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ENTRANCE EXAMINATION PAPERS

ENGLISH A

1. In a letter to a boy of your own age who is hesitating over the choice of a college, point out the reasons which induced you to choose Cornell. Encourage him to join you in a four years' course at Ithaca.

2. Write two compositions, each in two to four paragraphs, on topics selected from the following groups. Do not choose both topics from the same group.

Group I. a. Describe the scene in *The Merchant of Venice*, *Twelfth Night*, or *Julius Caesar* which seemed to you to show most vividly the characters of the persons figuring in the scene. Comment particularly on the way in which the characters are brought out.

b. "Henry V represents the ideal man of action." Show what traits of Henry's character entitle him, in your opinion, to such preeminence.

Group II. What points of likeness and of difference do you notice between *The De Coverley Papers* and a novel on the prescribed list? Be specific.

Group III. a. Quote a passage from a poem of Shelley, Wordsworth, Poe, Arnold, Coleridge, Goldsmith, or Tennyson; and explain the significance of the passage in the theme of the poem.

b. Retell in your own words a story from a narrative poem by Scott, Pope, Lowell, Browning, Macaulay, or Byron.

Group IV. Name four traits of some personage famous in prose fiction, and show how the author has impressed those traits on the reader.

Group V. Of the authors read in your high-school course, which had for you the strongest personal appeal? Give your reasons in detail, making the answer concrete throughout.

ENGLISH B

1. Choose a or b.

a. Discuss Macbeth's rise and fall, showing how the successive stages are plausibly accomplished.

b. Mortals that would follow me,
Love Virtue; she alone is free:
She can teach ye how to climb
Higher than the sphery chime;
Or if Virtue feeble were,
Heaven itself would stoop to her.

From what poem is this passage taken? Explain the passage as it bears on the poem as a whole. What is meant by *sphery chime*? What is the syntax of *climb*, of *were*?

2. Choose a or b.

a. Develop in a paragraph the idea stated in one of the following quotations: "The memory of other writers is kept alive by their works, but the memory of Johnson keeps many of his works alive."

"Properly speaking, there is but one era in the life of Burns, and that the earliest."

b. Compare the first experiences of Johnson in London with those of Burns in Edinburgh.

3. Choose a or b.

a. In what way does Burke justify to Parliament his plan of conciliation with the rebellious colonies?

b. Explain the essential ideas of Washington's Farewell Address with reference to the time of its publication.

GREEK

A. XENOPHON

1. Translate into clear, idiomatic English:

(Chrisophus retorts to Xenophon's joke.)

Ἄλλὰ μέντοι, ἔφη ὁ Χειρίσοφος, καὶ γὰρ ὑμᾶς τοὺς Ἀθηναίους ἀκούω δεινοὺς εἶναι κλέπτειν τὰ δημόσια, καὶ μάλα ὄντος δεινοῦ τοῦ κινδύνου τῷ κλέπτουσι, καὶ τοὺς κρατίστους μέντοι μάλιστα, εἶπερ ὑμῖν οἱ κράτιστοι ἄρχειν ἀξιούνται ὥστε ὦρα καὶ σοὶ ἐπιδείκνυσθαι τὴν παιδείαν. Ἐγὼ μὲν τοίνυν ἔφη ὁ Ξενοφῶν,
 5 ἔτοιμός εἰμι τοὺς ὀπισθοφύλακας ἔχων, ἐπειδὴν δειπνήσωμεν, ἰέναι καταληψόμενος τὸ ὄρος. ἔχω δὲ καὶ ἡγεμόνας· οἱ γὰρ γυμνήτες τῶν ἐπομένων ἡμῖν κλωπῶν ἔλαβόν τινες ἐνεδρεύσαντες· τούτων καὶ πυνθάνομαι ὅτι οὐκ ἄβατόν ἐστι τὸ ὄρος, ἀλλὰ νέμεται αἰξὶ καὶ βουσίν· ὥστε ἐάνπερ ἅπαξ λάβωμέν τι τοῦ ὄρους, βατὰ καὶ τοῖς ὑποζυγίοις ἔσται. ἐλπίζω δὲ οὐδὲ τοὺς πολεμίους μενεῖν ἔτι,
 10 ἐπειδὴν ἴδωσιν ἡμᾶς ἐν τῷ ὁμοίῳ ἐπὶ τῶν ἄκρων· οὐδὲ γὰρ νῦν ἐθέλουσι καταβαίνειν εἰς τὸ ἴσον ἡμῖν.

B. GRAMMAR

1. Explain the syntax of *καταληψόμενος* (5), *κλωπῶν* (6), *τούτων* (7).
2. Tell in order the types of the four conditions found in the above passage.
3. Give the principal parts of *λάβωμεν* (8), *μενεῖν* (9), *ἴδωσιν* (10).
4. With the above passage as an example, what can you say in general about the use of connectives in Greek?
5. State the rule for moods and tenses in subordinate clauses which are thrown into indirect discourse.

C. COMPOSITION

Translate into Greek:

After Clearchus had been ill-treated in this way, he called together his soldiers to a public meeting and, breaking into tears, he said to them: "Soldiers, you see that I am grieved at what has taken place. You know that I have stood in friendly relations to Sparta. . . However, since you have resolved not to follow him any longer, I shall march *with you*."

D. HOMER

Translate:

“ὦ γέρον, αἰεὶ τοι μῦθοι φίλοι ἄκριτοί εἰσιν,
 ὡς ποτ' ἐπ' εἰρήνης· πόλεμος δ' ἀλίαςτος ὄρωρεν.
 ἦ μὲν δὴ μάλα πολλὰ μάχας εἰσήλυθον ἀνδρῶν,
 ἀλλ' οὐπω τοιόνδε τοσόνδε τε λαὸν ὄπωπα·

- 5 λήην γὰρ φύλλωσιν εὐκότεις ἢ ψαμάθοισιν
 ἔρχονται πεδίοιο μαχησόμενοι περὶ ἄστν.
 Ἔκτωρ σοὶ δὲ μάλιστα ἐπιτέλλομαι ὧδέ γε ῥέξαι·
 πολλοὶ γὰρ κατὰ ἄστν μέγα Πριάμου ἐπίκουροι,
 ἄλλη δ' ἄλλων γλώσσα πολυσπερέων ἀνθρώπων·
- 10 τοῖσιν ἕκαστος ἀνὴρ σημαίνεται ὅσι περ ἄρχει,
 τῶν δ' ἐξηγησθῶ· κοσμησάμενος πολιήτας."
 Ὡς ἔφαθ' Ἔκτωρ δ' οὔτι θεᾶς ἔπος ἠγνοίησεν,
 αἰψὰ δ' ἔλυσ' ἀγορὴν ἐπὶ τεύχεα δ' ἔσσεύοντο.
 πᾶσαι δ' ὠλύγνυτο πύλαι, ἐκ δ' ἔσσυτο λαὸς
- 15 περὶ θ' ἰππηῆς τε· πολὺς δ' ὄρμαγδὸς ὀρώρει.
 Ἔστι δὲ τις προπάρουθε πόλιος αἰπεῖα κολώνη,
 ἐν πεδίῳ ἀπάνευθε περιδρομος ἔνθα καὶ ἔνθα,
 τὴν ἦτοι ἄνδρες Βατρείαν κικλήσκουσιν,
 ἀθάνατοι δὲ τε σῆμα πολυσκάρθμοιο Μυρίνης·
- 20 ἔνθα τότε Τρῶές τε διέκριθεν ἠδ' ἐπίκουροι.

1. To whom does γέρον (I) refer?
2. Write lines 8-9 and mark scansion.
3. Give the Attic form or substitute of ἔφατο (12), ἰππηῆς (15), πόλιος (16), διέκριθεν (20).

LATIN

A separate book should be used for each set of questions, i.e. one book for I, another for II, etc.

At the beginning of one of the books, state how long you have studied Latin and give the exact amount of each Latin author you have read.

I

FIRST YEAR LATIN

1. Decline: *castra; filius; cornu; lapis; princeps; aequor; mare; sacer; mos meus; aliud animal; ea res; acer* (in all three genders); *ego; qui; iste; idem; quisque*.
2. Give the comparative and superlative degrees of: *pulcher; similis; parvus; inferus; audacter*.
3. Write out the conjugation of *sum* in the subjunctive.
4. Give the principal parts of: *prohibeo; aufugio; cedo; decerno; veto*.
5. Give a complete synopsis of the conjugation of *volo* in the second person plural; of *claudio* in the third person singular (both active and passive).
6. Translate into Latin, marking all long vowels in what you write:
 - (a) He returned home;
 - (b) he used to live at Rome;
 - (c) I said that I would go away from Rome, if you wished;
 - (d) Caesar was persuaded by him;
 - (e) he remained in the country ten days;
 - (f) he was a man of great virtue;
 - (g) we needed a leader;
 - (h) I am a foot taller than you;
 - (i) let us not go;
 - (j) I should have ordered you not to go away, if I had been in the city.
7. Translate:

Postquam id nūntiātum est, cōpiās suās Caesar in proximum collem dūxit equitēsque contrā hostēs misit. Ipse in colle mediō aciem instrūxit legiōnum quattuor et in summō colle duās legiōnēs et omnia auxilia posuit, ac tōtum

montem hominibus complēvit. Helvētīi, quī cum omnibus suis carrīs secūtī erant, impedimenta in ūnum locum contulērunt; ipsī nostrōs equitēs superāvērunt et ad primam nostram aciem vēnērunt. Caesar celeriter proelium commisit.

