Online summative assessment : ExamOnline

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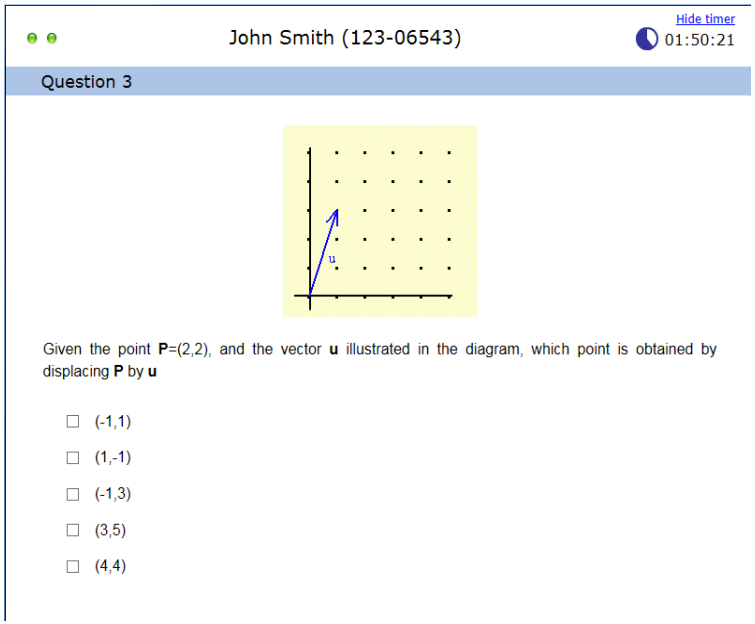
Online Examinations (e-Assessment)

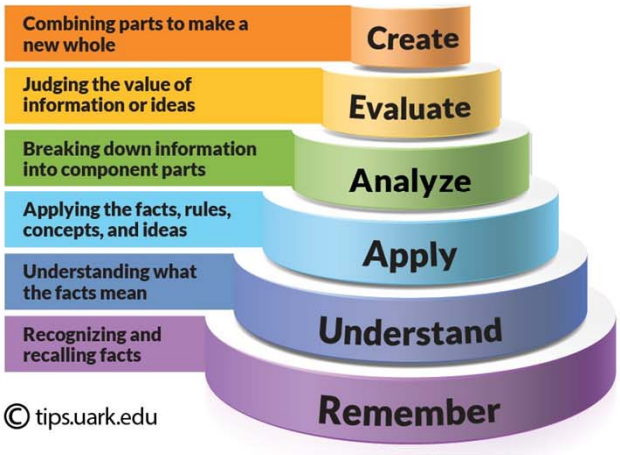
Advantages of e-Assessment

- Automatic marking
- Immediate feedback
- Increased flexibility



Question types :

