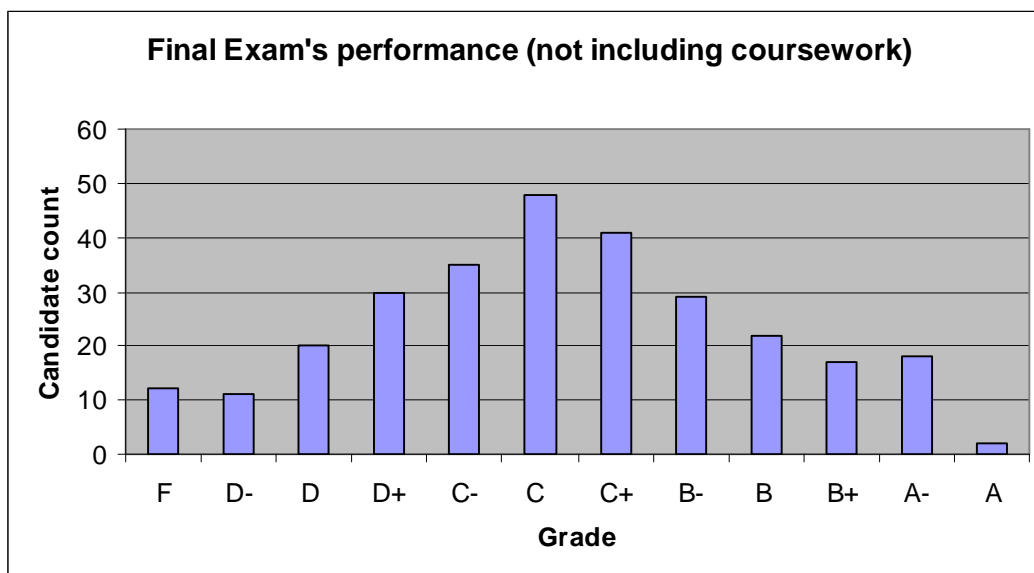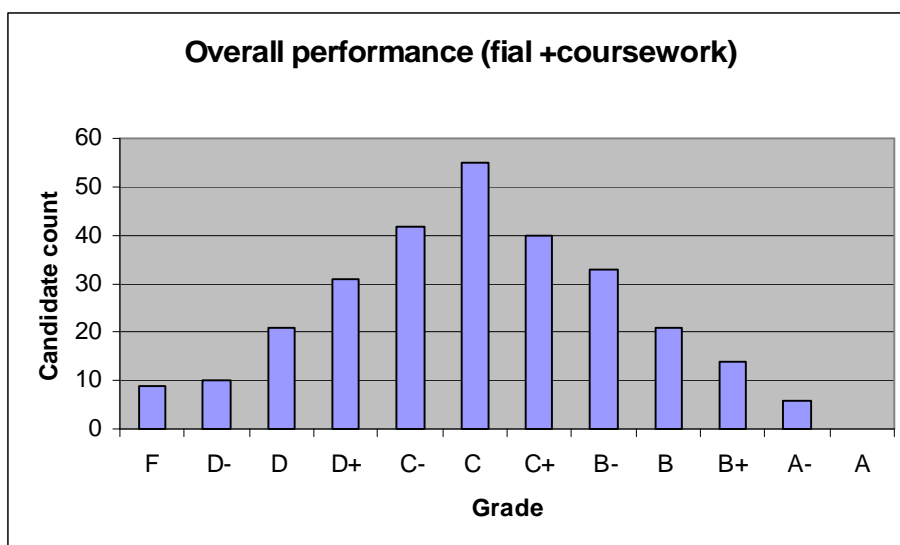**ZCT 104 Sessi 06/07, Semester II Final exam performance (not including coursework marks)**

Grades	student counts
F	12
D-	11
D	20
D+	30
C-	35
C	48
C+	41
B-	29
B	22
B+	17
A-	18
A	2
total	285
% of candidate with C- or below	37.9
average	45.5

