Semester 2 Myplace assessments

ALL ASSESSMENTS WILL BE ONLINE AND DELIVERED THROUGH MYPLACE USING THE MYPLACE QUIZ FACILITIES.

Exams should contain 2 hours' worth of content and have a 3 hour duration to allow for internet issues, etc.

Additional time requirements as indicated on Pegasus can be applied using the user overrides facility on Myplace:
https://support.myplace.strath.ac.uk/display/MS/Additional+Requirement+Adjustments
This must be done for each assessment and *each student* individually.

All Myplace assessments should have sections A and B clearly indicated.

All questions should be set using the Myplace quiz environment.

Please give students the opportunity to familiarise themselves with the type of Myplace questions you will be using by giving examples in tutorials, Continuous Assessments etc.

Level 1 – 3 assessments should be set such that all questions can be answered in the Myplace quiz environment (i.e. students should not be asked to upload scans of their answers).

Level 4 & 5 assessments should be set such that all questions in section A are answered in the Myplace quiz environment (without students uploading scans of their answers) and where possible the same approach should be applied for the more in-depth questions in section B. Due to the advanced nature of level 4 and 5 module material, where necessary some of the questions (or parts of a question) can be set such that students can upload scans of their answers. Such uploads should be done as part of the quiz using the "essay"-type question (other options may be available).

Level 3 – 5 assessments cannot be entirely multiple choice. We also encourage that Level 1 & 2 are not solely multiple choice as well.

Setting assessments using the Myplace quiz facility will require some re-working of the way that we normally write exam questions. For example, longer questions or numerical calculations should be broken into smaller parts. There should not be any high-value questions requiring a single numerical answer (typically no more than 2-3 marks and exceptionally up to a maximum of 5). *Questions requiring numerical answers should be set using **random numbers** (as indicated by the IoP in their guidance for accreditation) and have an appropriate tolerance set to allow for rounding.*

The stack question type is the best for random numbers and also allows the option for multi-part questions and the award of partial credit, as well as the checking of units.

A number of different question types is available, as shown in the list below.
The Myplace help pages are quite helpful. Two in particular that may be of use are:

- Add a Quiz - https://support.myplace.strath.ac.uk/display/MS/Add+a+Quiz
- Quiz question types - https://support.myplace.strath.ac.uk/display/MS/Quiz+Question+Types

Question Type	Description	Moodle Documentation Link
True / False	Simplest question type, true false answers	More info
Multiple choice	Students select answers and can allow one or more correct answers	More info
Numerical	Numerical answer with acceptable ‘range’ and can also add in use of 'units'	More info
Short answer	Students type short answer and will receive marks depending on whether it matches the listed acceptable answers written by the tutor	More Info
Calculated (simple)	Allows calculated questions which substitute random values into the question’s equation Other versions: Calculated complex – more in depth control Calculated multiple choice	More info
Stack	Third party maths specific plug in Github link	More Info
Coderunner	Third party plug in that runs code in a variety of language to test if it was correct	More Info
Essay/text-based answers	The only question type not marked automatically. Long form answers	More Info
Drag and drop into text	Drag correct text answer(s) into a sentence Other versions: Drag and drop onto marker Drag onto image	More Info
Missing words	Sentences with drop down selection of words for missing word	More Info

Question Type	Description	Moodle Documentation Link
Description	Not assessed, just a way to present extra information to students	This can be used to indicate Section A & B, for example.

Some Examples

There are some examples of previous exams and different question types on the Physics Playgroud page: https://classes.myplace.strath.ac.uk/course/view.php?id=25066

A gas at temperature 273 K is injected into a metal cylinder at temperature 367.5 K. Over time the gas temperature increases to that of the cylinder. Calculate the percentage increase in the molecular flux of the gas onto the surface of the cylinder once the warming process is complete. **Give your answer to 1 decimal place.**

Answer:

Which of these statements describes a spontaneous process?

Select one:

- Heat flows from a cold to a hotter system when the entropy of the universe increases.
- Heat flows from a cold to a hotter system and the entropy of the cooler system increases.
- Heat flows from a hot to a colder system and the entropy of the universe decreases.
- Heat flows from a hot to a cooler system and the entropy of the universe increases.
- Heat flows from a hot to a cooler system and the entropy of both systems increase.

Which of the following statements are true?

Select one or more:

- [ ] The molecules of an ideal gas have zero mass while those of a real gas have a finite mass.
- [ ] Quantum effects cause a diatomic gas to have a temperature dependant heat capacity.
- [ ] In classical theory a diatomic gas has twice the heat capacity as a monatomic gas.
- [ ] An ideal gas cannot condense.
- [ ] An ideal gas and a real gas have the same number density at the same pressure and temperature.

1. A mass on a spring exhibits simple harmonic motion and the displacement of the mass, x(t) is quantified by the equation $x(t) = x_m\cos(wt + f)$, where all symbols have their usual meaning. Describe the mathematical steps that you would take to derive an expression for the acceleration. You are not expected to give the algebraic derivation but rather explain the nature of the steps.

   Ans) The acceleration is given by the second derivative of the displacement with respect to time. The differential of the displacement is taken with respect to time keeping f the initial phase constant to give the velocity. By keeping f constant it does not contribute to the differential. The expression for the velocity is then differentiated again to give the acceleration. As we have started with cos we end up with -cos.

2. A compound pendulum oscillates about its equilibrium position exhibiting simple harmonic motion which is a periodic process. A student attends a lecture every weekday at 10 am, which is also a periodic process. Explain why the student's attendance at the lecture cannot be described as simple harmonic motion.

   Ans) For a body to exhibit simple harmonic motion there must be a restoring force that is proportional to body's displacement from its equilibrium position that is always directed towards the equilibrium position. This results in a smooth continuous motion of the body about its equilibrium position. Although the student's attendance at the lecture is periodic the student's motion is not continuous.

3. Two blackbody radiators are held at temperatures T_1 and T_2 respectively. Explain how you would determine which temperature is highest, if the surfaces are too hot for the use of a thermometer?

   Ans) Measure the spectrum of the radiation produced by each blackbody. Then find the peak wavelength & apply Wien's law which states that the product of the peak wavelength and temperature is a constant. Hence the wavelength and temperature are inversely proportional such that the body with the highest temperature has the shortest wavelength.

4. Yes or No? Is it possible for two bodies to be in thermal equilibrium if they are not in contact with each other? Justify your answer.
   Ans) Yes the two bodies can be in thermal equilibrium if they are in thermal equilibrium with their surroundings. This is the zeroth law of thermodynamics.