

4. What is starch? State what you know of its chemical composition, microscopical structure, mode of formation, and distribution in the plant.
5. If the flower of a white iris be placed with the freshly-cut skin in a glass of red ink, a beautiful veining of fine red lines will soon become evident in the petals. Explain as fully as you can the meaning and cause of this phenomenon.
6. What is a seed? Describe fully the structure and mode of formation of a bean-seed.
7. Draw and describe a transverse vertical section of a leaf.
8. Explain, with the aid of diagrams, the difference between *epigynous*, *perigynous*, and *hypogynous* flowers, and give an example of each.

*Shorthand (Senior).—For Senior Civil Service. Time allowed: 3 hours.*

#### INSTRUCTIONS TO SUPERVISORS.

1. Inform candidates before the time for taking up this subject that they may use pen or pencil as they please for taking notes, which should be written on ruled paper, but that they must transcribe those notes into longhand with pen and ink.
  2. Inform candidates that when once you have commenced to dictate you cannot stop until the passage is finished.
  3. Dictate the passages at the following rates of speed:—
    - (a.) 50 words per minute.
    - (b.) 80       "       "
    - (c.) 100       "       "
- N.B.—It will be well to practise reading these aloud some time beforehand, looking at a watch or clock, so as to accustom yourself to reading at the exact rate indicated.\*
4. Candidates are at liberty to take down one, two, or three passages, as they choose. All the passages required by candidates are to be dictated before any one begins to transcribe; and there should be as little delay as possible between the readings.
  5. Inform candidates that rapidity in transcribing notes into longhand is essential, and note carefully on the transcribed copy the exact time taken in transcription. Candidates must not look at their notes while a passage that does not concern them is being read.
  6. Inform them also that the clearness and accuracy of the shorthand notes (which must in every case be sent in attached to the transcript) will be taken account of by the examiner; and that they must not alter the shorthand notes after the dictation is finished.

(a.) At the rate of 80 words per minute. Take 10 minutes.

The whole crew would take to the water like so many tritons and nereids attending the progress of some ancient sea-god. Or they would slip nooses of line over their shoulders, and be gently drawn through the limpid, tepid wavelets without effort, and attended by every sensation of languorous bliss. During one of these periods of boyish enjoyment we suddenly opened up a bay whose shores seemed unfamiliar. The cliffs were very precipitous, but, as usual, heavily wooded. Feeling that | we might be approaching some new hiding-place of the whales, all hands climbed on board and threw on each the two garments that completed his dress. Every nook was eagerly scanned for spouts, and hardly a glance was wasted upon the marvellous scene below. For here, indeed, was one of the loveliest of nature's pictures spread out in all that extravagance of beauty and dazzling radiance of colour found in such lonely spots, as if intended for the pleasure of | the Creator alone. Fish like living jewels darted about in myriads through those subaqueous groves whose every branch was a miracle, over which a reverent soul might wonder for a lifetime without exhausting its marvels.

- 2 Suddenly a low semicircular opening in the cliff wall opened up. We were sailing close in shore with so light a breeze that the water was as smooth as a mirror, and as we slowly neared the doorway it proved high enough and broad enough | to admit a much bigger craft. Without waiting to think we unstepped the mast and paddled gently in. As we entered, the swell, imperceptible before, lifted us unpleasantly near the top of the natural arch, but we glided swiftly through without touching. There appeared to be a natural channel below corresponding to the doorway above the water, for the sea was here of an intense blue, and we could with difficulty see the bottom. Once within, great was our amazement. | The cavern widened out enormously, and the roof rose as near as we could guess to a pitch of about 60ft. We gently paddled on, guided by a soft suffused light that entered we knew not where, but made it possible for us, as our eyes got accustomed to the gloom, to see the configuration of the cave. Its walls were perpendicular, nowhere that we could see affording the slightest foothold. After a little paddling around we concluded that | we had been inside long enough and headed for the entrance, but it had disappeared. Then it dawned upon us that we had been here much longer than we supposed, and that possibly the tide had risen. For a few moments we sat and stared at each other in silence, each brain busy with its own view of the question. Then our cogitations were brought to an abrupt termination by a most hideous deafening roar, which reverberated through that mighty | hall, as if it would never cease. To say we were scared sounds weak. I simply wilted, and for a moment felt as if all my faculties were dead except consciousness of existence. Then it came again, but the repetition restored us all to sanity and life. We recognised the sound, but having never heard it before under such conditions no wonder it took us by surprise. It was a whale spouting. He had come in after us, and

\* The matter to be read is marked off into sections, each of which is to occupy a minute. The Supervisor will perhaps find it advisable to mark it off into smaller sections, each containing the number of words to be read in fifteen seconds, and to read one section in every quarter of a minute. As the candidates hear the passage read only once, the reader's articulation ought to be very clear, and the candidates ought to be so placed as to be able to hear well.