Directions
Do not open this testpaper or start writing until the supervisor directs you to do so.

1. Time allowed: 1 hour 30 minutes

2. Perusal time: 10 minutes

3. Equipment allowed:

<table>
<thead>
<tr>
<th>Permitted</th>
<th>Not permitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>2B pencils</td>
<td>own paper</td>
</tr>
<tr>
<td>pencil sharpener</td>
<td>dictionary</td>
</tr>
<tr>
<td>eraser</td>
<td>thesaurus</td>
</tr>
<tr>
<td>ruler</td>
<td>protractor</td>
</tr>
<tr>
<td>approved calculator</td>
<td>drawing compass</td>
</tr>
<tr>
<td>highlighter</td>
<td>electronic devices</td>
</tr>
<tr>
<td>transparent container</td>
<td></td>
</tr>
<tr>
<td>other approved items</td>
<td></td>
</tr>
</tbody>
</table>

You are not permitted to borrow or lend equipment.

4. This testpaper has 50 test items, numbered 51 to 100.

5. The 50 items are arranged within 10 units.

6. For each item there are four alternative responses, represented by the letters A, B, C, D.

7. Respond to the items on the response sheet provided.

8. With your 2B pencil, blacken the whole area within one circle to represent your response (A, B, C or D) to each item. If you want to change a response, follow Direction 3 on the response sheet.

9. Be vigilant about covering your response sheet. Turn it face down unless you are actually blackening an oval.

10. You may write on this testpaper but only your response sheet will be marked.

11. You may attempt the units in any order.

12. Points to observe:
   • Work through each unit, considering items in the order given.
   • Do not waste time on any one item. If you find an item too difficult, return to it later.
   • Even if you are unsure, make a decision and mark a response. Marks are not deducted for incorrect responses.

13. You will be given a warning 30 minutes before finishing time.
    You will be given a final warning 10 minutes before finishing time.
UNIT 11

Items 51–54

The four items in this unit are independent quotations and proverbs.

Item 51

'It is well to remember that the entire population of the universe, with one trifling exception, is composed of others.'  
*John Andrew Holmes*

Those who would do well to remember Holmes's comment are people who

A prefer solitude.  
B are self-important.  
C have low self-esteem.  
D enjoy being with others.

Item 52

'Faith moves mountains, but you have to keep pushing while you are praying.'  
*Mason Cooley*

According to Cooley, faith and prayer

A are sufficient to bring about desired changes.  
B are adjuncts to, not substitutes for, personal effort.  
C only seem to accomplish what real effort actually does.  
D must be pursued aggressively to achieve positive results.

Item 53

'They are able who think they are able.'  
*Virgil*

For Virgil, a key ingredient for success is

A choosing to ignore one’s limitations.  
B turning one’s limitations to advantage.  
C being prepared to work within one’s limitations.  
D removing one’s limitations by sound preparation.

Item 54

'The afternoon knows what the morning never suspected.'  
*Swedish proverb*

This proverb suggests that the future is

A wise.  
B mysterious.  
C unpredictable.  
D predetermined.
UNIT 12

Items 55–57

A cuboid is a box-like shape, defined by its length, width and height. These dimensions don’t necessarily have to be different.

The particular cuboids in this unit are called integer cuboids because their lengths, widths and heights are all whole numbers of centimetres — no fractions or decimals are allowed.

Reminder: volume of a cuboid: \( V = lwh \)
          total surface area of a cuboid: \( A = 2lw + 2lh + 2wh \)

Item 55

An integer cuboid has a width of 6 cm. Which of the following could be its volume?

A  160 cm\(^3\)  C  164 cm\(^3\)
B  162 cm\(^3\)  D  166 cm\(^3\)

Item 56

An integer cuboid has a surface area of 108 cm\(^2\) and one of its dimensions is 6 cm.

What are its other two dimensions?

A  2 cm and 9 cm  C  4 cm and 3 cm
B  3 cm and 10 cm  D  8 cm and 3 cm

Item 57

Which of the following is a complete and correct description of the total surface area of any integer cuboid?