II

LATIN GRAMMAR

1-5. Answer the first five questions under First Year Latin (Part I of the present paper).

6. Mention and illustrate four uses of the accusative case; six of the dative; six of the genitive; eight of the ablative.

7. What is meant by the "indirect reflexive"? Illustrate.

8. Illustrate the different types of conditional sentences.

9. Illustrate the following uses of the subjunctive: jussive; optative; deliberative; concessive.

10. State when the indicative, and when the subjunctive, is commonly used with the following conjunctions: *cum*; *quia*; *antequam*; *dum*; *ut*.

III

SECOND YEAR LATIN

CAESAR

I. Translate:

Dum haec a Caesare geruntur, Treveri magnis coactis peditatus equitatusque copiis, Labienum cum una legione, quæ in eorum finibus hiemaverat, adoriri parabant: jamque ab eo non longius bidui via aberant, cum duas venisse legiones missu Caesaris cognoscunt. Positis castris a milibus passuum quindecim, auxilia Germanorum exspectare constituunt. Labienus hostium cognito consilio sperans temeritate eorum fore aliquam dimicandi facultatem, praesidio quinque cohortium impedimentis relicto, cum viginti quinque cohortibus magnoque equitatu contra hostem proficiscitur et mille passuum intermisso spatio castra communit.

B. G. VI, 7.

Give the principal parts of *geruntur*; *adoriri*; *cognoscunt*; *positis*; *relicto*.

Account for the case of: *via*; *passuum*; *praesidio*; *impedimentis*.

Account for: the mood of *venisse*; the tense of *geruntur*.

2. In the following passage (not to be translated) transfer into direct discourse the words "neque suam neque populi Romani", etc., to the end.

Multa ab Caesare in eam sententiam dicta sunt, quare negotio desistere non posset, et neque suam neque populi Romani consuetudinem pati, uti optime merentes socios desereret: neque se judicare Galliam potius esse Ariovisti, quam populi Romani. Bello superatos esse Arvernos et Rutulos ab Q. Fabio Maximo.

IV

THIRD YEAR LATIN

CICERO

I. Translate (a) if you have read the oration; otherwise (b):

(a) *Maiores nostri saepe mercatoribus aut naviculariis iniuriosius tractatis bella gesserunt: vos tot milibus civium Ramanorum uno nuntio atque uno*

tempore necatis quo tandem animo esse debetis? Legati quod erant appellati superbis, Corinthum patres vestri totius Graeciae lumen extinctum esse voluerunt: vos eum regem inultum esse patiemini, qui legatum populi Romani consularem vinculis ac verberibus atque omni supplicio excruciatum necavit? Illi libertatem imminutam civium Romanorum non tulerunt: vos ereptam vitam neglegetis? Ius legationis verbo violatum illi persecuti sunt: vos legatum omni supplicio interfectum relinquetis?

DE. IMP. CN. POMP. V.

(b) At etiam sunt qui dicant, Quirites, a me in exilium eiectum esse Catilinam. Quod ego si verbo adsequi possem, istos ipsos eicerem, qui haec loquuntur. Homo enim videlicet timidus aut etiam permodestus vocem consulis ferre non potuit: simul atque ire in exilium jussus est, paruit. Quid? ut, hesterno die, Quirites, cum domi meae paene interfectus essem, senatum in aedem Jovis Statoris convocavi, rem omnem ad patres conscriptos detuli: quo cum Catilina venisset, quis eum senator appellavit? quis salutavit? quis denique ita aspexit ut perditum civem ac non potius ut importunissimum hostem? quin etiam principes eius ordinis partem illam subselliorum, ad quam ille accesserat, nudam atque inanem reliquerunt.

CAT. II, 6.

2. Translate into Latin, marking all long vowels in what you write:

1. I fear that he will not be made leader.
2. He was killed on the ground that he was a wicked citizen.
3. Though that may be true, I will still prevent him from leaving the city.
4. I should like to know whether you believe that these things will be done.
5. I bid you not to estimate him more highly than you do me.

6. In the consulship of Pompey and Crassus Caesar first landed an army in Britain. A year later he set out a second time for this island with five legions and a large number of cavalry. When he had disembarked his army and chosen a place suitable for a camp, he inquired from certain captives where the enemy were, and was informed that, terrified by the multitude of Roman ships which they had seen, they had withdrawn far from the coast.

V

FOURTH YEAR LATIN

VIRGIL

I. Translate:

Est procul in pelago saxum spumantia contra
Litora, quod tumidis submersum tunditur olim
Fluctibus, hiberni condunt ubi sidera Cori;
Tranquillo silet, immotaque attollitur unda
Campus et apricis statio gratissima mergis:
Hic viridem Aeneas frondenti ex ilice metam
Constituit signum nautis pater, unde reverti
Scirent et longos ubi circumflectere cursus.
Tum loca sorte legunt, ipsique in puppibus auro

Ductores longe effulgent ostroque decori;
 Cetera populea velatur fronde juvenus,
 Nudatosque humeros oleo perfusa nitescit.
 Considunt transtris, intentaque brachia remis;
 Intenti exspectant signum, exsultantiaque haurit
 Corda pavor pulsans laudumque arrecta cupido.

AEN. V, 124.

Explain the construction of: *unda*; *statio*; *scirent*; *humeros*; *remis*.—Decline *loca*; *litora*; *ilice*.—Give the principal parts of *tunditur*; *reverti*; *legunt*; *perfusa*; *haurit*.—Write out the last three lines, indicating the metrical feet, the principal caesura, and the length of each syllable.

2. Give the dates of Virgil's birth and death. What did he write besides the Aeneid? How many books does the Aeneid contain?

3. Briefly outline the contents of the sixth book of the Aeneid.

FIRST YEAR GERMAN

Beginning with September 1912, all entrance examinations in German will include an optional oral test; a required exercise in dictation; and a required theme in German.

N. B. State where and how long you have studied German.

I

Fifteen minutes of the time will be devoted to a dictation exercise.

II

Translate:

Es war mitten in der Nacht. Hinter den Linden im Garten kam der Mond herauf; das niedrige Fenster des Hauses ward von seinem Licht beschienen. Am Fenster stand ein Mädchen, das eine kleine Uhr gegen das Mondlicht hielt und sie aufmerksam zu betrachten schien. Vom Kirchturm schlug es eben drei Viertel. Unten im Garten war es dunkel und still. Plötzlich guckte ein Kopf über den Zaun; ein unterseßter (short and stout) Junge kletterte langsam in den Garten hinab. Unweit des Zaunes stand ein nicht sehr hoher Apfelbaum; die Äpfel waren gerade reif, die Zweige voll. Der Junge mußte ihn schon kennen, denn er nickte ihm zu, band sich einen großen Sack an den Leib und fing an zu klettern. Bald fielen die Äpfel in den Sack, einer nach dem andern in kurzen regelmäßigen Pausen. Da geschah es, daß ein Apfel zur Erde fiel und ein paar Schritte weiter ins Gebüsch rollte, wo, ganz versteckt, eine Gartenbank stand. Auf dieser Bank saß ganz regungslos ein junger Mann. Als der Apfel seine Füße berührte, sprang er erschrocken auf; einen Augenblick später trat er vorsichtig auf den Pfad hinaus. Da sah er droben, wo der Mond schien, einen Zweig mit roten Äpfeln hin und her schaukeln; eine Hand fuhr in den Mondschein hinaus und verschwand gleich wieder mit einem Apfel in den tiefen Schatten der Blätter.

III

1. Give the first person singular present, past (imperfect), and perfect of all the strong verbs in II, with prefixes.
2. Give the first person singular of the verb: *ward beschienen* (ll. 2 and 3) in the tense in which it appears. What other form could be used in its place? Inflect both forms in singular and plural, also the corresponding subjunctive.
3. What sort of verb is *muszte* (l. 9)? Name the others of its group and inflect each in the present indicative and past subjunctive.
4. Supply the proper endings where necessary, and decline in both numbers: *ein untersetzter Junge* (l. 6, 7), *das niedrige Fenster* (l. 2), *tief-Schatten* (l. 19), *ein-kurz-regelmässig-Pause* (l. 11, 12).
5. State the rules concerning the three kinds of word order in German and illustrate each with an example taken from II.
6. Form and translate sentences in which appear the comparative or superlative of: *kurz, tief, grosz, voll, vorsichtig, gut, langsam*.
7. Which of the prepositions used in passage II govern either dative or accusative? State when dative and when accusative is used and illustrate the rule with examples taken from II.
8. In how many different meanings is *der, die, das* used in German? Decline each in singular and plural.

IV

Translate into German:

One bright night a small boy climbed over the fence into his neighbor's garden and upon a fine apple tree which was full of ripe apples. He did not see a young man who was sitting on a hidden garden bench and waiting for the daughter of the house. When the boy had filled his large sack, the young man, who had seen the boy in the tree, grasped his foot, which was hanging down, and punished him.