- Item-banked, closed form, very often MCQ



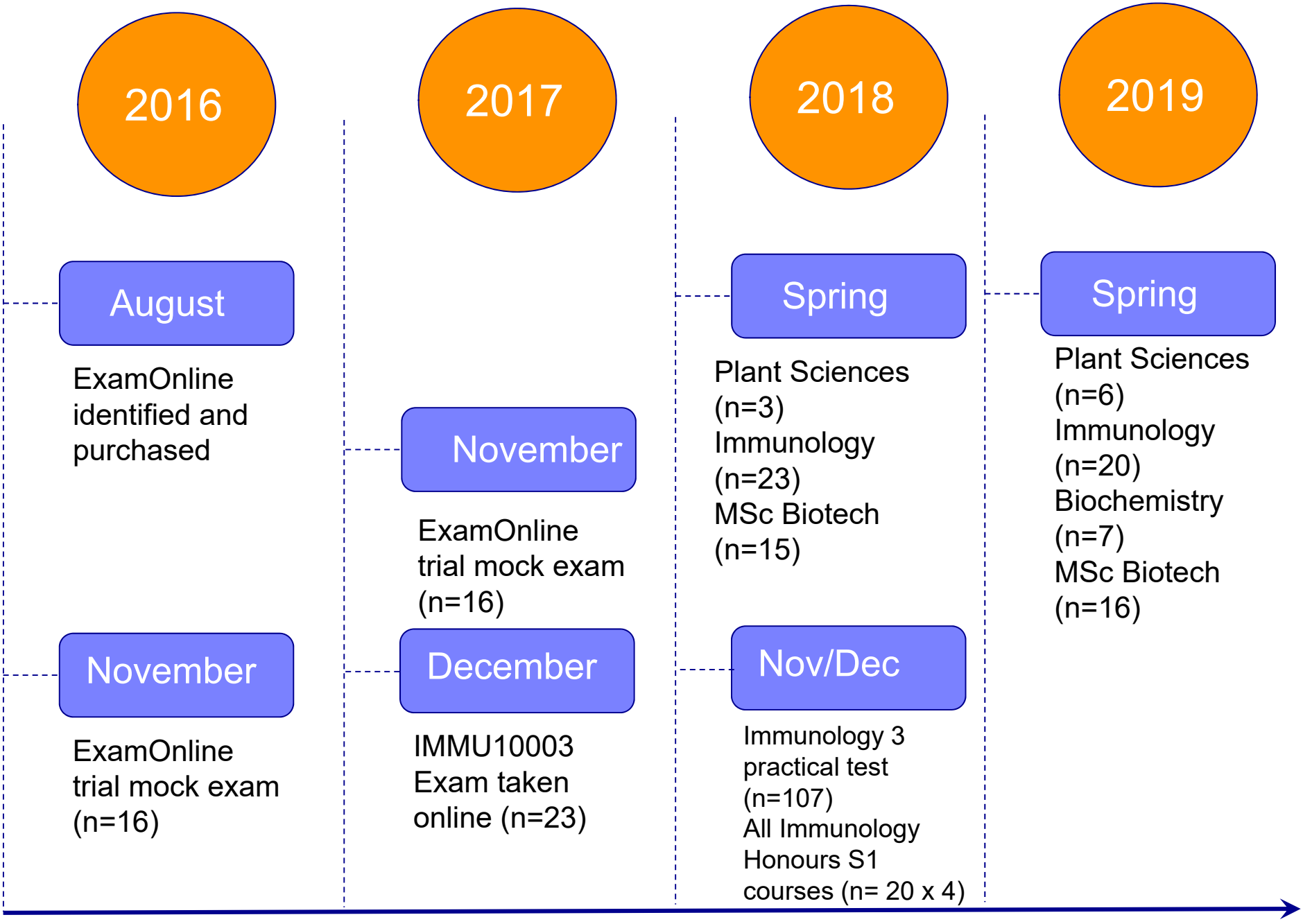
University Examinations

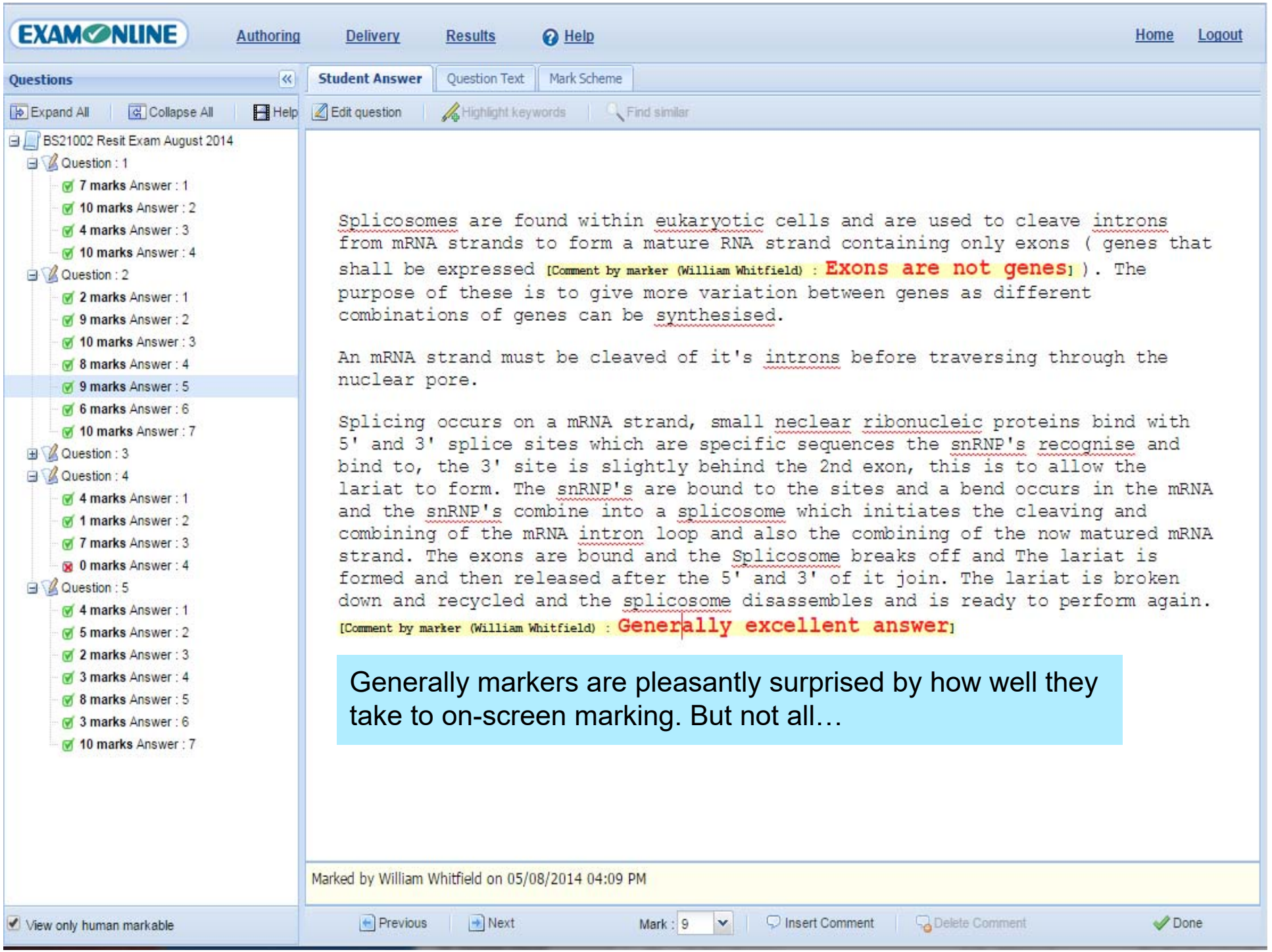
- Often consist of essay / extended answer / short answer questions
- Some questions require drawings and calculations as part of the process
- Require detailed human marking, often involving multiple markers