A  an even integer
B  an integer which divides exactly by four
C  an integer which divides exactly by six
D  an integer which divides exactly by both four and six
UNIT 13

Items 58–62

The following adapted extract is from a lecture by physicist Richard Feynman, published in 1963.

A most interesting change in the ideas and philosophy of science brought about by quantum mechanics is this: it is not possible to predict exactly what will happen in any circumstance. For example, we can measure when an atom has emitted light by picking up a photon particle. We cannot, however, predict when it is going to emit the light or, with several atoms, which one is going to. You may say that this is because there are some internal ‘wheels’ which we have not looked at closely enough. No, there are no internal wheels; nature, as we understand it today, behaves in such a way that it is fundamentally impossible to make a precise prediction of exactly what will happen in a given experiment.

This is a horrible thing; in fact, philosophers have said before that one of the fundamental requisites of science is that whenever you set up the same conditions, the same thing must happen. This is simply not true, it is not a fundamental condition of science; we can find only an average, statistically, as to what happens. Nevertheless, science has not completely collapsed. Some philosopher or other said it is fundamental to the scientific effort that if an experiment is performed in, say, Stockholm, and then the same experiment is done in, say, Quito, the same results must occur. That is quite false. It is not necessary that science do that; it may be a fact of experience, but it is not necessary.

What is the fundamental hypothesis of science, the fundamental philosophy? The sole test of the validity of any idea is experiment. If it turns out that most experiments work out the same in Quito as they do in Stockholm, then those ‘most experiments’ will be used to formulate some general law, and those experiments which do not come out the same we will say were a result of the environment near Stockholm. We will invent some way to summarise the results of the experiment, and we do not have to be told ahead of time what this way will look like. We just have to take what we see, and then formulate all the rest of our ideas in terms of our actual experience.

Notes:

1. the study of the behaviour and properties of particles within atoms
2. Stockholm is not far south of the Arctic Circle whereas Quito is on the Equator.

Item 58

Of the following, which is closest to what Feynman means by ‘internal wheels’ (lines 6 and 7)?

A. untested propositions
B. undiscovered causes
C. intricate movements
D. microscopic objects
Item 59

Feynman’s statement that ‘there are no internal wheels’ (lines 6 and 7) may be reasonably questioned because it
A is not meant to be taken seriously.
B might be as hard to support as it is to refute.
C conceals more than it reveals about his opinion.
D contradicts the way that nature actually operates.

Item 60

Regarding the use of averages in science (line 13), Feynman implies that this
A reflects a decline in the quality of scientific practice.
B makes the practice of science more unpredictable.
C is a proper application of the scientific method.
D actually weakens the credibility of science.

Item 61

In the second paragraph, Feynman refers to philosophers of science in a way that
A reveals a disdain for their opinions.
B shows his desire to engage them in debate.
C respects their views, but disagrees with them.
D tries to overcome their scepticism regarding science.

Item 62

Feynman discusses the possibility of experiments performed in Stockholm returning different results from the same experiments performed in Quito (lines 14–23).

Feynman deals with these differences by
A finding fault with the Stockholm experiments rather than the ones in Quito.
B suggesting that the results from Stockholm and Quito be averaged.
C suspending judgment until further studies can be done.
D identifying location as a relevant variable in science.
UNIT 14

Items 63–66

For proper functioning, the human body needs essential nutrients. These include saturated and unsaturated fatty acids, which are found in oils.

The table below presents information on the colour, aroma and taste of various oils. It also lists the percentages by volume of unsaturated and saturated fatty acids in the oils. Some of the oils listed also contain omega-3 linoleic unsaturated fatty acid, but these amounts are not included in the table.

Note: the percentages of unsaturated fatty acids in oleic sunflower oil have been omitted from the table.

Quickly peruse the table and then return to specific parts when attempting the items.

