SCIENCE

1. (2) Rate of change of momentum of an object is proportional to the applied unbalanced force in the direction of the force
2. (3)
3. (3) Straight-line parallel to the X-axis indicates a uniform motion.
4.

(2) Let speed of the train in later half = x, then the time taken travel later 40 km = 40/x hours
Total time taken = 40/30 + 40/x

Average speed = $\dfrac{80}{4/3 + 40x} = 45$

Solve the equation to find value of x

5. (3)
6. (3) Objects of density less than that of a liquid will float on the liquid and the objects of density more than that of a liquid will sink in the liquid
7.

(1) $W = m \times g$
$6000 = m \times 10$
$m = 60$ kg

8. (1) Mass remains same everywhere. So mass on moon = 60 kg
9.

(3) $W = m \times g$
$100 = 60 \times g$
$g = 100/60 = 1.66$ m/s^2

10. (1)
11. (4)
12. (2)
13.

(1) $V = f \times \lambda$

Wavelength, $\lambda = \dfrac{V}{f}$ $\lambda = \dfrac{320}{640} = 0.5$ m

14. (1) One crest and the immediate next trough constitute one wave and distance between them = l.Frequency n is the number of waves produced by the source. Here, the source produces 50 waves in 0.5s. Therefore, the number of waves produced by the source in one

second $= \dfrac{50}{0.5s} = 100s^{-1}$ or $v = 100$ Hz

15. (3)

ENGLISH

16. (4) Can be inferred from the last sentence of the passage
17. (1) Clear from the reading of the passage.
18. (3) Clearly stated in the passage.
19. (1) Can be easily inferred from the passage.
20. (4) Clearly given in the passage.
21. (2) Exonerate means declared free from blame, to implicate means to show that someone is involved in something especially a crime, to appease means to pacify, to adore means to love deeply and respect highly.
22. (4) Fascinating means charming, fanaticism means madness, especially in religious or political matters,indolence means laziness.
23. (3) A 'I will ..... you tomorrow', option (3) will be the most appropriate because its talking about "if you are unable to see kindly call me" completes the sentence
24. Option (2) logically follows sentence A, because after invention of steam engine by James watt, many years later,petrol engine was invented
25. This is 'synonym' type question. 'Anthology' means a chronological collection.(1), (3) & (4) could easily be eliminated from the first read of line 'Anthology of poetry. It can only mean collection of poetry. Thus, (2) is the right answer.
26. (2)
27. (3)
28. (4)
29. (4)
30. (3) fickle means unstable, often changing, not constant, not faithful, Insipid means tasteless

MATH

31.

(4) $CI - SI = \dfrac{R \times SI}{2 \times 100}$

$144 = \dfrac{15 \times SI}{200}$

$SI = ₹1920$

$\dfrac{PTR}{100} = ₹1920$

$\dfrac{P \times 2 \times 15}{100} = 1920$

$P = ₹ 6400.$

32.

(2) Time taken by the tap to fill the tank = p hours
Time taken by the tap to empty the tank = q hours

∴   In one hour the tap fills $\dfrac{1}{p}$th part of the tank.

In one hour the tap empties $\dfrac{1}{q}$th part of the tank.

Thus, in one hour $\left(\dfrac{1}{p}-\dfrac{1}{q}\right)$th part is filled.

But given tank is filled in r hours when both the taps opened.

∴   In 1 hour $\dfrac{1}{r}$th part of tank is filled.

∴ $\dfrac{1}{r}=\dfrac{1}{p}-\dfrac{1}{q}$.

33. (3)
34. (1)
35. (1)
36. (2)
37. (1)
38. (2)
39. (4)
40. (1)
41. (4)
42.

(2) R = Radius = $\dfrac{24}{2}$ = 12 cm.

H = Height = 11 m

Curved surface area of the cylindrical portion = 2π
= 2π (12)(11) = $(264\,\pi)\,m^2$.

43.