So there is a disconnect between e-Assessment platforms and the requirements of University examinations

THE ANSWER - EXAMONLINE

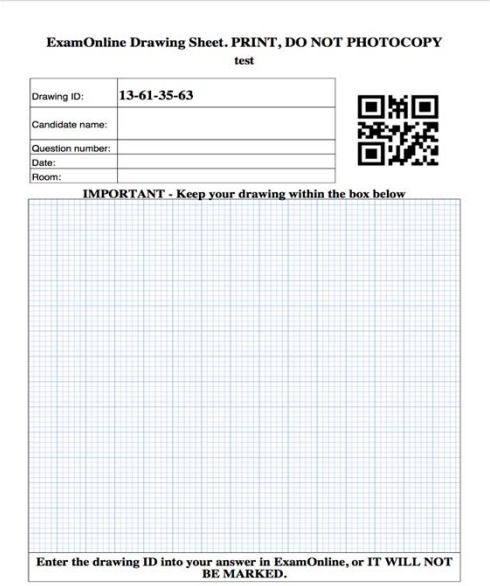
- Online assessment system specifically designed to deliver high stakes summative assessments
- Computer marked question types (multiple choice, true/false, best/worst, multiple answer, gap-fill etc.) … plus
- Specific support for University exams: human-marked extended answer questions, with sketches/diagrams.

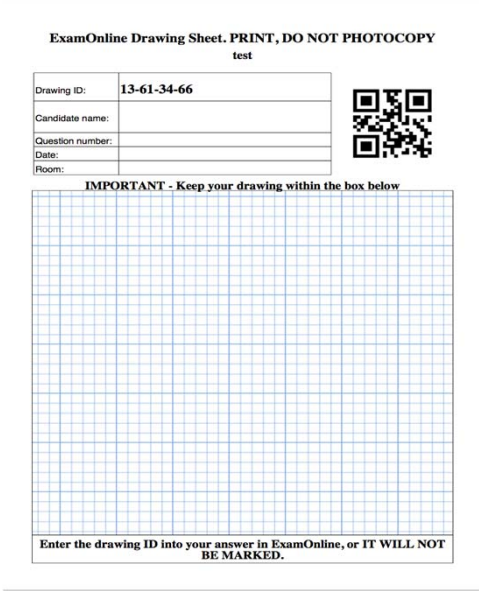

2016
2017
2018
2019
August
ExamOnline identified and purchased
November
ExamOnline trial mock exam (n=16)
November
ExamOnline trial mock exam (n=16)
December
IMMU10003 Exam taken online (n=23)
Spring
Plant Sciences (n=3)
Immunology (n=23)
MSc Biotech (n=15)
Nov/Dec
Immunology 3 practical test (n=107)
All Immunology Honours S1 courses (n= 20 x 4)
Spring
Plant Sciences (n=6)
Immunology (n=20)
Biochemistry (n=7)
MSc Biotech (n=16)


EXAMONLINE
Authoring
Delivery
Results
Help
Home
Logout
Questions
Student Answer
Question Text
Mark Scheme
Expand All
Collapse All
Help
Edit question
Highlight keywords
Find similar
BS21002 Resit Exam August 2014
Question : 1
7 marks Answer : 1
10 marks Answer : 2
4 marks Answer : 3
10 marks Answer : 4
Question : 2
2 marks Answer : 1
9 marks Answer : 2
10 marks Answer : 3
8 marks Answer : 4
9 marks Answer : 5
6 marks Answer : 6
10 marks Answer : 7
Question : 3
Question : 4
4 marks Answer : 1
1 marks Answer : 2
7 marks Answer : 3
0 marks Answer : 4
Question : 5
4 marks Answer : 1
5 marks Answer : 2
2 marks Answer : 3
3 marks Answer : 4
8 marks Answer : 5
3 marks Answer : 6
10 marks Answer : 7
Splicosomes are found within eukaryotic cells and are used to cleave introns from mRNA strands to form a mature RNA strand containing only exons (genes that shall be expressed [Comment by marker (William Whitfield) : Exons are not genes]). The purpose of these is to give more variation between genes as different combinations of genes can be synthesised.
An mRNA strand must be cleaved of it's introns before traversing through the nuclear pore.
Splicing occurs on a mRNA strand, small neclear ribonucleic proteins bind with 5' and 3' splice sites which are specific sequences the snRNP's recognise and bind to, the 3' site is slightly behind the 2nd exon, this is to allow the lariat to form. The snRNP's are bound to the sites and a bend occurs in the mRNA and the snRNP's combine into a splicosome which initiates the cleaving and combining of the mRNA intron loop and also the combining of the now matured mRNA strand. The exons are bound and the Splicosome breaks off and The lariat is formed and then released after the 5' and 3' of it join. The lariat is broken down and recycled and the splicosome disassembles and is ready to perform again.
[Comment by marker (William Whitfield) : Generally excellent answer]
Generally markers are pleasantly surprised by how well they take to on-screen marking. But not all…
Marked by William Whitfield on 05/08/2014 04:09 PM
View only human markable
Previous
Next
Mark : 9
Insert Comment
Delete Comment
Done

Hand Drawn Sketches/Diagrams

- Pre-printed sheets, each with a unique ID number, downloaded from ExamOnline
- Sheets are provided to candidates
- Candidates click on a button in the interface to insert a sketch, enter the ID from the paper.
- The number is checked for validity (Modulo 97,10 check digits) and then embedded in the answer.
- When the test is finished, the drawings are scanned, uploaded, and automatically matched to the candidate's answer – using QR code.


