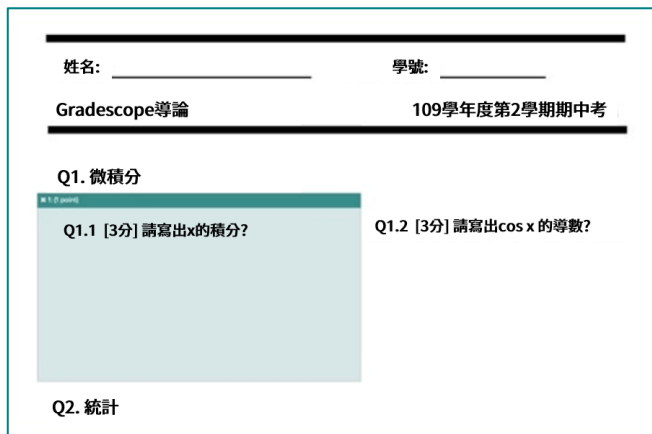
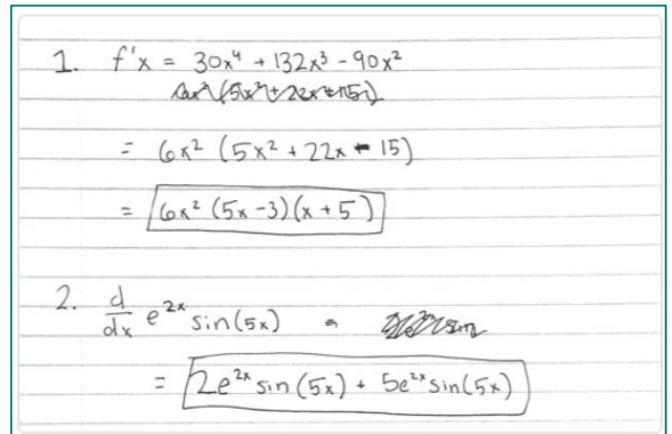