Final Exam's performance (not including coursework)

ZCT 104 Sessi 06/07, Semester II, Overall performance (Final + Coursework)

Grades	student counts
F	9
D-	10
D	21
D+	31
C-	42
C	55
C+	40
B-	33
B	21
B+	14
A-	6
A	0
total	282
% of candidate with C- or below	40.1
average	43.9

Overall performance (fial +coursework)

Comment

Comparing with the previous year, e.g. 05/06 (see
http://www2.fizik.usm.my/tlyoon/teaching/ZCT104_05_06/overallperformance.pdf), this year's
overall performance has dropped tremendously. The percentage of candidate with C- and below
has increases from 19.1% in 05/06 to this year's figure of 40.1%. The main reason is due to the
very poor coursework performance. In 05/06, only 4.3% of candidates got C- or below. But for
this semester, the coursework grade was bad, with 50.4% getting C- or below. It seems that this
year's open book quizzes have rendered difficulty for the candidates to earn their grades.

Dear class ZCT 104, Sessi 06/07, Semester II,

I find this paragraph of statement written in the final exam answer scripts (by student with the index number 47958). I thought it would be kind of fun to share it with the rest of the class who bother to browse this overall performance.

> To SIR YooN,
>
>   SIR. Really don expect U to give these 2 tutorial question.
>
>   (although u gave tips = tutorial)
>
>   For me, this 2 Ques is really xxxx.
>
> I though wil be the other 3.
>
>   Shal never spot ques.

Well. I thank student 47968 for dropping me this note. What can I say?
My response is: "You have learned the lesson through the hard way".

<u>My comment on the final exam and students' performance:</u>
I must say that the overall performance is disappointing.
It seems that students are highly inflexible in their way of thinking. To be specific, they seem to be able to answer only standard questions of which they have worked through or seen their solution before. For even the simplest question that is 'not standard' many of them failed to exercise their mind to work out the straight forward answer, presumably because they can only answer questions whose answers have been memorized.

Take for example, Question 1 (a) in the structure part: show that it reduces to Wein's law in the short wavelength limit. What you need to show is that in the limit of short wavelength, i.e. when $\lambda \to 0$, the term in the Planck's law $e^{\frac{hc}{\lambda kT}} - 1$ simply become $e^{\frac{hc}{\lambda kT}}$ because the term $e^{\frac{hc}{\lambda kT}}$ becomes much larger than 1. Or in other words, as the term $\frac{hc}{\lambda kT}$ becomes very large when λ becomes small, $e^{\frac{hc}{\lambda kT}}$ becomes very large, thus 1 can be ignored in comparison to $e^{\frac{hc}{\lambda kT}}$. As an illustration of a typical absurd answer by a candidate:

    "… when λ become very short, the $hc/\lambda kT$ will become ≈ 0…" (I nearly pengsan)

In the same question, students are asked what a and b is. To obtain the answer, simply compare the Wein's law and the Planck law in the limit $\lambda \to 0$,

$$R(\lambda, T) = \frac{2\pi hc^2}{\lambda^5 \left(e^{hc/\lambda kT} - 1 \right)}$$ (Planck's law) c.f. $$R(\lambda, T) = \frac{a e^{-b/\lambda T}}{\lambda^5}$$ (Wein's law).

In this limit, the Planck's law reduces to $R(l,T) = \dfrac{2phc^2}{l^5 e^{\frac{hc}{lkT}}} = \dfrac{2phc^2 \cdot e^{-\frac{hc}{lkT}}}{l^5}$. By directly comparing it to

the Wein's law, immediately we can identify $a \equiv 2phc^2$, $b \equiv hc/k$. To do this question, there is

really not much thing to calculate or to memorise but simple thinking. You agree?

Based on the answers written on their answer scripts submitted, one tends to have the impression that these students have very poor understanding of what is being taught in the course. In addition many also did not able to show even simple mathematical must-know such as performing simple integration by substitution.