ExamOnline Drawing Sheet. PRINT, DO NOT PHOTOCOPY
test
Drawing ID: 13-61-35-63
Candidate name:
Question number:
Date:
Room:
IMPORTANT - Keep your drawing within the box below
Enter the drawing ID into your answer in ExamOnline, or IT WILL NOT BE MARKED.


ExamOnline Drawing Sheet. PRINT, DO NOT PHOTOCOPY
test
Drawing ID: 13-61-34-66
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Question number:
Date:
Room:
IMPORTANT - Keep your drawing within the box below
Enter the drawing ID into your answer in ExamOnline, or IT WILL NOT BE MARKED.


ExamOnline Drawing Sheet. PRINT, DO NOT PHOTOCOPY
test
Drawing ID: 13-61-33-69
Candidate name:
Question number:
Date:
Room:
IMPORTANT - Keep your drawing within the box below
Enter the drawing ID into your answer in ExamOnline, or IT WILL NOT BE MARKED.

Test1 Student (2012001)

Hide timer
00:44:26

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4.

SECTION B

Ubiquitin (Ub) is a small, globular protein, found throughout all eukaryotic cells, with its name derived from the word 'ubiquitous'.

a) Draw a sketch of a protein substrate attached to a chain comprising two ubiquitins, which are linked to each other via a Lys63 linkage.

b) Protein ubiquitylation is catalyzed via E1, E2 and E3 enzymes. Outline the reactions catalyzed by the E1 ubiquitin-activating enzyme.

[21 marks]

[See drawing labelled 16-18-48-39 when marking this answer] Delete

a)Ubiquitins have 3 forms - multi ubiquitin chains, monomeric poly ubiquitin chains and poly ubiquitin chains. The chain type affects the fate and function, which ubiqutin binding domain it will interact with and the chains confromation. For a chain to form with another UB must have an N terminal
b) E1(2 forms)actavating enzyme: The C terminal of carboxyl group of Ub is activated by E1 forming a mixed anhydride with AMP. The ub adenylate transfers Ub on to the cystein residue of E1 creating a UB-E1 thiloester. There is now an area free for a secound ub to de adenylatedThe E1 must transfer the first E1 onto an E2 to continue with congugation.
Causes the MG-ATP to fold up onitself creating a 2 lobed structure. E1 causes the transfer of Mg-ATP to a serine or theronine residue in the substrate. Specifity is given by the C termial at 3+ position.

Submit

Top of answer

Word count: 150

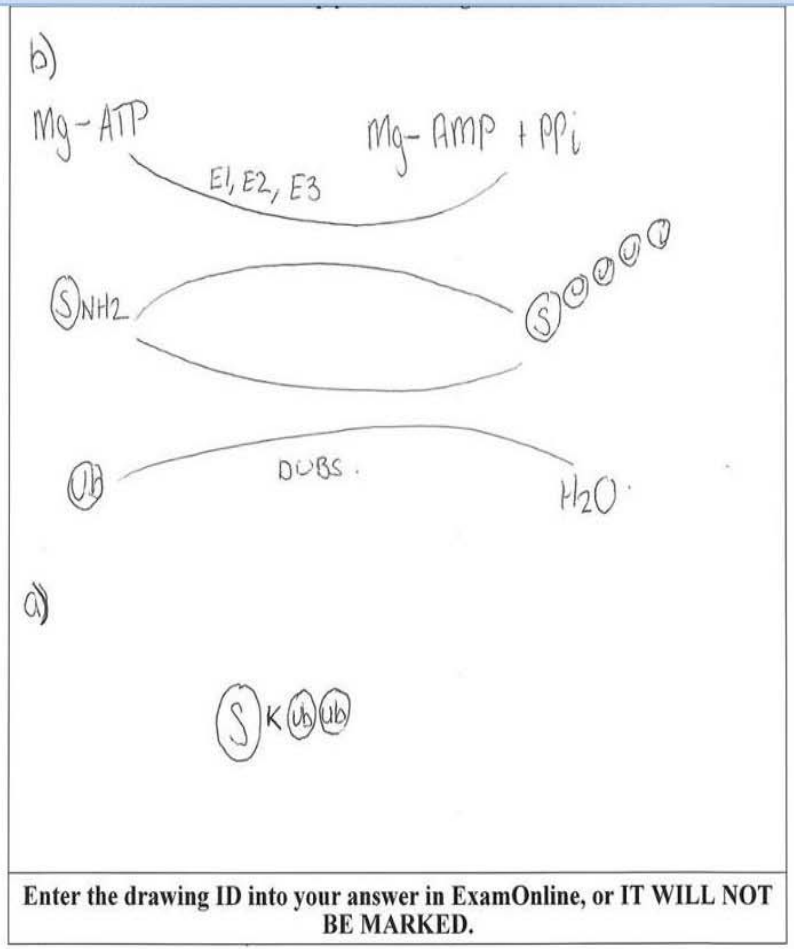
Bottom of answer

Questions

Student Answer | Question Text | Mark Scheme

Expand All | Collapse All | Help | Edit question | Highlight keywords | Find similar

- BS32006 Resit Exam August 2014
  - Question : A1
  - Question : A2
  - Question : B1
  - Question : B2
    - **15 marks** Answer : 1
    - **18 marks** Answer : 2
    - **9 marks** Answer : 3
  - Question : C1
  - Question : C2



Enter the drawing ID into your answer in ExamOnline, or IT WILL NOT BE MARKED.