適用作業類型

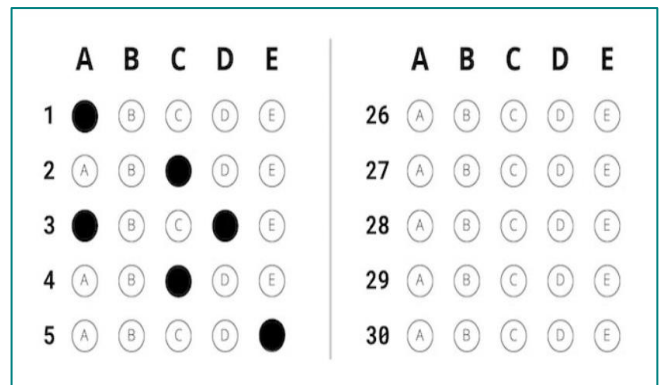
① **考試**：教師發布指定作答區域的試題，回收掃描學生試卷後批改。



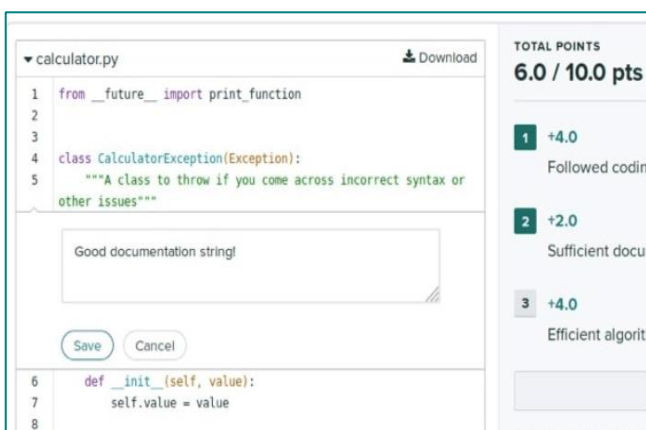
② **作業/題組**：學生自行標記作答區域，可使用手機拍照或掃描方式繳交。



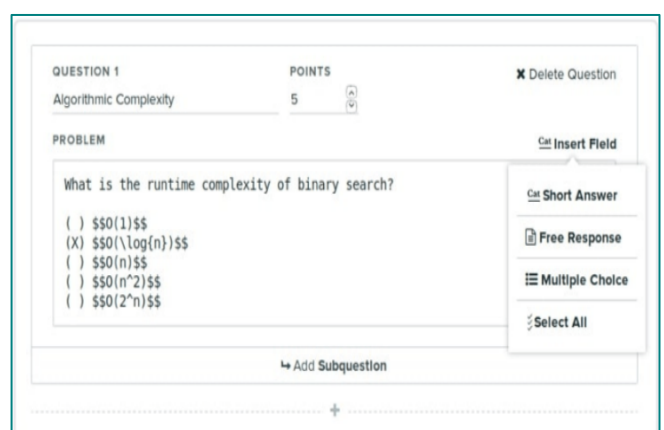
③ **答案卡**：學生下載專用答案卡填答。可由學生自行上傳或由教師掃描上傳；將自動依據教師設定的正確畫記批改計分。



④ **程式碼**：教師以先寫好的自動批改程式或人工審閱方式批改學生的程式碼。



⑤ **線上作業**：教師直接在 Gradescope 出題，學生登入系統內作答。



批改範例：程式語言

calculator.py

```
1 from __future__ import print_function
2
3
4 class CalculatorException(Exception):
5     """A class that is thrown in case of incorrect syntax or other issues."""
6     def __init__(self, value):
7         self.value = value
8
9     def __str__(self):
10        return repr(self.value)
11
12
13 class Calculator(object):
14     """Infix calculator REPL
```

Great documentation string!

Save Cancel

```
15
16     Parses and evaluates infix arithmetic with the 4 basic operators
17     and parentheses. Must obey order of operations.
18     """
19
20     def read(self):
21         """Read input from stdin"""
22         return raw_input('> ')
23
24     def eval(self, tokens):
25         """Eval
26         tokens
27         op1 = i
28         operato
29         op2 = i
30         if oper
31         ret
32         elif or
```

AUTOGRADER SCORE

16.0 / 20.0 pts

FAILED TESTS

0.0 / 2.0 Test evaluating 1+1 (no whitespace)

0.0 / 2.0 Test evaluation 1 + 1 * 8

STYLE - MANUAL GRADING

6.0 / 10.0 pts

1 +4.0

Followed code style guidelines

2 +2.0

Sufficient documentation

3 +4.0

Efficient algorithm

6. (10 pts) Refer to the previous problem for an explanation of the context of this code. Fill in the missing line.

It can be solved with one line but there are multiple possible approaches. If your solution requires two or three lines, fill in those lines above and below the blank as needed.

```
/** replace last factor with the value i */
public void replaceLastFactor(int i) {
```

```
    int prev = data.set(data.size()-1, i);
```

```
}
```

TOTAL POINTS

5.0 / 10.0 pts

1 +10.0

Correct:
this.set(this.size()-1, i)
OR
set(size()-1, i)

2 +10.0

Correct:
this.remove(this.size()-1)
this.addFactor(i)

3 +5.0

Partial credit: An answer that has the form
x.set(x.size()-1, i)
but where x is some variable that is either out of scope, or an inappropriately declared instance variable.

4 +5.0

Partial credit for answer with logic errors:

```
this.add(this.size()-1, i)
This will add the factor rather than
```

Question and rubric courtesy of
Phill Conrad



批改範例：數學

(c) Suppose that $f(x)$ is a continuous function where $\int_2^7 f(x) dx = 11$.