SECOND AND THIRD YEAR GERMAN

N. B. State whether you desire credit for Second Year or Third Year German, also where and how long you have studied German.

The examination for two units credit includes all parts of this paper from I to VI inclusive.

The examination for three units credit includes all parts of this paper except III, IV, and VI.

I

Fifteen minutes of the time will be devoted to a dictation exercise.

II

Translate:

Eine Pfeife hatte ich zwar nicht, wohl aber eine Zigarre. Ich setzte mich auf einen Stein, um eine Weile zu ruhen, und blies gedankenvoll bläuliche Wolken von mir, die alsbald in dem Meere des Nebels verschwammen. Nachdem ich unter Grübeln über meine verdrießliche Lage die Zigarre ausgeraucht hatte, blieb mir weiter nichts übrig, als aufs

neue nach dem Wege zu suchen. Endlich mußte ich ihn doch finden, und dann wollte ich besser auf ihn achtgeben. Es gelang mir jetzt wenigstens auf dem Trocknen zu bleiben und etwas zu entdecken, das einem Wege ähnlich sah, doch kam ich nur langsam vorwärts, weil ich immer auf der Hut sein mußte. Nach einer weiteren Stunde, als ich gerade auf einer weichen Moosdecke dahinschritt, und mein Geist mit der Vorstellung eines üppigen Beefsteaks erfüllt war, da wehte plötzlich ein leiser Luftzug deutlich den Duft von etwas Gebratenem zu mir her. Ich hielt dies zuerst für eine Halluzination der aufgeregten Sinne, allein als ich stehen blieb, merkte ich bald, es konnte keine Täuschung sein.

III

Bei einem Wirte wundermild,
Da war ich jüngst zu Gäste ;
Ein goldner Apfel war sein Schild
An einem langen Aste.

Es war der gute Apfelbaum,
Bei dem ich eingeklehret ;
Mit süßer Kost und frischem Schaum
Hat er mich wohl genähret.

Es kamen in sein grünes Haus
Viel leicht beschwingte Gäste ;
Sie sprangen frei und hielten Schmaus
Und fangen auf das Beste.

Ich fand ein Bett zu süßer Ruh
Auf weichen, grünen Matten ;
Der Wirt, er deckte selbst mich zu
Mit seinem kühlen Schatten.

Nun fragt' ich nach der Schuldigkeit,
Da schüttelt' er den Wipfel.
Gesegnet sei er alle Zeit
Von der Wurzel bis zum Gipfel!

IV

Paraphrase III in simple German prose.

V

1. Give principal parts of the verbs: *setzte mich* (l. 21), *blies* (l. 22), *blieb* (l. 25), *achtgeben* (l. 27), *gelang* (l. 27), *dahinschritt* (l. 31), *erfüllt* (l. 32), *stehen* (l. 35).

2. Give the nominative and genitive singular (with the definite article) and the nominative plural of: *Wirte* (l. 37), *Aste* (l. 40), *Haus* (l. 45), *Bett* (l. 49),

Wipfel (l. 54), *Zeit* (l. 55), *Wurzel* (l. 56), *Vorstellung* (l. 32), *Meere* (l. 23), *Moosdecke* (l. 31).

3. Find one example each of the three types of adjective declension from II and III and decline them through singular and plural. Explain the expressions: *aufs neue* (l. 25), *auf dem Trocknen* (l. 28), *von etwas Gebratenem* (l. 33), *auf das Beste* (l. 48).

4. Give the third person singular active of each tense in the indicative, subjunctive, and conditional modes of: *wollte* (l. 27), *dahinschritt* (l. 31); the same tenses and modes in the second person singular of the passive of: *erfüllt* (l. 32).

5. What case or cases are governed by each of the prepositions: *auf, aus, bei, durch, für, in, mit, über, um, von, wegen, zu*.

6. Account for: *Gesegnet sei er* (l. 55).

7. Explain the use of *Es* in line 45.

VI

Translate into German:

A certain English Lord was one day on a short journey, and passed through a village. Here he met a boy who was leading a calf. This boy stopped on the road and stared at the lord with open mouth, when he came near him. When the lord noticed the boy, he also stopped, and asked him if he knew him. The boy then answered: "Yes," and the gentleman asked him what his name was. The boy with the calf gave his name. Then the lord questioned him once more: "Why do you not take off your hat?" The boy replied coolly, he would gladly do so, if the lord would hold his calf a minute.

VII

Verdient' ich's, die Gesendete zu sein,
 Wenn ich nicht blind des Meisters Willen ehrte!
 Und ich bin nicht so elend, als du glaubst.
 Ich leide Mangel, doch das ist kein Unglück 60
 Für meinen Stand; ich bin verbannt und flüchtig
 Doch in der Öde lern' ich mich erkennen.
 Da, als der Ehre Schimmer mich umgab,
 Da war der Streit in meiner Brust; ich war
 Die unglücklichste, da ich der Welt 65
 Am meisten zu beneiden schien—Jetzt bin ich
 Geheilt, und dieser Sturm in der Natur,
 Der ihr das Ende drohte, war mein Freund;
 Er hat die Welt gereinigt und auch mich.
 In mir ist Friede—Komme, was da will, 70
 Ich bin mir keiner Schwachheit mehr bewußt!

VIII.

Oldendorf. Sei jetzt wenigstens kein Hanswurst.—Du kannst dir denken, wie peinlich meine Stellung im Hause des Obersten geworden

ist. Der würdige alte Herr entweder kalt oder heftig, die Unterhaltung mit beißenden Anspielungen gewürzt, Ida leidend, ich sehe oft, daß sie geweint hat. Siegt unsere Partei, werde ich Abgeordneter der Stadt, so fürchte ich, ist mir jede Hoffnung auf eine Verbindung mit Ida genemmen. 75

Bolz (eifrig). Und trittst du zurück, so erleidet unsere Partei einen empfindlichen Verlust. (Schnell und nachdrücklich) Die bevorstehende Sitzung der Kammern wird verhängnisvoll für den Staat. Die Parteien sind einander fast gleich. Jeder Verlust einer Stimme ist für unsere Sache ein Unglück. In dieser Stadt haben wir außer dir keinen Kandidaten, dessen Popularität groß genug ist, seine Wahl wahrscheinlich zu machen. Entziehst du dich aus irgend einem Grunde der Wahl, so siegen unsere Gegner. 80 85

Oldendorf. Leider ist es, wie du sagst.

IX

Paraphrase in simple German prose Heine's Lorelei, or some other German poem (other than No. III above) that you have committed to memory.

X

1. In VIII note all genitive forms (6 in all) and explain use of each.
2. State four uses of the subjunctive in German and two of the infinitive and illustrate each by a German sentence, if possible taken from II, VII, or VIII.

XI

Translate into German:

In the good old times, when two young people knew that they really loved each other, they had the courage to say so and the wedding would take place as soon as the parents would permit it. If there was anything against it, the young man used to pack up his traps (*sein Bündel schüren*) and go on till he found a new girl. That was what Mr. Eckart said, and he could not understand his son, who had not told the parents of the young lady that he loved her, though he had been going with her for three months. Mrs. Eckart thought the affair was critical. Charles was getting thin, and she thought that the chancellor's (*Kanzleirat*) wife and the count were the cause of the ill humor of her son. She knew that the young lady liked him, but this Hungarian count was making them all unhappy.

FIRST YEAR FRENCH

1. Write in French the names of the twelve months, of the four seasons, of the days of the week, and of the cardinal numbers up to twenty.
2. Give the feminine plural forms of the following adjectives: *vieux, beau, doux, flatteur, sec, prêt, général, blanc*.
3. Inflect the following tenses:
 1. Past Indefinite Indicative of *voir*.
 2. Present Subjunctive of *savoir*.

3. Pluperfect Subjunctive of *aller*.
4. Pluperfect Indicative of *arriver*.
5. Past Indefinite Indicative of *mourir*.
6. Imperfect Indicative of *croire*.
7. Future Indicative of *courir*.
8. Imperfect Subjunctive of *venir*.
9. Present Subjunctive of *vouloir*.
10. Present Indicative of *manger*.

4. Translate into French:

1. Have you any books? Yes, I have some. Here they are. Do you want them? Yes, give them to me, if you please.
2. If I had any money, I should give it to you; but I haven't any.
3. We have been in France for three months, but we cannot yet speak

French.

4. Do you know what you are going to do this afternoon at five o'clock?
5. I gave him the books which I bought yesterday in town.
6. How many pupils are there in your class?
7. My sisters have gone in town to meet one of their friends who is to arrive by the three o'clock train.
8. It is very cold today, but I am not cold.
9. My uncle, who has been living in the country for some time, has some fine horses that I have never seen.
10. If I had not been sick last evening, I should have accompanied you to the theatre.

4. Translate into English:

1. Les Lorin étaient bien chagrins d'être ainsi forcés de se séparer de ce cher neveu qu'ils n'avaient donc retrouvé que pour le perdre presque aussitôt. Mais quoi! ils se sentaient malgré cela soulagés en pensant que leur petite Millette serait heureuse puisque, Placide s'éloignant, Pierrille demeurerait au milieu d'eux. D'ailleurs, Placide les avait déjà quittés une fois, et quelque dure que dût être la séparation, elle ne serait jamais aussi cruelle que s'il eût fallu voir partir Pierrille emportant avec lui tout le bonheur de la maisonnée.

