Hillcrest High School

Grade 9

TECHNOLOGY

JUNE 2025

MARKS: 100 **EXAMINERS:** Mrs L. Gordon& Mrs A. Stols

TIME: 1 Hour 30min **MODERATOR:** Mrs T. Tonkin

MEMORANDUM

INSTRUCTIONS

1. The question paper consists of 6 questions and 8 pages including the cover page.
2. Question 6 and the Computer Literacy questions are attached to your answer booklet.
3. Write your name and grade clearly and neatly in the space provided on the answer sheet.
4. Technological based answers must be written.
5. All drawings/sketches must be completed using a sharp pencil and drawing instruments unless otherwise instructed.
6. Marks will be deducted for untidy work especially drawings/sketches.

QUESTION 1 SHORT QUESTIONS **[30]**

1.1. 1.1.1. D (10)
1.1.2. D
1.1.3. D
1.1.4. C
1.1.5. A
1.1.6. D
1.1.7. C
1.1.8. A
1.1.9. B
1.1.10. D

1.2. 1.2.1. E (10)
1.2.2. G
1.2.3. J
1.2.4. A
1.2.5. I
1.2.6. H
1.2.7. D
1.2.8. C
1.2.9. F
1.2.10. B

1.3. 1.3.1. T (10)
1.3.2. T
1.3.3. T
1.3.4. F
1.3.5. T
1.3.6. T
1.3.7. F
1.3.8. F
1.3.9. F
1.3.10. T

QUESTION 2 BEAM STRUCTURES **[5]**

A – I-beam
B – U-beam
C – L-beam
D – T-beam
E – Square beam

QUESTION 3 HYDRAULICS **[15]**

3.1. 3.1.1. $Pressure = \frac{Force}{Area}$ (3)

$= \frac{1000N}{20\,m^2}$

$= 50N/m^2$

3.1.2. Input force = Pressure x Area (2)

$= 50N/m^2 \times 5m^2$

$= 250N$

3.2. MA $= \frac{Load}{Effort}$ (2)
$= \frac{15\ 000N}{3\ 000N}$
= 5

3.3. A – Handle (3)
B – Resivour
C – One-way valve

3.4. Hydraulic jack, tipper truck, TLB, Bulldozer, rubbish truck (any 3 examples) (3)

3.5. ADVANTAGES (one) (2)
- can be used in hard-to-reach places
- small force multiplied
Control movement precisely
Force transferred directly and immediately
DISADVANTAGES (one)
- high pressure in the system is dangerous to work with
- Very expensive
- need strong heavy parts and coupling to withstand high pressure

QUESTION 4 PULLEY AND CLEAT SYSTEMS [20]

4.1. A – Wheel (4)
B – Rope
C – Direction
D – Force

4.2. 4.2.1. A – Compound pulley (2)
B – Block & Tackle pulley
4.2.2. B. There are more falls therefore more Mechanical Advantage. (2)
4.2.3. Effort = $\frac{Load}{Number\ of\ falls}$ (2)
$= \frac{300kg}{3}$
= 100kg

4.3. 4.3.1. A – Cam (3)
B – Jam
C – Clam
4.3.2. A cleat secures a rope by pinching it between or locking it around two pieces of metal or plastic. (2)
4.3.3. Secure a ship to the dock. Secure window blinds, secure a flag, mountain climbing equipment. (1)

4.4. If drawn as a systems diagram -1 mark (4)
1. The rider applies pressure to the brake lever
2. This pulls the cable tight, and pulls the two calipers together
3. The brake pads are squeezed against the rim of the wheel
4. This causes the bicycle to stop.

QUESTION 5 **DRAWING** **[10]**

5.1. B
5.2. C
5.3. A
5.4. C
5.5. D

QUESTION 6 **DRAWING** **[20]**

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COMPUTER LITERACY [10]

1. 1.1. Insert (5)
   1.2. Design
   1.3. References
   1.4. Home
   1.5. Layout

2. (5)