Multiple-choice section

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Answer | D | B | D | D | C | A | B | C | D | B |

Question 1 [1.1]

D

-1 – (-12) = -1 + 12

= 11

Question 2 [1.3]

B

3

Question 3 [1.4]

D

-5 + (3  -2) + 6 = -5 – 6 + 6

= -5

Question 4 [1.4]

D

 9 – 4 × -3

= 9 + 12 = 21

Question 5 [1.5]

C

32 + (-4)2

= 9 + 16 = 25

Question 6 [1.5]

A

26 ÷ 22 = 26 – 2

= 24

= 2 × 2 × 2 × 2 = 16

Question 7 [1.6]

B

10 + 50 = 1 + 1

= 2

Question 8 [1.6]

C

(3 × 4)2 = 122

= 12 × 12

= 144

Question 9 [1.4]

D

4 × 4 × 4 × 4

= 42 × 42= 44

= 256

Question 10 [1.3]

B

Each subsequent number is ÷ -3

-9 ÷ -3 = 3

Multiple-choice total marks: 10

Short answer section

Question 11 2 marks [1.1]

(a) -9 (b) +400

Question 12 2 marks [1.1]

12, 3, 0, -4, -5

Question 13 5 marks [1.4]

(a) -2 + (-3) – (-5)  
= -2 – 3 + 5 = 0

(b) -2 × 10 = -20

(c) (-1)2 + (3)2    
= 1 + 9 = 10

(d) (-1)2 – (2)2  + (-3)2= 1 – 4 + 9 = 6

(e) 54 ÷ -6 = -9

Question 14 4 marks [1.1]

(a) Tuesday -11 °C

(b) Thursday 2 °C

(c) From Tuesday to Wednesday, a rise of 12 °C

Question 15 2 marks [1.2]

Loss for each squash racquet is -$98 + $60 = -$38

Loss for 15 squash racquets is 15 × -$38 = -$570. The loss for the store is $570.

Question 16 2 marks [1.2]

Four Bs, one E, one F

4 × -2 + 7 – 3

= -8 + 7 – 3 = -4

Question 17 2 marks [1.3]

-$2140 ÷ 4 = -$535

Question 18 2 marks [1.3]

-$2 220 000 ÷ 12 = -$185 000

Question 19 2 marks [1.3]

From 6 pm to 2 am the next day is 8 hours. The temperature change is a drop of   
12 °C – (-12 °C) = 24 °C . This can also be expressed as -24 °C. The average change in temperature per hour = -24 °C ÷ 8 hours = -3 °C per hour.

Question 20 4 marks [1.4]

|  |  |
| --- | --- |
| (a) 15 – 19 × -2 + (-2)2 = 15 + 38 + 4  = 57 | (b) -2 × -11 – (-24 ÷ -3) +(-4) = 22 – 8 – 4  = 10 |

Question 21 3 marks [1.4]

4 × -$6 million + 8 × $2 million

= -$24 million + $16 million = -$8 million

The company made a loss of $8 million for the year.

Question 22 4 marks [1.5]

|  |  |
| --- | --- |
| (a) Method 1 (-3)2  (3)3 = 9 × 27 = 243  Method 2 (-3)2 × (3)3 = 32  × 33 = 3(2 + 3) = 35 = 3 × 3 × 3 × 3 × 3 = 243 | (b) (23  74) ÷ (22  73) = 2(3 - 2) × 7(4 - 3) = 21 × 71 = 2 × 7 = 14 |

Question 23 5 marks [1.6]

(a) 

(b)   


(c) (32)3 = 3(2 × 3)   
= 36   
= 3 × 3 × 3 × 3 × 3 × 3   
= 729

Question 24 2 marks [1.6]

180 = 3 × 3 × 5 × 2 × 2

= 32 × 5 × 22

Short answer total marks: 41

Extended answer section

Question 25 5 marks [1.1]

(a) +9, -4, +3, -7

(b) travelled up 1 floor

(c) +1

(d) 9 floors down, 4 floors up, 3 floors down, 7 floors up

(e) -9 + 4 – 3 + 7 = -1 She ended up one floor below ground.

Question 26 4 marks [1.1]

(a) 0 + (-30) + (+12) + (-17)

(b) -35 m, or 35 m below the surface of the water

(c) -18 + (-7) + (+12) = -13 m, or 13 m below the surface of the water

(d) The second submarine is 22 m above the first.

Extended answer total marks: 9

TOTAL test marks: 60