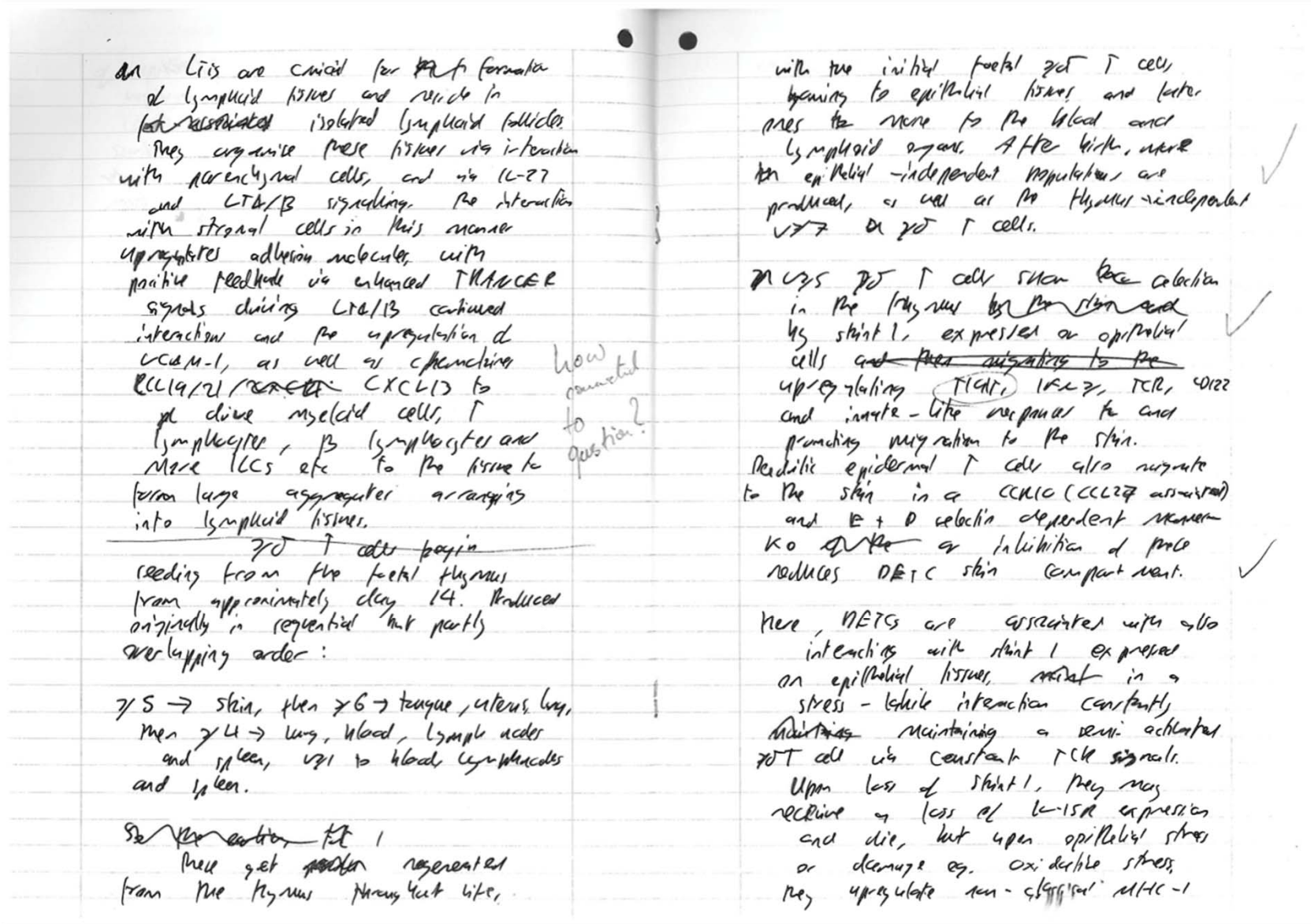
a) Ubiquitins have 3 forms - multi ubiquitin chains, monomeric poly ubiquitin chains and poly ubiquitin chains. The chain type affects the fate and function, which ubiqutin binding domain it will interact with and the chains confromation. For a chain to form with another UB must have an N terminal Met1 [Comment by marker (Carol MacKintosh) : **this is only true for linear chains**] to which other ub can attach covalantly. Homotypic polyubiquitin chains only have a single linkage type where as heterotypic can have mixed type or a branched type chain. (ub extended at 2 or more lysines) Lys63 has an extended confromation (similar to linear chains) exopsing the lle44.