<table>
<thead>
<tr>
<th>oil</th>
<th>fatty acid</th>
<th>characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>unsaturated</td>
<td>saturated</td>
</tr>
<tr>
<td></td>
<td>omega-6 linoleic (%)</td>
<td>omega-9 oleic (%)</td>
</tr>
<tr>
<td>almond</td>
<td>25.0</td>
<td>66.0</td>
</tr>
<tr>
<td>apricot</td>
<td>25.0</td>
<td>66.0</td>
</tr>
<tr>
<td>canola</td>
<td>19.5</td>
<td>64.0</td>
</tr>
<tr>
<td>flaxseed</td>
<td>18.0</td>
<td>14.0</td>
</tr>
<tr>
<td>macadamia</td>
<td>4.0</td>
<td>84.0</td>
</tr>
<tr>
<td>mustard</td>
<td>32.0</td>
<td>45.0</td>
</tr>
<tr>
<td>oleic safflower</td>
<td>14.0</td>
<td>78.0</td>
</tr>
<tr>
<td>oleic sunflower</td>
<td>......</td>
<td>......</td>
</tr>
<tr>
<td>olive</td>
<td>6.8</td>
<td>71.6</td>
</tr>
<tr>
<td>peanut</td>
<td>33.0</td>
<td>47.0</td>
</tr>
<tr>
<td>pumpkin</td>
<td>52.0</td>
<td>29.0</td>
</tr>
<tr>
<td>safflower</td>
<td>78.0</td>
<td>12.0</td>
</tr>
<tr>
<td>sesame</td>
<td>43.0</td>
<td>41.0</td>
</tr>
<tr>
<td>spicy mustard</td>
<td>32.0</td>
<td>45.0</td>
</tr>
<tr>
<td>sunflower</td>
<td>56.0</td>
<td>33.0</td>
</tr>
<tr>
<td>wheatgerm</td>
<td>56.0</td>
<td>19.0</td>
</tr>
</tbody>
</table>
Item 63

The following diagram refers to the colour, taste and aroma of some of the oils in the table.

The shaded area includes which of the following pairs of oils?

A  wheatgerm and mustard  C  flaxseed and sesame
B  canola and macadamia  D  spicy mustard and oleic safflower

Item 64

Of the oils listed, the percentage that have a golden colour or nutty taste, or both, is closest to

A  20%.
B  40%.
C  50%.
D  60%.

Item 65

If omega-3 linoleic acid is the only other fatty acid in flaxseed, canola, olive and mustard oils, which of the following lists these oils in order of increasing percentages of omega-3 linoleic acid?

A  olive, canola, mustard, flaxseed
B  olive, mustard, flaxseed, canola
C  flaxseed, mustard, canola, olive
D  flaxseed, canola, mustard, olive

Item 66

Oleic sunflower oil contains no omega-3 linoleic acid. The ratio of the percentage of omega-6 linoleic acid to that of the saturated fatty acids is 3:2.

What is the ratio of the percentage of omega-9 oleic acid to that of the saturated fatty acids in oleic sunflower oil?

A  2:15
B  10:15
C  15:2
D  15:10
UNIT 15

Items 67–72

In the following passage from a novel, the narrator talks about his reaction to finding out that he has a disease that will cause him to get old very quickly.

How easily the human mind ‘normalises’ the abnormal, with what rapidity the unthinkable becomes not only thinkable but humdrum, not worth thinking about! — Thus my ‘condition’, once it had been diagnosed as ‘incurable’, ‘inevitable’, and many other ‘in’s’ that I can no longer call to mind, speedily became so dull a thing that not even I could bring myself to give it very much thought. The nightmare of my halved life was simply a Fact, and there is nothing to be said of a Fact except that it is so. — For may one negotiate with a Fact, sir? — In no wise!¹ — May one stretch it, shrink it, condemn it, beg its pardon? No; or, it would be folly indeed to seek to do so. — How then are we to approach so intransigent, so absolute an Entity? — Sir, it cares not if you approach it or leave it alone; best, then, to accept it and go your ways. — And do Facts never change? Are old Facts never to be replaced by new ones, like lamps; like shoes and ships and every other blessed thing? — So: if they are, then it shows us only this — that they never were Facts to begin with, but mere Poses, Attitudes, and Shams. The true Fact is not your burning Candle, to subside limply in a stiff pool of wax; nor yet your Electric Bulb, so tender of filament, and short-lived as the Moth that seeks it out. Neither is it made of your common shoe-leather, nor should it spring any leaks. It shines! It walks! It floats! — Yes! — For ever and a day.