2. On a reproché à Molière, parfois avec acrimonie, ce que les plus indulgents ont appelé les négligences de son style, et les plus sévères, son 'jargon.' Des négligences, il en a à coup sûr, qui viennent de l'extrême rapidité avec laquelle il a écrit presque toutes ses pièces; mais lui reprocher d'avoir fait parler à Martine le patois de sa ferme, à tous ses personnages, nobles ou rustres, le langage de leur situation, c'est lui reprocher justement ce qui fait de lui le plus grand de tous les écrivains dramatiques français.

SECOND YEAR FRENCH

I

1. Give the plural of the following words, *jeu, oeil, ciel, couteau, trou, bijou, genou, détail, travail, bras, voix, nez*.
2. Give the feminine of *heureux, blanc, faux, cher, sec, beau, vieux, cruel, oisif, ancien*.
3. Explain the uses of the following pronouns in French, *celui, celle-ci, moi, me, quoi, lequel*. Illustrate by examples.

4. Give six rules for the use of the subjunctive in French. Illustrate each by an example.
5. Give the rules for the agreement of past participles in French. Illustrate each by an example.

II

1. Give a synopsis in the simple tenses of *avoir* in the first person singular.
Give a synopsis in the simple tenses of *être* in the first person plural.
Give a synopsis in the simple tenses of *régner* in the third person singular.
Give a synopsis in the simple tenses of *choisir* in the third person plural.
2. Give the five principal parts and the future indicative and present subjunctive of *aller*, *savoir*, *dire*, *écrire*, *se vêtir*, *pouvoir*, *valoir*, *peindre*, *apercevoir*, *venir*.
3. Conjugate *vouloir* in the present indicative.

“ <i>savoir</i>	“	imperfect indicative.
“ <i>conclure</i>	“	past definite.
“ <i>tenir</i>	“	future indicative.
“ <i>cueillir</i>	“	conditional.
“ <i>faire</i>	“	present subjunctive.
“ <i>naître</i>	“	imperfect subjunctive.

III

Translate into French:

1. Good morning, sir. How are you today? Very well, thank you.
2. I am very sorry that you have a headache. How long have you had it?
3. I am cold; it is cold today; snow is cold; I have a cold.
4. I wish you a Merry Christmas and a Happy New Year. Thank you. I hope you enjoy your vacation.
5. That hat that that lady is wearing is the one that we saw at the milliner's the day before yesterday.
6. He will give it to me provided that I introduce myself to him so that he will know who I am.
7. Here are two apples. Which one do you want? I want the one on the plate, the red one.
8. There are two fine horses on the street this morning. There they are now in front of the church.
9. I wanted him to go to the store so that he might say that he had seen them before they had arrived at the house.
10. They have given each other presents on their birthdays for the last ten years.
11. This is the best pen that I have ever had.
12. Today is the second of February, nineteen hundred twelve. It is now a quarter to three. I expect to have finished a little after four o'clock.

IV

Translate into English:

1. Il vient de me gronder.
2. Il a beau me conseiller.

3. Il s'est mis à traduire.
4. Il y va de votre intérêt.
5. C'est mon coup d'essai.
6. Il y a longtemps que je vous attends.
7. Il me savait bon gré.
8. Il me couchait en joue.

V

Translate:

vêpres = evening

plate forme = terrace

broutant = cropping

rebord = ledge

Dans la vie de maître Cornille il y avait quelque chose qui n'était pas clair. Depuis longtemps personne, au village, ne lui portait plus de blé, et pourtant les ailes de son moulin allaient toujours leur train comme devant. . . . Le soir, on rencontrait par les chemins le vieux meunier poussant devant lui son âne chargé de gros sacs de farine.

—Bonnes *vêpres*, maître Cornille! lui criaient les paysans; ça va donc toujours, la meunerie?

—Toujours, mes enfants, répondait le vieux d'un air gaillard. Dieu merci, ce n'est pas l'ouvrage qui nous manque.

Alors, si on lui demandait d'où diable pouvait venir tant d'ouvrage, il se mettait un doigt sur les lèvres et répondait gravement: "*Motus!* je travaille pour l'exportation. . ." Jamais on n'en put tirer davantage.

Quant à mettre le nez dans son moulin, il n'y fallait pas songer. La petite Vivette elle-même n'y entrait pas. . . .

Lorsqu'on passait devant, on voyait la porte toujours fermée, les grosses ailes toujours en mouvement, le vieil âne *broutant* le gazon de la *plate-forme*, et un grand chat maigre qui prenait le soleil sur le *rebord* de la fenêtre et vous regardait d'un air méchant.

Tout cela sentait le mystère et faisait beaucoup jaser le monde. Chacun expliquait à sa façon le secret de maître Cornille, mais le bruit général était qu'il y avait dans ce moulin-là encore plus de sacs d'écus que de sacs de farine.

—Alphonse Daudet.

Alors commencèrent pour nous ces douces années dont le souvenir m'arrache des larmes. Nous prîmes un petit appartement au fond d'un jardin, près du Val-de-Grâce. Notre solitude y fut absolue. Elle n'avait pas de relations et ne chercha guère à en former. Nos fenêtres donnaient sur le jardin des Carmélites de la rue d'Enfer. La vie de ces recluses, pendant les longues heures que je passais à la Bibliothèque, réglait en quelque sorte la sienne et faisait son unique distraction. Son respect pour mon travail était extrême. Je l'ai vue, le soir, durant des heures, à côté de moi, respirant à peine, pour ne pas m'interrompre; elle voulait cependant me voir, et toujours la porte qui séparait nos deux chambres était ouverte. Son amour était arrivé à quelque chose de si discret et de si mûr que la communion secrète de nos pensées lui suffisait. Elle, si exigeante de coeur, si jalouse, se contentait de quelques minutes par jour pourvu qu'elle fût assurée d'être seule aimée. Grâce à sa rigoureuse économie, elle me fit, avec des ressources singulièrement limitées, une maison ou rien ne manqua jamais, et qui même avait

son charme austère. Nos pensées étaient si parfaitement à l'unisson que nous avions à peine besoin de nous les communiquer.

—Ernest Renan.

THIRD YEAR FRENCH

I

Translate:

1. The lady to whose daughter I was just speaking went away just now.
2. Tell him I shall be there when he comes, but don't speak to them about it.
3. They presented him to me and then he presented me to you.
4. Have you any bread? Yes, sir, I have some white bread. Very well, that is what I want.
5. I don't see anyone I have ever known in this room.
6. Who is the man you are looking for? The one over yonder in the other room.
7. I am afraid that it won't be very warm tomorrow, but John has no fear that it will be cold.
8. I am looking for a man who will teach me French.
9. If he should come at half-past two he would be able to give it to them before they go away.
10. I am doing it without his knowing anything about it.

II

Translate into idiomatic English:

1. J'ai de quoi me tirer d'affaire.
2. Prenez garde de le faire.
3. Ils se sont beaucoup plaints de lui.
4. Je n'en doute pas; je m'en doute.
5. Il est à même de le faire.
6. Il a beau parler, cela ne sert de rien.
7. Ils me manquent de plus en plus.
8. Il m'en voulait de l'avoir fait.

III

Translate:

Ces quelques paroles me bouleversèrent. Ah! les misérables, voilà ce qu'ils avaient affiché à la mairie.

Ma dernière leçon de français! . . .

Et moi qui savais à peine écrire! Je n'apprendrais donc jamais! Il faudrait donc en rester là! . . . Comme je m'en voulais maintenant du temps perdu, des classes manquées à courir les nids ou à faire des glissades sur la Saar! Mes livres que tout à l'heure je trouvais si ennuyeux, si lourds à porter, ma grammaire, mon histoire sainte me semblaient à présent de vieux amis qui me feraient beaucoup de peine à quitter. C'est comme M. Hamel. L'idée qu'il allait partir, que je ne le verrais plus, me faisait oublier les punitions, les coups de règle.

—Alphonse Daudet.

Give the principal parts, including the future indicative and present subjunctive, of the italicized verbs.

IV

Translate:

After the departure of her daughter, Madame de Sévigné continued to live at the court, going from time to time to pass a season at her estate, *Les Rochers*, in Brittany. She enjoyed herself at Versailles. One evening the king danced with her; she was so dazzled that, returning to her place, she said to her cousin: "It must be confessed that we have a great king." "I should think so, after what he has just done," replied Bussy mischievously.

The most intimate friends of Madame de Sévigné were Fouquet, Cardinal de Retz, and Monsieur and Madame de Pomponne. Many of her letters are written to her excellent uncle, the Abbé de Coulanges, who had brought her up, and who left her his entire fortune. She calls him in her letters "le Bien-bon."

V

Translate:

Gil Blas, me dit-il, écoute-moi! Quoiqu'en me découvrant tes besoins ce soit me reprocher de ne les avoir pas prévenus, je ne t'en sais pas mauvais gré, mon ami. Je me veux plutôt du mal à moi-même de ne t'avoir pas demandé comme tu vivais. Mais, pour commencer à réparer cette faute d'attention, je te donne une ordonnance de quinze cents ducats, qui te seront comptés à vue au Trésor royal. Ce n'est pas tout, je t'en promets autant chaque année; et de plus, quand des personnes riches et généreuses te prieront de leur rendre service, je ne te défends pas de me parler en leur faveur.