Marked by Carol MacKintosh on 06/08/2014 04:36 PM

View only human markable

Previous | Next | Mark : 18 | Insert Comment | Delete Comment | Done

A typical Edinburgh Biology student's written answer…



LTis are crucial for the formation of lymphoid tissues and reside in isolated lymphoid follicles. They organise these tissues via interaction with mesenchymal cells, and via IL-7 and LTα/β signalling. The interaction with stromal cells in this manner upregulates adhesion molecules, with positive feedback via enhanced TRANCER signals during LTα/β continued interaction and the upregulation of VCAM-1, as well as chemokines CCL19/21 CXCL13 to attract myeloid cells, T lymphocytes, B lymphocytes and more LTCs etc to the tissue to form large aggregates arranging into lymphoid tissues.

How connected to question?

γδ T cells begin seeding from the foetal thymus from approximately day 14. Produced originally in sequential but partly overlapping order:

γ5 → skin, then γ6 → tongue, uterus, lung, then γ4 → lung, blood, lymph nodes and spleen, γ1 → blood, lymphnodes and spleen.

These get regenerated from the thymus throughout life,

with the initial foetal γδ T cells homing to epithelial tissues and later ones the more to the blood and lymphoid organs. After birth, more epithelial-independent populations are produced, as well as the thymus-independent γδ T cells.

Mice γδ T cell skin homing selection in the thymus by the skin and by skint 1, expressed on epithelial cells and then migrating to the upregulating TIGIT, IFNγ, TCR, CD122 and innate-like response to and promoting migration to the skin.

Healthy epidermal T cells also migrate to the skin in a CCR10 (CCL27 associated) and E + P selectin dependent manner KO of the or inhibition of these reduces DETC skin compartment.

Here, DETCs are associated with also interacting with skint 1 expressed on epithelial tissues, resulting in a stress-latch interaction constantly maintaining maintaining a semi-activated γδT cell via constant TCR signals. Upon loss of skint 1, they may receive a loss of IL-15R expression and die, but upon epithelial stress or damage eg. oxidative stress, they upregulate non-classical MHC-1

…and his answer in ExamOnline

Question: Question 3 : Discuss the importance of the antigen processing pathways used to present self and pathogen antigens to T cells, on both MHC and MHC-like molecules.

MHC encoded genes make up for roughly 0.1% of the genome, approximetaly 4Mb of DNA, and present antigen to activate CD4 and CD8 T cells.**[comment by marker David Cavanagh marker:** ***MHC proteins present, not the genes!***] Firstly, MHC-1 genes which are encoded or all nucleated cells encode**[comment by marker Matt Taylor:** ***unclear phrasing***] cytosolic, antigens to CD8 T cells in order to activate their cytoloytic killing.**[comment by marker David Cavanagh marker:** ***I think you mean that MHC1 is expressed on all cells, and that they present cytosolic antigens, but the way you have written it is unclear***] These consist of 3 alpha subunits and a B2M, tramsmemrabne apha and membrane distal alpha 1/2 have an enclosed peptide binding pocket, which preferentially present 9 (also peptidesd between 8-10) peptides**[comment by marker Matt Taylor:** ***unclear phrasing***] . **[comment by marker David Cavanagh marker:** ***Again, I think you mean 3 alpha domains, with 1 and 2 distal from the membrane and involved in peptide binding, but this is also written in a confused way***] these are also associated wiht the presentation of croos-presented antigens in the case of APCs, particularly DCs which uptake via macropinocytosis or phagocytosis to present and activate naive CD8 T cells. MHC-II mleculs consist of a heterodimer of alpha and beta chains, with alpha/beta 2 membrane prximal both transembrane, and alpha/beta-1 having an open peptide binding cleft apable of presenting 13-18 amino acid peptides to CD4 T cells.**[comment by marker David Cavanagh marker:** ***almost right - although again could have been phrased better***] These are rstricted to antigen presenting cells, highly upregulated on DCC activation, preented at intermediate levels on macrophages (more to show the cotinued presence of antigen at tissue) and B cells for T cell licensing, as well as the brain microglia, thymic epithelial cells. Finally, antigen presentation canbe done by non-classical MHC-ib molecules on the MHC locus (Chr6p21.2) and also non-MHC encoded molecues, such as the lipid-presenting CD-1 molecules on Chr1q23.1**[comment by marker David Cavanagh marker:** ***good***]

Firstly I shall discuss MHC-I presentation in the endogenous pathway. This has been found to be intercepted at pretty much every stage by viruses. Firsty, MHC-1 heavy chain is synthesised de novo in the ER and is membrane bound by the alpha3 domain. This is firstly glycosylated by Gls1/2, wich facilitates the binding of calnexin, maintaining it in a partially folded and stable state. Upon this, beta2microglobulin binds, which causes a conformational

Finally the non-MHC encoded CD01 family, Ch1q23.1, which have alpha1/2/3 subunits and are B2M associated, include group 2 (CD1d) and group 1 (CD1a/b/c/e) which are associated with binding different glycolipids in their partially enclosed but larger than MHC-I peptide binding cleft. The lipids they bidn vary but are generally acoiatd with being amphipathic, but a flexible aliphatic hydrocarbon chain bining the cleft and a hydrophilic head being extruded out to bind alpha/beta, gamma/delta and NKT TCRs. these TCRs don't ppear to be any different from normal TCRs, but CD1 resrticted TCRs have been found both C4+/- and CD8+/-. CD1a/b/c are asociated with binding to lipids frokm bacterial membranes. CD1 molecules are loaded in the ER with self-lipid by microsomal triglyceride transfer protein, where they get trafficked to the PM,and then recycled. CD1a is associated with recyling to a sorting endosome, CD1b/mCD1d to MIICs/lysosomes, and indeed CD1c to both, whereby they exchange their lipids for microbial ones by sapsonins.