Note: ¹ ‘No way!’

Item 67

The way the narrator handles his disease is conditioned by a belief that

A he has somehow deserved his fate.
B he is powerless to control the disease.
C the disease marks him out as being special.
D worrying about the disease will only make it worse.

Item 68

For the narrator, a feature of words beginning with ‘in-’ (lines 3 and 4) is that they evoke a sense of

A hopelessness.
B rationalism.
C opposition.
D purposefulness.
Item 69

A euphemism is an inoffensive word or phrase substituted for one considered offensive or hurtful.

Which of the following words is used as a euphemism in the passage?

A normalises (line 1)  
B humdrum (line 2)  
C condition (line 3)  
D nightmare (line 5)

Item 70

Which of the following words is closest in meaning to the word ‘intransigent’ (line 9) as used in the passage?

A aloof  
B powerful  
C callous  
D unyielding

Item 71

Casting the narrator’s thoughts as a kind of mock dialogue serves mainly to

A play on readers’ sympathies.  
B reflect the narrator’s inner turmoil.  
C add colour and immediacy to the story.  
D highlight that the narrator is melodramatic by nature.

Item 72

Certain words in the passage are capitalised. This is most likely because capitalisation

A lends to distance the words from their normal contexts and gives them different meanings.  
B adds a flavour of peculiarity to the text that is in keeping with the peculiarity of the illness.  
C lends these words substance and weight, which reinforces the notion that some things cannot be changed.  
D is at odds with accepted grammar, in the same way that the narrator’s attitude is at odds with what one would expect.
UNIT 16
starts inside
this fold-out section.

Fold out this page and leave it open while you work through this unit.
UNIT 16

Items 73–78

This unit looks at planar graphs, which are diagrams on a flat surface.

Here are the rules for the simple planar graphs in this unit:

- each graph consists of vertices (singular ‘vertex’; represented by dots) and edges (represented by lines);
- each edge connects two different vertices, and edges may be straight or curved;
- two vertices may be connected by one edge only;
- vertices that are connected by an edge are called adjacent vertices;
- each graph has at least two vertices and at least one edge.

Figure 1 shows a planar graph with eight vertices and seven edges. Note that not all the vertices are connected by edges.

![Figure 1](image)

Here are two definitions relating to planar graphs:

- The **distance** between any pair of vertices is the smallest number of edges linking them. The distance between any pair of adjacent vertices is 1. In Figure 1, the distance between K and L is 3.

- The **diameter** of the planar graph is the distance with the greatest value. In Figure 1, the distance between vertices J and L is 4. Since this is the greatest distance between any pair of vertices in this graph, the diameter of this graph is 4.

In this unit, the words ‘distance’ and ‘diameter’ have the meanings given above.

**Item 73**

Consider the planar graph at right.

Of the following vertices, which is the shortest distance from X?

- A: P  
- B: Q  
- C: R  
- D: S

![Graph](image)
Item 74

Which of the following planar graphs has the largest diameter?

A

\[ \text{Graph A} \]

B

\[ \text{Graph B} \]

C

\[ \text{Graph C} \]

D

\[ \text{Graph D} \]

The following additional information refers to items 75–78.

A planar graph can be completely represented by a boxed array (see Figure 2).

