) $\sqrt[3]{125 \times 27} = 3 \times$ ___

31) $\sqrt[3]{8 \times \_\_} = 8$

32) $\sqrt[3]{1728} = 4 \times$ ___

33) $\sqrt[3]{480} = \sqrt[3]{3} \times 2 \times \sqrt[3]{\_\_}$

34) $\sqrt[3]{\_\_} = \sqrt[3]{7} \times \sqrt[3]{8}$

True / False ?

35) 392 is a perfect cube

36) 8640 is not a perfect cube

37) No cube can end with exactly two zeroes.

38) There is no perfect cube which ends in 4

39) For an integer $a$, $a^3$ is always greater than $a^2$.

40) Match the following

| | |
|---|---|
| (i) The smallest Hardy-Ramanujan Number is | (a) 343 |
| (ii) $7^3 =$ | (b) 5 |
| (iii) The smallest number by which 675 must be multiplied to obtain a perfect cube is | (c) 1729 |
| (iv) The smallest number by which 432 must be divided to obtain a perfect cube is | (d) $\frac{3}{5}$ |
| (v) The value of $\sqrt[3]{\frac{27}{125}} =$ | (e) 2 |

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VIII H.W-8 (Answers)

1) 1729

2) 1 and -1 [$\because 1^3 = 1$ and $(-1)^3 = -1$].

3) $1 \times 1 \times 1 = 1$
Hence one's digit of cube of 3331 is 1

4) $1^3 = 1$

5) No, $3^5 = 243$

6) $124 + 1 = 125$, which is a perfect cube?
Hence the required number to be added is 1.

7) (i) False, $3^3 = 27$, odd (ii) T eg:- $10^3 = 1000$, ends with 3 zeros
$5^3 = 125$, odd etc (iii) F, $15^2 = 225$ but $15^3 = 3375$
(iv) F, $2^3 = 8$, $12^3 = 1728$

8) $\sqrt[3]{216} = 6$
Hence 128 is not a perfect cube.

9) $\sqrt[3]{512} = 8$

10) $(-7)^3 = -7 \times -7 \times -7 = -343$

11) $\left(\frac{2}{3}\right)^3 = \frac{8}{27}$

12) $\left(5\frac{2}{7}\right)^3 = \left(\frac{37}{7}\right)^3 = \frac{50653}{343}$

13) $(3.1)^3 = 3.1 \times 3.1 \times 3.1 = 29.791$

14) $1^3 = 1$
$2^3 = 8$
$3^3 = 27$
$4^3 = 64$
Hence there are 4 perfect cubes from 1 to 100

15) $500 = 5 \times 5 \times 5 \times 2 \times 2$
Since 2 does not form a triplet, 500 is not a perfect cube.

$5 \mid 500$
$5 \mid 100$
$5 \mid 20$
$2 \mid 4$
$2$

$\sqrt[3]{50653} = 37$

| | |
|---|---|
| 3 | 37 |
| 37 | |
| 259 | |
| 111 | |
| 1369 | |
| 37 | |
| 9583 | 2 |
| 4107 | |
| 50653 | 3 |

$\sqrt[3]{29.791} = 3.1$

| | |
|---|---|
| 3 | 31 |
| 31 | |
| 31 | |
| 93 | |
| 961 | |
| 31 | |
| 961 | |
| 2883 | |
| 29.791 | |

16) $345 - 2 = 343$, which is a perfect cube.
Hence the required number to be subtracted is 2.

17) $\sqrt[3]{343} = 7$
Hence 343 is a perfect cube. (a)

18) $345 - 2 = 343$, which is a perfect cube (c)

19) 343 (a)

20) $394 = 2 \times 2 \times 2 \times 7 \times 7$

Since 7 does not form a triplet, the required number to be multiplied is 7 (d)

| | |
|---|---|
| 2 | 392 |
| 2 | 196 |
| 2 | 98 |
| 7 | 49 |
| | 7 |

21) $21296 = 2 \times 2 \times 2 \times 11 \times 11 \times 11 \times 2$

Since 2 does not form a triplet, the required number to be divided = 2 (a)

| | |
|---|---|
| 2 | 21296 |
| 2 | 10648 |
| 2 | 5324 |
| 2 | 2662 |
| 11 | 1331 |
| 11 | 121 |
| | 11 |

22) side = 4cm

Volume of a cube = side × side × side = $4 \times 4 \times 4$

$= 64 cm^3$ (c)

23) $\sqrt[3]{216} = 6$ (c)

24) $\sqrt[3]{1331} = 11$ (b)

25) $\sqrt[3]{512} = 8$ (c)

26) $\sqrt[3]{125 \times 64} = 5 \times 4 = 20$ (c)

27) $\sqrt[3]{\frac{64}{343}} = \frac{4}{7}$ (b)

28) $\sqrt[3]{\frac{-512}{729}} = -\frac{8}{9}$ (b)

29) $648 = 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 3$

Since the least number to be multiplied = $3 \times 3 = 9$ (c)

| | |
|---|---|
| 2 | 648 |
| 2 | 324 |
| 2 | 162 |
| 3 | 81 |
| 3 | 27 |
| 3 | 9 |
| | 3 |

30) $\sqrt[3]{125 \times 27} = 5 \times 3$

31) $\sqrt[3]{8 \times 64} = 8$

32) $\sqrt[3]{1728} = 12 = 4 \times 3$

33) $\sqrt[3]{480} = \sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 5}$

$= 2 \times \sqrt[3]{3} \times \sqrt[3]{20}$

| | |
|---|---|
| 2 | 480 |
| 2 | 240 |
| 2 | 120 |
| 2 | 60 |
| 2 | 30 |
| 3 | 15 |
| | 5 |

34) $\sqrt[3]{7 \times 8} = \sqrt[3]{7} \times \sqrt[3]{8} = \sqrt[3]{56}$

35) False.

$\sqrt[3]{392} = 2 \times \sqrt[3]{49}$

| | |
|---|---|
| 2 | 392 |
| 2 | 196 |
| 2 | 98 |
| 7 | 49 |
| | 7 |

36) $\sqrt[3]{8640} = 12 \times \sqrt[3]{5}$

True

| | |
|---|---|
| 2 | 8640 |
| 2 | 4320 |
| 2 | 2160 |
| 2 | 1080 |
| 2 | 540 |
| 2 | 270 |
| 5 | 135 |
| 3 | 27 |
| 3 | 9 |
| 3 | 3 |
| | 1 |

37) True

38) False

$\sqrt[3]{64} = 4$

39) False

If $a = -3$, $a^2 = 9$ and $a^3 = -27$

$\therefore a^2 > a^3$

40) (i) 1729 (c)

(ii) 343 (a)

(iii) 5 (b)

(iv) 2 (e)

(v) $\frac{3}{5}$ (d)

| | |
|---|---|
| 5 | 675 |
| 5 | 135 |
| 3 | 27 |
| 3 | 9 |
| | 3 |

| | |
|---|---|
| 2 | 432 |
| 2 | 216 |
| 2 | 108 |
| 2 | 54 |
| 3 | 27 |
| 3 | 9 |
| | 3 |