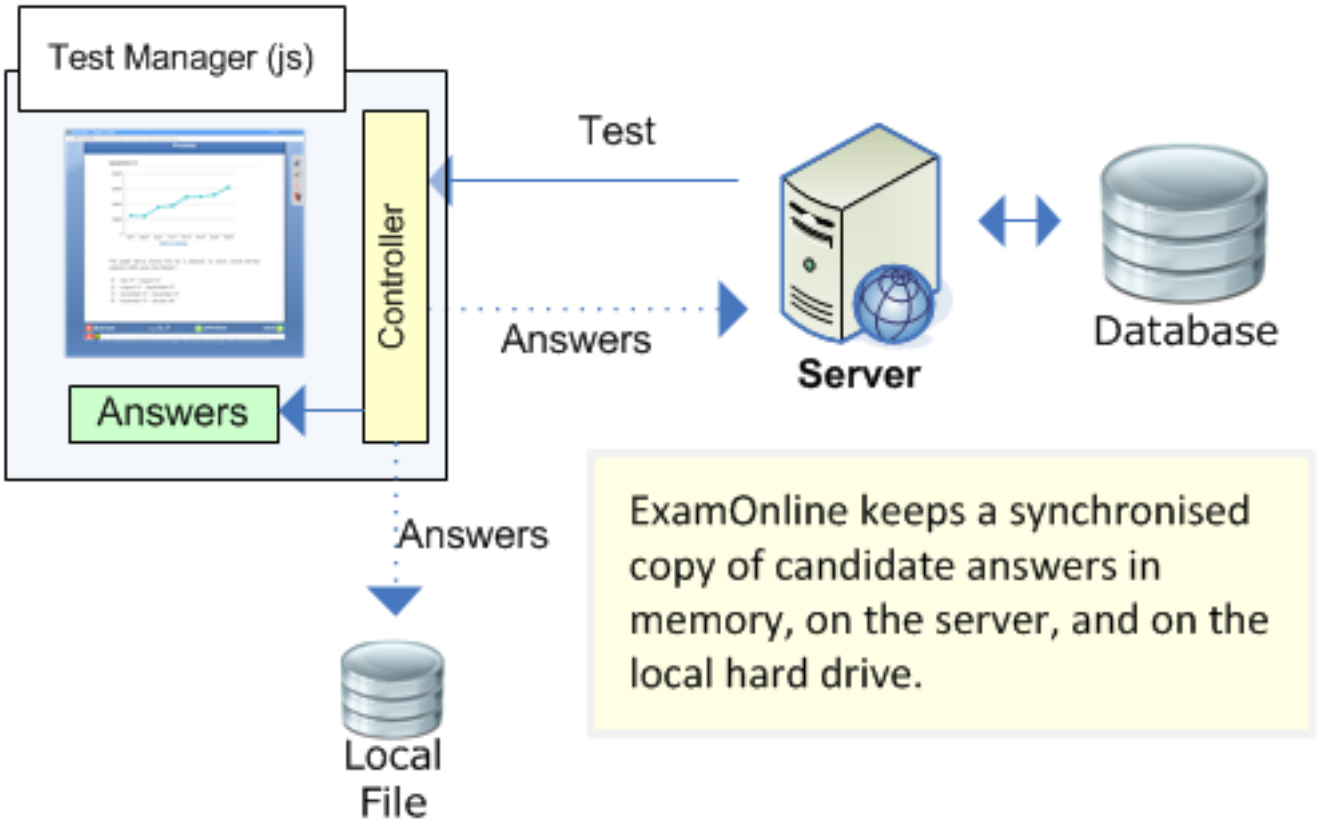
[comment by marker David Cavanagh marker: ***Good detail, comprehensive knowledge and understanding. Directly addresses question. Clear style, although occasional unclear phrasing. Evidence of critical grasp of topic and independent reading. (MT).***

Generally excellent, with a comprehensive knowledge of the topic. Let down in some minor areas by misunderstandings and/or omissions. Directly addresses the question, and shows evidence of independent reading in places. Clearly written mostly, but occasionally areas which could have been better expressed. Relates different items together and gives relevant examples. (DC).
]

Mark: 72

Marked by David Cavanagh on 11/01/2018 02:29 PM

Redundancy and fault tolerance



For a small (n=25) course:-

- 8-10 hours of admin time/exam creating, sorting and collating papers/answers/marks

- 8-12 person-hours/day delivering and collecting exam papers

Students love ExamOnline!

Begin forwarded message:

From: <xxxxx@sms.ed.ac.uk>

Subject: Exam

Date: 11 December 2018 at 13:47:41 GMT

To: CAVANAGH David <David.Cavanagh@ed.ac.uk>

Hello David!