In a boxed array, an \( \times \) signals that an edge has a particular vertex as an end, and an \( \circ \) signals that an edge does not have a particular vertex as an end. In a planar graph it does not matter in which order the vertices are numbered.

\[ \begin{array}{ccc}
\times & \circ & \times \\
\times & \times & \circ \\
\circ & \times & \times \\
\end{array} \]

\[ \text{boxed array} \]

Figure 2
Item 75

Refer to the boxed array at right.

\[
\begin{array}{ccc}
\begin{array}{ccc}
& e_1 & e_2 & e_3 \\
v_1 & x & x & o \\
v_2 & o & x & x \\
v_3 & x & o & o \\
v_4 & o & o & x
\end{array}
\end{array}
\]

Which of the following planar graphs corresponds to this boxed array?

A  
B

Item 76

Refer to the planar graph at right.

\[
\text{Planar Graph}
\]

Which of the following boxed arrays represents this planar graph?

A

B

C

D
Item 77

Which of the following boxed arrays represents a planar graph?

A

\[
\begin{array}{cccc}
   & e_1 & e_2 & e_3 & e_4 & e_5 \\
v_1 & X & O & O & O & X \\
v_2 & O & X & O & X & O \\
v_3 & X & O & O & X & O \\
v_4 & O & X & O & O & X \\
v_5 & O & O & O & X & O \\
v_6 & O & O & O & X & O \\
\end{array}
\]

B

\[
\begin{array}{cccc}
   & e_1 & e_2 & e_3 & e_4 & e_5 \\
v_1 & O & X & O & O & O \\
v_2 & O & X & O & X & O \\
v_3 & O & O & O & X & O \\
v_4 & O & O & O & X & O \\
v_5 & O & O & O & X & X \\
v_6 & O & O & O & X & X \\
\end{array}
\]

C

\[
\begin{array}{cccc}
   & e_1 & e_2 & e_3 & e_4 & e_5 \\
v_1 & X & O & O & X & O \\
v_2 & O & O & O & X & O \\
v_3 & O & X & O & X & O \\
v_4 & O & O & O & X & O \\
v_5 & O & O & O & X & O \\
v_6 & O & O & O & O & O \\
\end{array}
\]

D

\[
\begin{array}{cccc}
   & e_1 & e_2 & e_3 & e_4 & e_5 \\
v_1 & X & O & O & O & O \\
v_2 & O & O & O & X & O \\
v_3 & O & X & O & X & O \\
v_4 & O & O & O & X & O \\
v_5 & O & O & O & X & O \\
v_6 & O & O & O & X & O \\
\end{array}
\]

Item 78

A planar graph and its boxed array are shown below. The edge at the top of the graph is shown bolded.

Of the following columns of the boxed array, which represents the bolded edge?

A  \( e_4 \)  
B  \( e_5 \)  
C  \( e_6 \)  
D  \( e_8 \)
GO STRAIGHT ON ...
UNIT 17

Items 79–83

Figure 1 shows a painting by Doris ('Dod') Procter. It portrays a young Indian woman at the time she moved from India to England to marry Procter's brother (in 1919). The background of the painting shows the coast of Cornwall in southern England, the area to which she moved.
Item 79

'It is no exaggeration to say that Procter is the most sculptural painter living.' Mary Chamot, 1927

Which aspect of this painting best supports Chamot's comment?

A  The woman appears to be carved out of the rocky cliffs on which she is sitting.
B  The hills in the background have a massive feel, as if they had been carved by a sculptor.
C  The broad shapes and clear contours of the woman's body impart a strong sense of depth.
D  The treatment of the rugged Cornish coast throws it into stark relief against the rolling hills.

Item 80

Which of the following identifies a similarity between the ways in which the woman and the landscape are represented?

A  Both focus on complex forms to reflect the woman's feelings.
B  Both deliberately distort or exaggerate natural forms.
C  Both manipulate light and shade in similar ways.
D  Both use forms that have been simplified.

Item 81

Of the following, which best describes the woman's state of mind as revealed by the way her hands are positioned?