—LeSage.

FIRST YEAR SPANISH

I

1. Pronunciation. 2. Dictation.

II

1. (a) Write the feminine of: *blanco, difícil, verde, joven, español, burlón, traidor, mejor*.

(b) Write the plural of: *la vez, la ley, el café, el alcalde, la pared, la lección, la imagen*.

2. Give the Spanish relative pronouns and explain the distinctions in their uses. Illustrate by examples.

3. Write the cardinal numbers from one to twenty; by tens to one hundred; by hundreds to one thousand.

4. Write the names of the days of the week; the months of the year; the four seasons.

5. Give three rules for the use of the subjunctive. Give illustrative examples.

III

1. Conjugate in all the simple tenses of the indicative and subjunctive moods the verbs: *comprar, vender, ser, haber*.

2. Conjugate the following:

- a. Present indicative of *tener, saber*.

- b. Present subjunctive of *poder, gozar*.
- c. Future indicative of *querer, salir*.
- d. Preterit indicative of *poner, dar*.
- e. Imperfect subjunctive of *estar, venir*.

IV

Translate:

1. On what page does the lesson begin today?
2. What time is it? It is a quarter to twelve.
3. Traveling in Spain is not so easy as in some other countries.
4. How old will you be next Christmas? I shall be about nineteen.
5. That is the best book I have ever read. I finished it last Sunday.
6. I met your brother in the street the night before last, and he said that he would visit us tomorrow.
7. I had to write the exercises on the blackboard today.
8. What is the name of this in Spanish? I do not know; I never saw it before.
9. He sent me to her to show her the book.
10. He told it to him to see what he would do.
11. I am hungry and thirsty and I am far from home.
12. The more this machine runs, the less it is worth. I wouldn't pay much for it now.
13. Do you know Mr. Pereda? I was introduced to him once on the ship.
14. We all have a right hand and a left hand. The former is more useful than the latter.
15. If he comes, I shall go too, but I do not believe he will come.

V

Translate:

1. Me gusta verle de vez en cuando.
2. Trataré de hacerlo.
3. Le ví dos años ha.
4. Acabo de hacerlo.
5. No me es posible hacerlo.

VI

Translate:

De un salto me planté en la calle y corrí hasta la esquina; pero allí me hice cargo de que venía sin sombrero, y me volví. Penetré de nuevo en el portal, con gran repugnancia y miedo. Encendí otro fósforo y eché una mirada oblicua á mi víctima, con la esperanza de verle alentar. Nada; allí estaba en el mismo sitio, rígido, amarillo, sin una gota de sangre en el rostro, lo cual me hizo pensar que había muerto de conmoción cerebral. Busqué el sombrero, metí por él la mano cerrada para desarrugarlo, me lo puse y salí.

Pero esta vez me guardé de correr. El instinto de conservación se había apoderado de mí por completo, y me sugirió todos los medios de evadir la justicia. Me ceñí á la pared por el lado de la sombra, y haciendo el menor ruido con los pasos, doblé pronto la esquina de la calle de la Perseguida, entré en la de San Joaquín y caminé la vuelta de mi casa. Procuré dar á mis pasos todo el sosiego y compostura posibles.

—Armando Palacio Valdés.

El diablo (que también se mezcla á veces en estos asuntos compasivos) me tentó á probar si las palabras aventajarían á las monedas en calmar algún tanto la ulceración de aquella alma, en carne viva.

—Tenga ánimo, mujer—le dije enérgicamente.—Si su marido es un mal hombre, usted por eso no se abata. Lleva usted un niño en brazos. . . . para él debe usted trabajar y vivir. Por esa criatura debe usted intentar lo que no intentaría por sí misma. Mañana el chico aprenderá un oficio y le servirá á usted de amparo. Las madres no tienen derecho á achicarse así, ni á entregarse á la desesperación, mientras sus hijos viven:

—Emilia Pardo Bazán.

SECOND YEAR SPANISH

I

1. Pronunciation. 2. Dictation.

II

Translate:

1. The principal parts of the body are the trunk, the arms, the legs, and the head.

2. He is as good as he can be, but his little sister is better.

3. I know an author and a painter. The former is English but the latter is Spanish.

4. What time is it? I do not know. My watch is broken. It must be about nine o'clock.

5. Winter is the coldest season. The fields are covered with snow and the lakes with ice. The sidewalks are slippery too.

6. We have just finished a very interesting Spanish story. What a pleasure it is to be able to read a foreign language!

7. The more I read Spanish aloud, the more I appreciate its beauty and its music.

8. We must eat something or we shall be hungry before we arrive. I shall take a salad? What would you like?

9. She plays cards every evening but she has never learned to play the piano or any other musical instrument.

10. I gave it to her, so that when she should send me to them, I would not have it with me.

11. He wants me to go to the theatre with him to see the new play, but I have neither the time nor the desire.

12. I wish he could feel what I felt. He would not sleep much, or if he did sleep, he would dream of strange things.

13. George Washington was born the twenty-second of February, seventeen thirty-two and died the fourteenth of December seventeen ninety-nine.

14. He went to her house in order that she might show him what she had found the week before.

15. He has never given anything to anybody which he desired for himself.

III

1. Give the forms of the personal pronouns used as the object (direct and indirect) of verbs. Explain their position and use with the verb. Illustrate by examples.

2. Explain the difference between the use of *ser* and *estar*; *saber* and *conocer*; *jugar* and *tocar*; *pero* and *sino*. Illustrate by examples.

3. Give five rules for the uses of the subjunctive in Spanish. Illustrate each by an example.

4. Conjugate in all the simple tenses of the indicative and subjunctive, the verbs *gozar*, *mover*, *sentir*.

5. Conjugate

(a) in the present indicative, the verbs *poder*, *saber*, *ser*, *haber*, *tener*.

(b) in the present subjunctive, the verbs *caber*, *decir*, *hacer*, *dar*, *ver*.

(c) in the preterit, *venir*, *traducir*, *pedir*, *querer*, *traer*.

6. Translate:

I know, he sees, I shall have, we shall go out, I go, he would like, we made, they said, he will be able, she was going, we were seeing, I am worth.

IV

Translate:

Ya en mi edad pocas veces gusto de alterar el orden que en mi manera de vivir tengo hace tiempo establecido, y fundo esta repugnancia en que no he abandonado mis lares ni un solo día para quebrantar mi sistema, sin que haya sucedido el arrepentimiento más sincero al desvanecimiento de mis engañadas esperanzas. Un resto, con todo eso, del antiguo ceremonial que en su trato tenían adoptado nuestros padres, me obliga á aceptar á veces ciertos convites á que parecería el negarse grosería, ó por lo menos ridícula afectación de delicadeza.

Andábame días pasados por esas calles á buscar materiales para mis artículos. Embebido en mis pensamientos, me sorprendí varias veces á mí mismo riendo como un pobre de mis propias ideas, y moviendo maquinalmente los labios: algún tropezón me recordaba de cuando en cuando que para andar por el empedrado de Madrid no es la mejor circunstancia la de ser poeta ni filósofo.

Larra.

Translate:

Elisa se reía también de este amor, que lisonjeaba, no obstante, su vanidad de mujer; porque la admiración es bien recibida, aunque venga de los tontos. Cuando encontraba á Rufo por la calle le ponía semblante halagüeño y le hablaba en el tono protector y cariñoso que se dispensa á los niños: gozaba con las muecas y carocas de perro fiel en que se deshacía el tonto al verla: le prometía formalmente casarse con él, siempre que obedeciese á su padre y no pegase á los chicos. Rufo preguntaba con expresión de anhelo:—¿Para cuándo?—Amigo, no lo sé—respondía ella,—pregúntaselo al Santo Cristo, á ver lo que te dice.—Y el pobre se pasaba horas enteras de rodillas en la iglesia, preguntando al célebre Cristo de Rodillero cuándo sería su boda, sin obtener contestación.—Es que todavía no quiere que nos casemos—le decía Elisa,—ten paciencia y sé bueno, que ya sé ablandará.

Armando Palacio Valdés.

THIRD YEAR SPANISH

[Write a full statement of your previous course in Spanish; name the text-books used and the authors or works read; state the approximate number of pages you have read. How long have you studied the language?]

I

1. Pronunciation. 2. Dictation.

II

Translate into Spanish:

Queen Mercedes had died childless, and it was considered necessary, if possible, to ensure the succession to the Crown in the male line, as it was known that the King was consumptive. Alfonso still clung to the memory of his dead wife, but recognized the national desire that he should marry again, and his choice fell upon the Archduchess Maria Cristina of Austria, whom he had known in Vienna. In the autumn of 1879 the Archduchess and her mother were staying at Arcachon near Bordeaux, and thither went Alfonso to meet her.

III

Translate into Spanish:

But who were they? Whence had they come? What was the name of their mysterious chief? This was the enigma which all sought to explain, but which thus far no one could solve, although it was observed that from then on the armor of the feudal lord had disappeared from the place it had previously occupied, and afterwards various peasants had affirmed that the captain of this inhuman band marched at its head clad in an armor which, if not the same, resembled it exactly.