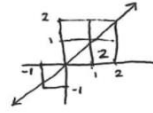
For the following expression, evaluate it or state that there is not enough information.

$$\int_2^{-1} (f(x) + x) dx + \int_{-1}^7 f(x) dx$$

$$\int_2^{-1} f(x) dx + \int_2^{-1} x dx + \int_{-1}^7 f(x) dx$$

$$\int_2^7 f(x) dx + \int_2^{-1} x dx$$

$$11 + 2 - \frac{1}{2} = 11 + 1.5 = 12.5$$



TOTAL POINTS

0.5 / 1.0 pts

1 -0.0

Correct

2 -0.5

You had trouble calculating

$$\int_{-1}^2 x dx$$

Now that we have spent some time practicing how to integrate, go back and look over this.

3 -0.5

$$\int_2^{-1} x dx \neq \int_{-1}^2 x dx$$

Why not? What is the big difference? Can you use the net change lens to justify this?

4 -1.0

There actually is enough information. The integrals up.

批改範例：物理

6. (10 points) A 475 nm wavelength laser produces a diffraction pattern using a diffraction grating of slit spacing D . What is the range of values D can have that will produce exactly 15 bright spots on a screen 10.0 meters away.

$$m < D < m$$

$$m = 7 \quad D \sin \theta_m = m \lambda$$

$$\lambda = 475 \times 10^{-9} \text{ m}$$

$$L = 10 \text{ m}$$

$$m = 7 \quad D \sin \theta_7 = 7(475 \times 10^{-9}) \text{ m}$$

$$= 3.325 \times 10^{-6} \text{ m}$$

$$\text{let } \theta_7 = 90$$

$$D = 7(475 \times 10^{-9}) \text{ m}$$

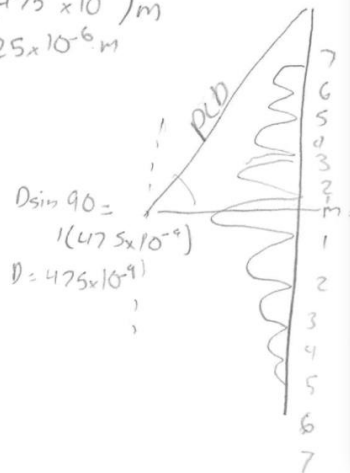
$$= 3.325 \times 10^{-6} \text{ m}$$

$$\sin 90 = \frac{y \text{ m}}{PLD}$$

$$y_7 = 3.325 \times 10^{-6} \text{ m}$$

$$\tan \theta = \frac{3.325 \times 10^{-6} \text{ m}}{10 \text{ m}}$$

$$\theta = 1.905 \times 10^{-5}$$



TOTAL POINTS

8.5 / 10.0 pts

1 +2.0

Problem setup (diagram or explanation)

2 +2.0

$m = 7 \rightarrow 15$ fringes

3 +1.0

$m \lambda = d \sin \theta$

4 +2.0

$\sin 90 \leq 1 \rightarrow$ limit to fringes

5 +1.5

Identify the lower limit $3.33 \mu\text{m}$

6 +1.5

Identify the height limit $3.8 \mu\text{m}$

7 +2.0

Clear explanation but incorrect answer

8 +0.0

Incorrect

Question and rubric courtesy of
Kenneth Walsh



批改範例：生物

10) Many bacteria that are able to metabolize citrate (as seen in the Krebs cycle) produce negative results in the citrate test. Why? Be specific. (8 points) [max 4 sentences]

The citrate test doesn't test for the Krebs cycle. It tests for citrate permease. Citrate permease is found in bacteria that can undergo citrate fermentation, and can survive solely on citrate as a carbon source. This has nothing to do with the TCA cycle, which is why many TCA cycle bacteria test negative for the citrate test. Only bacteria with citrate permease will grow on the citrate test medium.

TOTAL POINTS

6.0 / 8.0 pts

1 +2.0

Citrate (citric acid) is the first intermediate of the Krebs Cycle [where it is ultimately catabolized to CO₂ and oxaloacetic acid.

2 +2.0

However, the citrate test does not detect the ability of an organism to perform the Krebs cycle.