I don’t really know if you are looking for feedback but I just wanted to say the typed exam worked really well for me personally. Having the clock there, being able to type in a quiet room with a comfortable seat proved to work so well, I could focus and I didn’t notice other people typing away at all! The system works great and I’m glad we got to use it.
Best wishes,

Summary

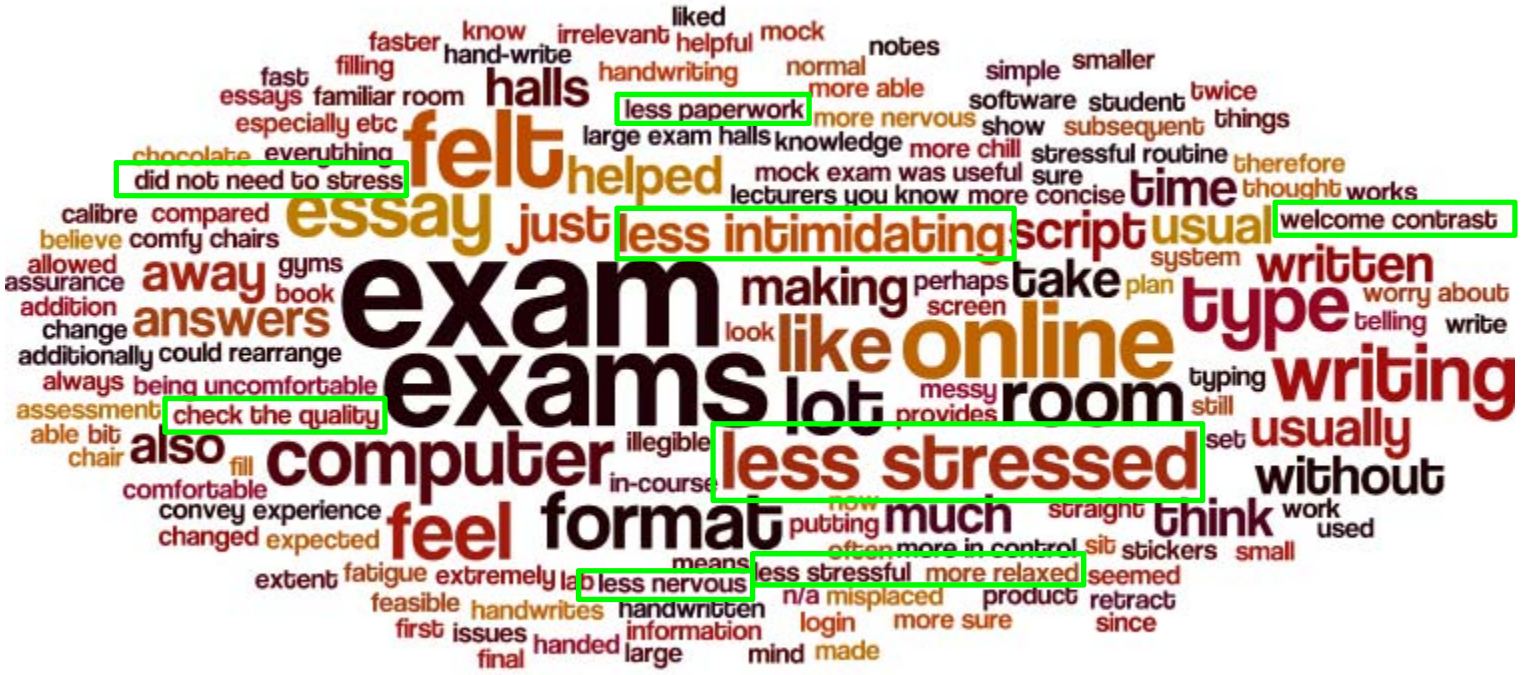
- ExamOnline fulfils the role we asked for
  - Clear text – quicker marking
  - Allows hand-drawn diagrams/equations to be integrated into each answer
  - Online marking – two markers can view/mark simultaneously (soon)
  - Quicker feedback possible – release of marked script without mark
  - Online monitoring of markers progress – easier for COs and admin

- Students welcome the use of it
  - Editing text
  - More relaxed surroundings
    - Students can enter exam hall well in advance and sit at any desk
    - Biology staff less scary than university invigilators
  - Most report quicker typing speeds than writing

- The 5 P's are important – especially in scheduling tests
  - Consistent rules about candidate ID, logins, passwords *__MUST__* be enforced
  - Paper back-up needed in room (extended power failure?)
  - Run practice tests for 10 mins before real test

It's just a much better and more comfortable and more practical format for exams in the 21st century

The ExamOnline system definitely helped reduce my exam anxiety overall- although I was initially sceptical about whether I'd be able to type fast enough/ if keyboard sounds would be distracting etc, I found the whole experience a lot more bearable than sitting in a drafty exam hall, and I was surprised by how easy it was to adapt to typing exam answers.



I unequivocally endorse the use of ExamOnline in the future. It greatly enhanced my exam experience and I feel that I would have done better on previous exams if its use had been allowed.

This form of examination makes sense in this modern age; In my previous 3 years of University I would never hold a pen unless sitting an exam. Instead, typing the exam was a much more natural, modern and appropriate form of examination.

Its simply brilliant. I cannot believe other students from different courses are not benefitting from this excellent technology. In our current society exams are timed and sadly the essay you write under those conditions doesn't reflect your knowledge of the time. This technology alleviates that pressure as a majority of students are faster typers.

END