IV

Translate:

Adorábanse, sí, locamente el molinero y la molinera, y aun se hubiera creído que ella lo quería más á él que él á ella, no obstante ser él tan feo y ella tan hermosa. Dígolo porque la señá Frasquita solía tener celos y pedirle cuentas al tío Lucas cuando éste tardaba mucho en regresar de la Ciudad ó de los pueblos adonde iba por grano, mientras que el tío Lucas veía hasta con gusto las atenciones de que era objeto la señá Frasquita por parte de los señores que frecuentaban el molino; se ufanaba y regocijaba de que á todos les agradase tanto como á él: y, aunque comprendía que en el fondo del corazón se la envidiaban algunos de ellos, la codiciaban como simples mortales y hubieran dado cualquier cosa porque fuese menos mujer de bien, la dejaba sola días enteros sin el menor cuidado, y nunca le preguntaba luego qué había hecho ni quién había estado allí durante su ausencia.

Alarcón.

V

Translate:

LA COPA DEL REY DE THULÉ

—¿Me quieres?—le preguntó
un galán á una doncella.
Él era muy pobre, y ella
le contestó airada:—¡No!—

Quedó él lleno de pesar
sobre una roca sentado,
y al verse tan despreciado
se echó de cabeza al mar.

Llegó al fondo, y al morir,
tentando un cáliz lo asió,
pensó en Dios... nadó... subió
y dijo:—¡Quiero vivir!—
Cuando hizo á la orilla pie,
vió el cáliz de oro, en que había
un letrero que decía:
Copa del rey de Thulé.

Sobre la roca después
se hablaron él y ella así;
—Soy rico; ¿me quieres?—Sí.
—Dame un beso...—Y dos y tres...—
Mas cuando le fué á besar,
viendo él la codicia de ella,
rechazando á la doncella
la echó de cabeza al mar.

• Campoamor.

VI

Translate:

Yo era el menor de los hijos de mi padre, y en mí tenía éste puestos los cinco sentidos, no solamente por ser el Benjamín de la casa, sino por mi calidad de varón, llamado, por ende, á conservar el apellido de familia, de lo cual se pagaba mucho el candoroso autor de mis días, ni más ni menos que si los Sánchez no abundasen en el mundo, ó hubiera en la rama directa de los de mi casta alguna particularidad eminente que valiera la pena de irse esculpiendo en la memoria de las sucesivas generaciones de mi familia, ó no pudiera ni debiera endosarse á cualquier otro Sánchez de los muchos que había en el lugar, ó al primero con quien se topase al revolver la esquina, á falta de otro mejor.

Pereda.

VII

- a. Explain all pronouns and pronominal adjectives in the preceding selection.
- b. Give rules for the use of the subjunctive in noun clauses in Spanish, with illustrative sentences.

ANCIENT HISTORY

Preparation (answer all).

1. Where have you studied this subject?
2. How long have you studied it?
3. What textbook or textbooks did you use?
4. What other books dealing with this period have you read?

I. Oriental History (answer 1 or 2).

1. What industries flourished in ancient Egypt? in ancient Babylonia?
2. From what city did the founders of Carthage come, what language did they speak, and what were the natural advantages of their new home?

II. Greek History (answer two questions).

1. Where and how did the Greeks and the Carthaginians come into conflict with each other? What part in this struggle was played respectively by Gelon, by Dionysius I, and by Timoleon?
2. Where was Ionia? How did the Ionian Greeks come under the sway of Persia? When and why did they accept the leadership of Athens? What caused the disruption of the Athenian empire?
3. What was the native country of Alexander the Great? Where is it? How far did he go in his invasion of Asia? What were the permanent results of his career?

III. Greek Ideas (answer two questions).

1. What did the Greeks mean by these words, viz.: tyranny, oligarchy, democracy, autonomy, ostracism?
2. What principles did Socrates stand for?
3. What do you know about (a) Greek athletics, or (b) the education of boys at Sparta?

IV. Roman History (answer two questions).

1. Explain briefly the establishment of Roman sovereignty (a) in Spain, (b) in Greece, (c) in Egypt.
2. To what extent, in the 2d century B. C., did the people rule at Rome, (a) in theory, (b) in practice?
3. Why was Julius Caesar hostile to the Senate? What did he accomplish as proconsul in Gaul? What did he accomplish as dictator at Rome?

V. Roman History (answer two questions).

1. What did Augustus do, during his administration, for the city of Rome?
2. Who were the Flavian emperors, and when did they bear rule? With what success did each of them administer the empire? What buildings at Rome do you associate with any one of them?
3. Where did Trajan extend the frontiers of the empire? What did he do for the poor in Italy? What was his policy toward the Christians?

VI. The Later Roman Empire (answer 1 or 2).

1. How did Christianity become the religion of the Roman Empire?
2. What do you know about (a) Alaric, (b) Theodoric, and (c) Clovis?

MEDIEVAL AND MODERN HISTORY

PREPARATION (answer all).

1. Where have you studied this subject?
2. How long have you studied it?
3. What textbook or textbooks did you use?
4. What other books on medieval or modern history have you read?

GROUP I (answer 1 or 2).

1. What non-Christian peoples harassed Christendom during the century which followed the death of Charles the Great (Charlemagne)? What lands were overrun by each? What districts conquered? Which of these peoples became Christian, and when?

2. When and where did Otto (Otho) the Great rule? What did he do to deserve the title of "the Great"?

GROUP II (answer any two).

1. How did the medieval towns win their liberties? What were these liberties? What was a "commune"? What was a gild (guild)?

2. What was a Cardinal? How was he chosen? What powers and duties had he? When and how did these change? Name any three great Cardinals, and tell what each did.

3. Name three great scholars of the Middle Ages, telling something of each. When and how did the universities arise? What was scholasticism?

GROUP III (answer 1 or 2).

1. Locate on the map the seven leading powers of Christendom at the time of the discovery of America. Locate in the territories of each the two towns then of most importance. Attach names to the rivers then navigable, marking on each what was then the head of navigation for sea-going vessels.

2. Locate Rouen; Dresden; Prague; Munich; Berlin; Vienna; La Rochelle; Stralsund; Warsaw; Copenhagen.

GROUP IV (answer any three).

1. Who was Colbert? What were the principal taxes in France in his time? What did he attempt to do in respect to tariffs? the French navy? colonization? What success did he have?

2. What territories belonged to the King of Spain at the beginning of the Spanish succession war? What were taken from him by the war? Who got each of these? When did the war begin and end? What countries were engaged in it?

3. When did Frederick the Great come to the throne? In what wars was he engaged? What territorial additions did he make to Prussia? What internal reforms did he establish?

4. Explain the following, and tell why each was important. Fall of the Bastille; the 10th of August; the Concordat of 1801; the Battle of Jemmapes; Marengo; the Berlin decrees; the code Napoleon; the Battle of Leipzig; Waterloo; the Congress of Vienna.

GROUP V (answer 1 or 2).

1. Explain and show the importance of the Zollverein. What state headed this? What states belonged to it? Name the three wars in which Prussia was engaged from 1863 to 1871. Give briefly the results of each war.

2. What was the importance of Sardinia in the unification of Italy? Who was Mazzini? Garibaldi? Victor Emmanuel? What were the events in 1859

leading towards Italian Unity? What was Garibaldi's conquest of the Two Sicilies? What was the result for Italy of the Austro-Prussian war? Date. What was the result of the Franco-Prussian war? Date.

AMERICAN HISTORY AND CIVICS

Preparation (answer (I) with reference to American History, and (II) with reference to Civics, separately, each of the following questions, a to e.

- a. In what school did you study (I) American History? (II) Civics?
 - b. How many class exercises were there each week?
 - c. For how many weeks?
 - d. What textbooks did you study?
 - e. Name three other books (author and title) which you used.
1. Geographical (answer a or b).
 - a. Why was the Shenandoah Valley the scene of repeated raids and numerous minor battles in the Civil War?
 - b. Locate on the map: Kaskaskia, Saratoga, the Alamo, Astoria, Sutter's mill race, Vicksburg, Gettysburg, Nauvoo.
 2. Biographical—Give the dates of birth and death, education, public offices, political achievements, and personal character of one of the following. a. William Bradford, b. John Marshall, c. William McKinley.
 3. Constitutional (answer a or b).
 - a. By what legal warrant did President Lincoln issue his emancipation proclamation? Where did it abolish slavery, and where did it not?
 - b. On what grounds did the Supreme Court declare a federal income tax to be unconstitutional?
 4. Economic (answer a or b).
 - a. Explain the importance of the fur trade to the colonists, the reasons for French and English rivalry in it, and the causes of its decline.
 - b. Tell what you can of the policy of internal improvements.
 5. Chronological (answer a or b).
 - a. Give the approximate dates of: the first battle of Bull Run, the first voyage of the "Clermont", the formation of the New England Confederation, the admission of Maine into the Union, the Electoral Commission, the death of John C. Calhoun.
 - b. What recent political or international incidents, now become historic, were chiefly occupying the attention of the people of the United States fifty years ago this month? One hundred years ago this month?
 6. Civic (answer a or b).
 - a. How does municipal government by commission differ from municipal government by mayor and aldermen?
 - b. Tell what office in your state (naming the state) is next most important to the governor's, i.e., which would the people of the state find it hardest to get along without while the governor was living and why?
 7. Current Events (answer a or b).
 - a. What is the meaning of—a protective tariff? a tariff for revenue with incidental protection? a tariff for revenue only? reciprocity? a tariff for politics?
 - b. Why are the United States differently concerned about the course of public affairs in Cuba and in Porto Rico or Jamaica?