3 +2.0

It detects the ability of the organism to obtain citrate from the environment and use it.

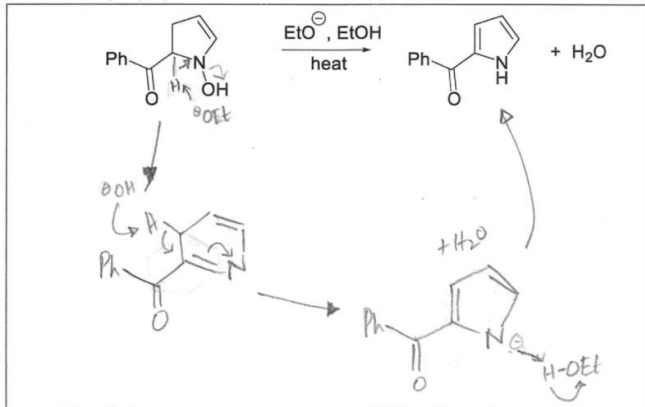
4 +2.0

Thus, an organism could synthesize its own citrate in the Krebs cycle, but environment and use it.

4 +2.0

批改範例：化學

6.D. The cyclized intermediate then undergoes an E1cB mechanism and a tautomerization to yield the final pyrrole product. Show the mechanism below. (10 pts)



TOTAL POINTS

5.0 / 10.0 pts

1 +10.0

Correct: make enolate, kick out hydroxide (e1cb), make enamine anion, neutralize.

2 +2.5

Partial: make enolate

3 +2.5

Partial: kick out hydroxide (like e1cb)

4 +2.5

Partial: make enamine anion

5 +2.5

Partial: neutralize nitrogen

6 +0.0

Incorrect

7 -5.0

Penalty: positively charged intermediate

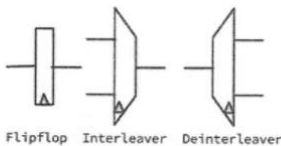
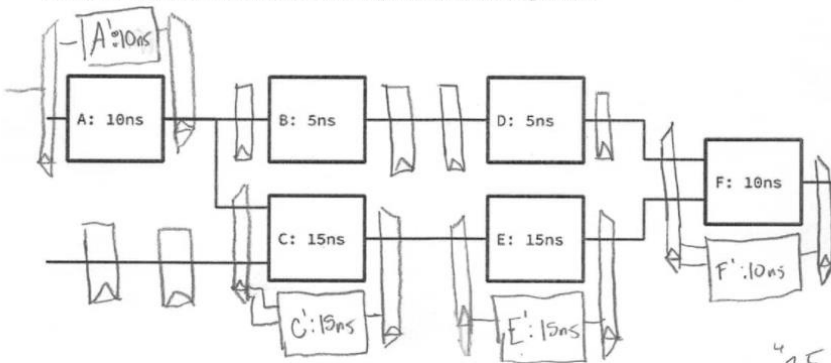
Question and rubric courtesy of
Pete Marsden



批改範例：工程

Question 2 (points total):

Pipeline the circuit below. Optimize throughput (inputs processed per ns) and cost (\$). You may add any number of the blocks in the circuit (A-F), edge-triggered flipflops, edge-triggered interleavers, an edge-triggered de-interleavers (see figure below). No other modifications are permitted. The latency of flipflops, interleavers, and de-interleavers is 0ns. The cost of any item (whether already there or one you add), regardless of which item is \$1. You have a total budget of \$25 and the components already drawn below cost \$6. Draw your answer on top of the diagram below if at all possible.



$$\text{Cost} = \$6 + \$18 = \$24$$

$$\text{Latency} = 7.5 \times 8 = 60\text{ns}$$

$$\text{Throughput} = \frac{1}{7.5\text{ns}}$$

(If we add a flip at the output, throughput will be the same but latency = 7.5 * 9.)