<table>
<thead>
<tr>
<th>her right hand</th>
<th>her left hand</th>
</tr>
</thead>
<tbody>
<tr>
<td>distracted</td>
<td>melancholy</td>
</tr>
<tr>
<td>tense</td>
<td>resilient</td>
</tr>
<tr>
<td>hopeful</td>
<td>hopeless</td>
</tr>
<tr>
<td>poised</td>
<td>relaxed</td>
</tr>
</tbody>
</table>

Item 82

The representation of which feature(s) contrast(s) most strongly with the painting's overall mood?

A  the sea and sky
B  the woman's top
C  the woman's face and hair
D  the rocks in the foreground

Item 83

Procter chose a title for this painting that summarised a significant aspect of its meaning. Of the following, which is most likely to be the title?

A  Serenity of Solitude
B  A New Beginning
C  The Forgotten Past
D  In a Strange Land
UNIT 18

Items 84–90

Apprentice hairdressers work under the supervision of qualified hairdressers in salons while they are taught hairdressing skills. They also learn the cleaning and preparation routines and business skills involved in hairdressing salons.

Figure 1 shows the amount of time apprentices are expected to spend on different tasks at various times during their three years of training. They are supervised when beginning a new task, and then are expected to perform the task without supervision. In Figure 1, supervised periods are indicated by dots.

For the purposes of this unit, assume the following:
  - apprentices work for eight hours each day and for five days each week;
  - each three-month period of the apprenticeship contains 13 weeks.

![Diagram showing distribution of hours per day by month of apprenticeship and tasks]

*Figure 1: Allocation of time for an apprentice hairdresser*
**Item 84**

For approximately how many weeks will an apprentice be caping clients and washing their hair?

A  116  
B  120  
C  126  
D  130

**Item 85**

For approximately how many hours per week will an apprentice learn 'financial transactions' under supervision?

A  3  
B  5  
C  13  
D  25

**Item 86**

An apprentice has been straightening and blow-drying clients' hair without supervision for six months.

At this stage, which of the following is closest to the percentage of time she spends in the salon caping clients and washing their hair?

A  28%  
B  36%  
C  50%  
D  63%

**The following additional information refers to items 87–90.**

Courtney started a hairdressing apprenticeship on 1 November 2009 and progressed through it in the way Figure 1 describes.

**Item 87**

Courtney's work journal records a typical week in which she spent about 8 hours caping and washing and about 11 hours straightening and blow-drying. In which month did this occur?

A  January 2011  
B  March 2011  
C  May 2011  
D  October 2011
Figure 1 and part of the stimulus text have been reproduced on page 21 for your convenience.

**Item 88**

At one stage, Courtney noted that she was performing seven different tasks and was being supervised in only one of them.

She most likely made this observation in

A  August 2011.  
B  December 2011.  
C  February 2012.  
D  April 2012.

**Item 89**

For how many weeks did Courtney work without any supervision?

A  18  
B  30  
C  72  
D  78

**Item 90**

On some days Courtney was being supervised for more than half the time.

For approximately how many weeks was this the case?

A  10  
B  12  
C  13  
D  15
For the purposes of this unit, assume the following:

- apprentices work for eight hours each day and for five days each week;
- each three-month period of the apprenticeship contains 13 weeks.
UNIT 19

Items 91–95

In the following two adapted passages from the same part of a novel, one of the characters — Michael Young — shares his thoughts on history and literature.

Passage 1

History is what, for the time being, I do. Had I the patience and the discipline I should have chosen literature. But, while I can read Middlemarch and The Dunciad or, I don’t know, Julian Barnes or Jay McInerney, say, as happily as anyone, I have this little region missing in my brain, that extra lobe that literature students possess as a matter of course, the lobe that allows them the detachment and the nerve to talk about books (texts they will say) as others might talk about the composition of a treaty or the structure of a cell. I can remember at school how we would read together in class an Ode by Keats, a Shakespeare sonnet or a chapter of Animal Farm. I would tingle inside and want to sob, just at the words, at nothing more than the simple progression of sounds. But when it came to writing that thing called an Essay, I flubbed and floundered. I could never discover where to start. How do you find the distance and the cool to write in an academically approved style about something that makes you spin, wobble and weep?