ENGLISH HISTORY

GROUP I (answer any two).

1. What race did Julius Caesar find in Britain? Name the important steps in the conquest of the island by the Romans, giving dates. Name the Germanic tribes which came to England after the departure of the Romans. What part of Britain did each conquer and settle.
2. What were the differences between Roman and Celtic Christianity? Name some of the leaders of each in England. How, where, and when was the dispute between the churches determined?
3. When did the Danes first come to England? Name three effects upon England of their conquests. Who was their greatest Saxon opponent? What reforms did he establish in order to make effectual resistance against the Danes?

GROUP II (answer any three).

1. What claims did William of Normandy have upon the English throne? Why did the Pope support him against Harold? Give the principal events in the conquest from 1066 to 1071.
2. What was the constitutional importance of the charter of Henry I? What were the Constitutions of Clarendon? Give the important provisions in them which affected the clergy. Why did Becket oppose these?
3. Give the facts in the quarrel between John and Innocent III. How did this quarrel end? How did it affect Magna Charta?
4. Explain: Statute of Mortmain; Curia Regis; Mise of Amiens; Good Parliament; Black Death; Lollard; Cade's Rebellion; Enclosures; Annates; Statute of Præmunire.

GROUP III (answer any three).

1. What classes supported Edward IV in his struggle for the crown of England? Why? Who was the Earl of Warwick, and what was his attitude toward Edward? What were benevolences? Why did England accept the rule of Henry VII?
2. What were the social and economic causes of the religious revolution in England? How did Henry VIII come to support the movement? What kind of church did he establish? Was Cranmer a Catholic or a Protestant? What was Mary's religious policy? Who were the Puritans? Name some of the leading seamen under Elizabeth.
3. Explain: Bate Case; Cobham Plot; the Spanish Marriage; Petition of Right; "Thorough"; Triennial Act; New Model Army; Pride's Purge; Act of Navigation; Instrument of Government.
4. Who was the Earl of Clarendon? What was his religious policy? Who was the Earl of Shaftesbury? Did he favor absolutism or parliamentary government? What colonies were added to England under the later Stuarts?

GROUP IV (answer any three).

1. Who were the following, and for what was each celebrated: Swift; Addison; Marlborough; the Young Pretender; Walpole; Robert Clive; John Wilkes; Charles Townshend; Captain Cook; Adam Smith?

2. What was the attitude of the younger Pitt towards Parliamentary reform? the French Revolution? Catholic emancipation? What action did he take in each of these matters?

3. What was the policy of George Canning in respect to South America? In respect to the Greek Revolution?

4. Name some important event connected with each of the following: Parnell; General Buller; Lord Kitchener; Daniel O'Connell; Lord Palmerston; the Marquis of Salisbury; General Henry Havelock; Chinese Gordon; Sir Robert Peel; John Henry Newman.

ELEMENTARY ALGEBRA

1. Clear the following equation of fractions and arrange the result in powers of x :

$$\frac{2x-5}{x^4+4x^3+4x^2} = \frac{a}{x+2} + \frac{b}{(x+2)^2} + \frac{c}{x} + \frac{d}{x^2}$$

2. Solve for x : $\frac{x^3-x^2}{6} = x^2-2x$.

3. For what value of x will the following expression be equal to 5:

$$\frac{11x-2-\frac{10}{x}}{2x+\frac{1}{x}}$$

4. It takes $\frac{3}{4}$ of a second for a ball to go from the pitcher to the catcher, and $\frac{1}{2}$ of a second for the catcher to handle it and get off a throw to second base. It is 90 ft. from first base to second, and 130 ft. from the catcher's position to second. A runner stealing second has a start of 13 ft. when the ball leaves the pitcher's hand, and beats the throw to the base by $\frac{1}{8}$ of a second. The next time he tries it, he gets a start of only $3\frac{1}{2}$ ft., and is caught by 6 ft. What is his rate of running, and the velocity of the catcher's throw?

5. Simplify:

$$(1-\sqrt{-3}) \cdot (2\sqrt{3} + \sqrt{-4}) + 2\sqrt{-1} \cdot (2+\sqrt{-1}\cdot 2) + \sqrt{-5}$$

6. On Jan. 1, 1911, a man has \$500. His annual income is \$1200, and his living expense for the year 1911 will be \$800. If his income remains the same, but the cost of living increases \$20 per year, in how many years will he have \$3600?

INTERMEDIATE ALGEBRA

1. Solve the following equation for y in terms of x , and show what values of x will make y real:

$$2x^2-4xy+4y^2-6x+4y+1=0.$$

2. Simplify:

$$-y(a^2-y^2)^{-\frac{1}{2}} + a \cdot \frac{y^2(a^2-y^2)^{-\frac{1}{2}} + a + \sqrt{a^2-y^2}}{ay + y\sqrt{a^2-y^2}}$$

3. The illumination of an object varies inversely as the square of its distance from a light and directly as the candle power of the light. If the illumination on the page of a book is just right for reading at a distance of 6 ft. from a 16 candle power light, at what distance from a 25 candle power light should a book be held?

4. Solve the following simultaneous equations, and plot the graph of each equation:

$$\begin{aligned}x^2 + y^2 &= 13 \\ y^2 &= 4(x-2)\end{aligned}$$

5. Simplify:

$$(a) \frac{1 + \frac{x}{\sqrt{y^2+1}}}{x + \sqrt{x^2+1}} \quad (b) \frac{3x}{x^2-x} + \frac{4x}{x^2+x} + \frac{x-7}{x^3-x}$$

6. A student has \$60. He pays for all the books he needs and has enough left to pay his board bill for 9 weeks. If he had paid for only one half of his books, he could have paid his board bill for 10 weeks and had \$8 left over. What is his book bill, and his weekly board bill?

7. Write the first four terms of the expansion of

$$\left(x - \frac{1}{2x^2}\right)^{11}$$

ADVANCED ALGEBRA

1. Solve the simultaneous equations:

$$\begin{aligned}2x^2 + 3xy + 5y^2 + 3y &= 8x + 2 \\ 5x + 2y - 1 &= 0\end{aligned}$$

2. For what values of x is the number $(\sqrt{x+1})(x-2)(x-3)$ real?

3. Prove by mathematical induction that

$$1 \cdot 2 + 2 \cdot 3 + 3 \cdot 4 + \cdots + n(n+1) = \frac{n(n+1)(n+2)}{3}$$

4. Form the equation whose roots are the arithmetic and geometric means between the roots of $x^2 - 10x + 9 = 0$.

5. Simplify:

$$(a) \frac{1 + \frac{x}{\sqrt{x^2+a^2}}}{x + \sqrt{x^2+a^2}} \quad (b) \sqrt{1 + \frac{(e^x - e^{-x})^2}{4}}$$

6. From 8 juniors and 10 seniors how many committees consisting of 2 juniors and 3 seniors can be chosen?

7. By means of determinants solve the following simultaneous equations for y :

$$\begin{cases} 3x + 2y + 4z - 10 = 0, \\ 5x + y - z + 2w = 9, \\ 2x + 3y - 7z + 3w = 14, \\ 4x - 4y + 3z - 5w - 4 = 0; \end{cases}$$

and evaluate the result

PLANE GEOMETRY

1. The base angles of an isosceles triangle are equal.

2. Construct a triangle, given the length of one side, the length of the perpendicular from the opposite vertex on that side, and the length of the median from the same vertex.

3. Given two circles of unequal radii, intersecting in two points. Show how to draw the common tangents to the two circles.

4. The two circles described upon two sides of a triangle as diameters intersect upon the third side.
5. In any right triangle the square of the hypotenuse is equal to the sum of the squares of the other two sides.
6. Construct a square equivalent to two thirds of a given square.
7. A point moves so that its perpendicular distances from two intersecting lines are in the ratio of 3 to 2. Find its locus.

SOLID GEOMETRY

1. If two straight lines are cut by three parallel planes, the corresponding segments are proportional.
2. If a straight line is perpendicular to one of two parallel planes, it is perpendicular to the other also.
3. Between two straight lines not in the same plane a common perpendicular can be drawn, and only one.
4. The volume of a triangular pyramid is one third the product of its base and altitude.
5. Given a right prism whose base is a regular hexagon inscribed in a circle 6 feet in diameter, and whose altitude is 8 feet; find its volume.
6. Find the locus of all points equidistant from three points not in the same straight line.
7. The area of a face of a regular tetrahedron is one square foot; find its volume.

TRIGONOMETRY

Students taking both Plane and Spherical omit question 8.