TOTAL POINTS

24.0 / 33.0 pts

- 1 +6.0 Correct interleaving concept
- 2 +6.0 Correct interleaving of multiple inputs
- 3 -3.0 Abused interleavers (too many outputs/inputs)
- 4 +6.0 Well-formed ("balanced" latch count)
- 5 +8.0 Correct extra stages for long-latency interleaved approach
- 6 -4.0 Not including latch for each input / extra latches if assuming interleavers latch
- 7 +6.0 Correctly on budget

Question and rubric courtesy of
Mattan Erez

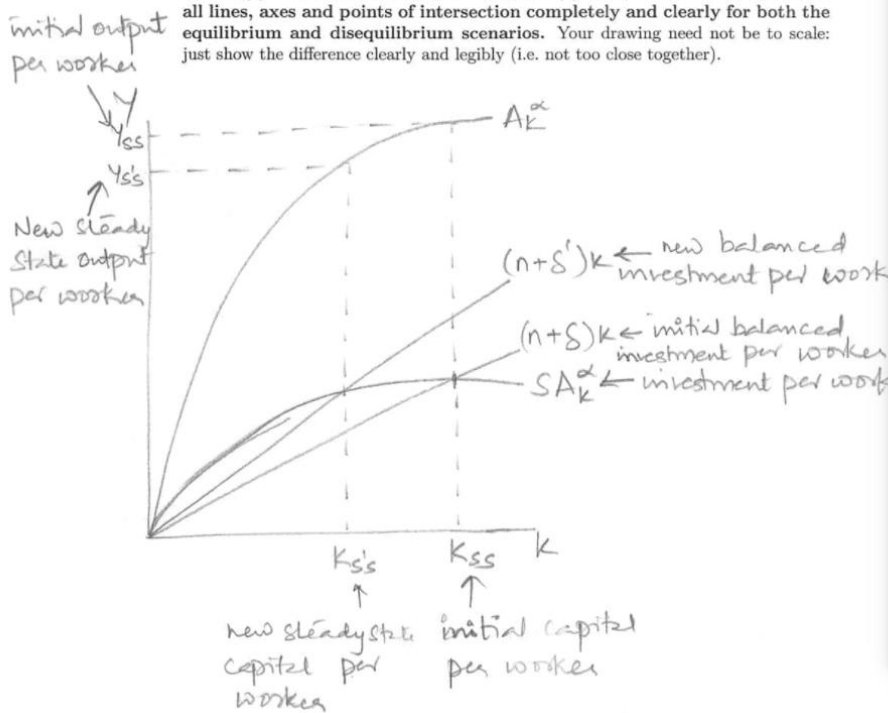


批改範例：經濟

5. "Planned obsolescence or built-in obsolescence in industrial design is a policy of planning or designing a product with an artificially limited useful life, so it will become obsolete, that is, unfashionable or no longer functional after a certain period of time." Consider the implications from the perspective of the Solow model of a shock that reduces the useful life of all products across an economy and, thus, increases the depreciation rate. Specifically,

- (a) (5 pts) Draw the diagram for the pre-shock equilibrium state.
- (b) (3 pts) On the diagram for Question 5a above, draw the curve(s) corresponding to the depreciation-rate shock.

Indicate the (1) initial capital per worker, (2) output per worker, (3) investment per worker, (4) balanced investment per worker, and (5) steady states. Draw and label all lines, axes and points of intersection completely and clearly for both the equilibrium and disequilibrium scenarios. Your drawing need not be to scale: just show the difference clearly and legibly (i.e. not too close together).



Question and rubric courtesy of
Ray Hawkins

TOTAL POINTS
7.0 / 8.0 pts

- 1 -0.0
Correct
- 2 -0.5
initial balanced investment incorrect
- 3 -0.5
initial actual investment incorrect
- 4 -0.25
final balanced investment incorrect
- 5 -0.25
final actual investment incorrect
- 6 -0.5
final output or capital per worker incorrect
- 7 -1.0
initial output or capital per worker incorrect
- 8 -1.5
Missing or incorrect shift in balanced