Passage 2

I went through all my schooldays convinced of this, that ‘literary studies’ were no more than a series of autopsies performed by heartless technicians. Worse than autopsies: biopsies. Vivisection. Even movies, which I love more than anything, more than life itself, they even do it with movies these days. You can’t talk about movies now without a methodology. Once they start offering courses, you know the field is dead. History, I found, was safer ground for me: I didn’t love Rasputin or Talleyrand or Charles the Fifth or Kaiser Bill. Who could? A historian has the pleasant luxury of being able to point out, from the safety of his desk, where Napoleon messed up, how this revolution might have been avoided, that dictator toppled or those battles won. I found I could be most marvellous dispassionate with history, where everyone, by definition, is truly dead.

Item 91

For Young, when literature students talk about ‘texts’ (line 5) they are being

A exact.  
B vague.  
C disciplined.  
D pretentious.
Item 92

How did Young react to reading literature when he was at school?

A It left him sobbing with boredom and frustration.
B It was so complex he couldn’t begin to write about it.
C It touched him deeply in ways he could barely articulate.
D It frustrated him that he couldn’t write as movingly as the great authors.

Item 93

During the course of these two passages there is a significant change in the way that Young characterises those engaged in literary studies. Which of the following pairs of words best captures this change?

<table>
<thead>
<tr>
<th>Earlier</th>
<th>Later</th>
</tr>
</thead>
<tbody>
<tr>
<td>A rational and confident</td>
<td>soulless and pedantic</td>
</tr>
<tr>
<td>B aloof and methodical</td>
<td>intuitive and engaging</td>
</tr>
<tr>
<td>C cold and analytical</td>
<td>trendy and elitist</td>
</tr>
<tr>
<td>D indifferent and haughty</td>
<td>emotional and subjective</td>
</tr>
</tbody>
</table>

Item 94

In Passage 2, Young implies that formal study has, in general, the effect of

A demeaning every topic it touches.
B valuing learning for learning’s sake.
C sharpening students’ critical abilities.
D favouring scientific over literary pursuits.

Item 95

What is it that Young finds most appealing about history writing?

A It is intellectually less demanding than literary criticism.
B It deals with important events and fascinating people.
C It can be done without any personal involvement.
D It is founded on facts rather than opinions.
UNIT 20

Items 96–100

This unit is about patterns that may be formed in necklaces using beads of two different colours.

Necklaces are made with orange and blue beads spaced along a strand. The ends of each beaded strand are then joined so that the point where they join cannot be identified.

Item 96

Which one of the following strands, when joined to form a necklace, will have a bead pattern different from the other three?

A

B

C

D

Item 97

How many necklaces with different bead patterns can be made using five blue beads and two orange beads?

A three

B four

C five

D six

Item 98

Consider the following strand, in which the beads are numbered and are evenly spaced.

If the ends of this strand are joined, the resulting necklace will be symmetrical about a line

A through bead 1.

B through bead 3.

C between beads 6 and 7.

D between beads 10 and 11.
The following additional information refers to items 99 and 100.

Consider the necklace shown in Figure 1.

![Figure 1](image)

Moving in a clockwise direction, 3-bead sequences of consecutive beads can be identified. Starting with the bead marked *, the first three sequences are:

![Sequences](image)

In total, there are eight possible 3-bead sequences in this necklace. Each sequence is represented once only. A necklace such as this is known as a de Bruijn necklace. The one shown in Figure 1 is the de Bruijn necklace of order 3, or DB₃. In general, when the DBₙ necklace’s beads are taken in n-bead lengths in a clockwise direction there is no repetition of any sequence.

**Item 99**

Refer to the 5-bead strand at right.

![Strand](image)

Which of the following 5-bead strands can be added to the above strand so that the two strands form part of the DB₃ necklace?

A

![Alternative A](image)

B

![Alternative B](image)

C

![Alternative C](image)

D

![Alternative D](image)
Item 100

Which of the following is the DB₄ necklace?