(3) h = Height of the cylindrical portion = $16-11$ =

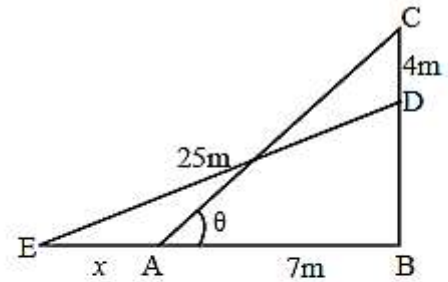Slant height, $l = \sqrt{h^2+R^2}$ = $\sqrt{25+144}$ = $13\,m$.
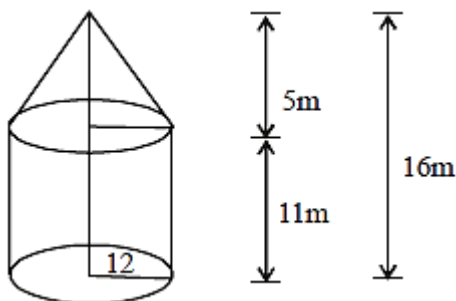
44.

(1) Area of canvas required for the tent = curved surface area
the cylindrical portion + curved surface area of the cone curv
surface area of the cone = $\pi Rl = \pi$ (12) (13) = $(156\pi)\,m^2$
Hence, Area of canvas = $(264\pi + 156\pi)\,m^2$

= $(420\pi-)\,m^2$ = $420\times\dfrac{22}{7}$= $1320\,m^2$.

45.

(2)

DE = 25 = AC = length of ladder.
Let BD = y m
∴ $(y+4)^2 + 7^2 = 25^2$
⇒ $(y+4)^2 = 625 - 49 = 576$
⇒ $y+4 = \pm 24 \Rightarrow y = 20$ [∵ y > 0]
From ΔDBE, $(20)^2 + (x+7)^2 = (25)^2$
⇒ $(x+7)^2 = (25)^2 - (20)^2 = (15)^2$
⇒ $x+7 = 15 \Rightarrow x = 8$
∴ Foot of the ladder slides 8 m.

Reasoning

46.   (d) The series is × 2 + 1, × 2 + 2, × 2 + 3, × 2 + 4, × 2 + 5

47. (a) The series is $18 + 1^2 = 19$; $19 + 22 = 23$; $23 +3^2 = 32$; $32 + 4^2 = 48$; $48 + 5^2 = 73$; $73 + 6^2 = 109$

48. (e) The series is × 0.5 + 0.5, × 1 + 1, × 1.5 + 1.5, × 2 + 2, × 2.5 + 2.5, × 3 + 3

49. (d)
The pattern of number series is as follows :
$7 \times 2 - 2 = 12$
$12 \times 4 - (2 + 6) = 48 - 8 = 40$
$40 \times 6 - (8 + 10) = 240 - 18 = 222$
$222 \times 8 - (18 + 14) = 1776 - 32 = 1744 \neq 1742$
$1744 \times 10 - (32 + 18) = 17440 - 50 = 17390$

50. (c)
The pattern of number series is as follows :
$6 \times 7 + 72 = 42 + 49 = 91$
$91 \times 6 + 62 = 546 + 36 = 582 \neq 584$
$582 \times 5 + 52 = 2910 + 25 = 2935$
$2935 \times 4 + 42 = 11740 + 16 = 11756$
$11756 \times 3 + 32 = 35268 + 9 = 35277$

51.

(e)

The pattern of number series is as follows:

$9050 - 15^3 = 9050 - 3375 = 5675$

$5675 - 13^3 = 5675 - 2197 = 3478$

$3478 - 11^3 = 3478 - 1331 = 2147$

$2147 - 9^3 = 2147 - 729 = 1418$

$1418 - 7^3 = 1418 - 343 = 1075 \neq 1077$

52. (b) the pattern is... (aab)
53. (b) the pattern is ..(aba)
54. (c) the pattern is ... man
55. (a) Clearly we can understand that the alphabets are arranged according to their respective numbers.
56. 2. (a) The pattern is ...
    Z – A = 25 – 1 = 24, Y – B = 25 – 2 = 23, × – C = 24 – 3 = 21, W – D = 23 – 4 = 19, ...
57. (a)
58. (b)
59. (d)
60. (e)