1. a. Express 100° in radians.
 b. Show that: $\tan^{-1} 9 - \tan^{-1} \frac{4}{5} = \frac{\pi}{4}$
2. From a window on a level with the foot of a tower, the angle of elevation of its top is 40° , and from a second window 18 feet directly above the first, the angle of elevation is $37^\circ 30'$. Find the height of the tower.
3. Prove that: $2 \sin A - \sin 2A = 8 \sin^3 \frac{A}{2} \cos \frac{A}{2}$.
4. Find all the values of x less than 360° , satisfying the equation:

$$2 \cos^2 x + 3 \sin x = 0.$$
5. If two sides of a triangle are 5.6 and 10.3, and their included angle is $35^\circ 40'$, find the remaining angles. Also find the altitude upon the third side.
6. State and prove the law of sines for an oblique spherical triangle.
7. In a right spherical triangle $a = 10^\circ 30'$ and $B = 77^\circ 43'$; find A and c .
8. The angles of a spherical triangle are: $A = 50^\circ 4'$, $B = 56^\circ 52'$ and $C = 86^\circ 34'$; find the side a .

PHYSICS

Answer five questions.

1. What do you mean by the term "center of gravity"? How is the position of the center of gravity related to the equilibrium of the body?

2. How is heat measured? A solid is changed to a liquid and the liquid to vapor. State clearly how heat is used in this process and how temperature varies.

3. Describe an experiment that you have performed to determine one of the following:

- a. Heat of fusion,
- b. Resistance of a wire,
- c. Wave length of a sound.

4. What sort of lens would be used to correct short sight? Explain by use of a diagram.

5. How does the pitch of an organ pipe change with decrease of length? About what range of frequencies produce sound?

6. Give a clear description of some instrument you have used to measure electric current. Explain the principle on which it acts.

CHEMISTRY

Entrance credit in chemistry does not carry with it University credit in any course in chemistry in Cornell University. Applicants for University credit in Introductory Inorganic Chemistry, Course 1, who have received permission from the Registrar, should take the examination for University credit also being held in this room.

Answer eight questions, as indicated below.

A

Answer both questions in this group.

1. Define in your own words and give an illustration of each of the following: (a) physical change, (b) compound, (c) acid, (d) base, (e) alkali, (f) deliquescence, (g) reduction, (h) catalysis, (i) solute, (j) molecular weight.
2. Name the substances represented by the following formulas: FeCl_3 , $(\text{NH}_4)_2\text{SO}_4$, $\text{Ba}(\text{NO}_3)_2$, SrSO_4 , NaBr , $\text{Ca}(\text{OC}_1)_2$, $\text{Al}_2(\text{SO}_4)_3$, PbCl_2 , Fe SO_4 ; KNO_2 .

Write the chemical formulas for the following substances: ammonium nitrite, barium sulphate, ferrous sulphate, aluminum chloride, barium bromide, strontium nitrate, potassium chlorate, sodium hypochlorite, lead nitrate, ferric hydroxide.

B

Answer only two questions from this group.

3. Name the oxides of nitrogen, and write the formula representing each. Describe laboratory methods for the preparation of two of these substances, and write the equation expressing the reaction involved in each case.
4. How may ozone be prepared? What are its properties? How is this substance formed in nature? What weight of oxygen would be obtained by the decomposition of five grams of ozone? What volume of oxygen would be obtained by the decomposition of ten cc. of ozone, provided that the temperature and pressure of the gas remained constant throughout the experiment?

5. What volume of oxygen, measured under standard conditions, would exactly suffice for the complete combustion of one liter of carbon monoxide, measured at 21° and 750 mm?

C

Answer only two questions from this group.

6. Describe a laboratory method for the preparation of chlorine gas. Give equation. What are the properties of chlorine? Explain as fully as possible the chemistry involved in the use of chlorine as a bleaching agent.
7. In what forms does carbon occur in nature? Write the formula for each of the oxides of carbon, and describe a laboratory method for the formation of each. What are the properties of these substances?
8. How may hydrogen sulphide be prepared? Give equation. What are its properties? What substances are formed when hydrogen sulphide is burned in a free supply of air? Write the equation expressing the reaction involved.

D

Answer both questions in this group.

9. Compute the weight of the potassium hydroxide required for the exact neutralization of the total quantity of hydrochloric acid obtainable from 117 grams of sodium chloride by the action of concentrated sulphuric acid. (Atomic Weights: H = 1, O = 16, Na = 23, Cl = 35.5, K = 39.)
10. State Avogadro's Hypothesis. With the aid of this generalization compute the volume of oxygen necessary for the complete combustion of (a) 10 liters of methane, (b) 100 cc. of acetylene, (c) 5 cubic feet of propane, C_3H_8 , (d) 150 cubic meters of hydrogen. What volume of carbon dioxide would be formed in each of the first three cases?

BOTANY

Physiology

1. What is starch? Where is it found? Illustrate. Where and how is it formed? How and through what channels is it transferred to the different parts of plants?
2. Name three of the most important functions performed by leaves, three by the stem, and two by the roots.
3. Describe and illustrate a cell, naming the parts. Describe some of the work performed by cells.
4. What is geotropism? Describe it in reference to the growth of roots and stems.

General Morphology

1. Name and describe the parts of a complete flower. Describe pollination. How does fertilization (i.e. fecundation) take place?
2. Describe the different phases in the complete life history of a fern, showing their relation in the life cycle.
3. Describe the staminate (male) cone of the pine; the pistillate (female) cone.
4. What are fungi, and how do they differ in their nutrition from the green plants? Describe the life history and structure of a parasitic fungus.

Special Morphology

1. What are the main parts of a seed? Illustrate by drawing. What is the function of each part? State briefly the changes in each part as the seedling develops.
2. What are the primary morphological parts of the higher plants? Give the technical distinction whereby these parts may be distinguished from each other.
3. Explain the meaning of the following terms as applied to flowers or floral parts: perianth, essential organs, gynoecium, perfect, irregular.
4. What are the successive groups into which plants are divided, beginning with the most comprehensive and proceeding to the least comprehensive?
5. Describe five different contrivances by means of which seeds are scattered. Give the name of a plant illustrating each.

ZOOLOGY

1. Compare the following animals as to form of body, respiration, method of obtaining food, and habitat: ameba, paramecium, hydra, perch, rabbit.
2. Arrange the animals mentioned above in a series beginning with the simplest. Discuss the advance in complication of structure and animal functions.
3. Define: fauna, siphon, vacuole, cilia, spiracle, carapace, metamorphosis, plastron.
4. Discuss the larval development of the frog and illustrate with drawings.
5. Write a full discussion of the various methods of respiration in animals.

BIOLOGY

State briefly what biological subjects you have studied, with what proportion of recitation and laboratory work, and for what periods. Laboratory books or work done in previous study may be submitted as supplemental to the answers to the following questions.

Answer any ten questions.

1. Give an account of starch, its composition, its function in the plant, where formed, and under what conditions.
2. Give an account of the structure of the seed and of its method of germination.
3. Illustrate by outline drawings the form and manner of cell division of two algae, one unicellular, the other filamentous.
4. Give an account of the structure of any liverwort or moss.
5. Give an account, with simple diagrams, of the life history of a fern.
6. Illustrate by diagrams the structure of a hydra and its mode of increase by budding.
7. Explain and illustrate division of labor in the body of any plant or animal.
8. Compare the transformation stages of a frog and an insect.
9. Illustrate by sectional diagrams the structure of earthworm, fish, or frog.
10. List a dozen common birds of your home neighborhood and state briefly their nesting and migration habits.
11. Diagram the heart and the main channels of circulation in the human body.
12. Explain how the food is prepared for absorption and how it gets to the cells of the body.

13. Diagram the air content of the lungs and state the differences in function of tidal, residual, and complemental air.
14. How does the body get rid of the waste which results from the activities of the cells?
15. State how the body is benefitted by exercise.

PHYSICAL GEOGRAPHY

Answer seven of the first eight questions.

1. Under what conditions is dew formed? Distinguish between dew formation and frost formation. What is a hurricane, a typhoon? How do they differ from a cyclone with respect to time and place of occurrence?
2. Distinguish between cordillera, system, range, ridge, peak, and park as applied to mountains; and tell which are constructional and which erosional forms. How are peaks formed?
3. Why does an aggrading stream commonly shift its main channels? Does aggradation steepen or make more gentle the slope of the stream bed?
4. Distinguish between chemical, mechanical, and biological processes of weathering, and cite processes of each. Which particular process is probably most effective in the humid, north temperate regions?
5. When and where did Niagara Falls originate? What basis have we for estimating the length of time it has taken to cut Niagara gorge?
6. How does the transportation of material by a glacier differ from that by a stream? How do glacier deposits differ from stream deposits?
7. What are the requisite conditions for the formation of Bad Lands? Where do they occur in the United States?
8. What is a spring tide? a drumlin? globigerina ooze? oceanic climate?

Answer two of the following four questions.

9. What are the two most important rock-forming minerals? How would you identify each and distinguish between them? Name four other important rock-forming minerals.
10. Show by diagram and explanation how a Mercator projection map of the world is made. What is the advantage of such a projection for navigation?
11. Describe and account for the physiography on the topographic sheet handed you, with respect to differences in elevation, steepness of slopes, character of divides, nature of drainage, youth, maturity, or old age of the region, and relation of the features present to human occupation of the region.

Be sure to write name of topographic sheet on your paper.

12. Construct a weather map of the United States for a day in February when a snow storm is raging in New York City. (Outline maps of United States will be furnished.)

The candidate is to set down answers to all of the following.

1. Where did you study physical geography?
2. What text and laboratory manual did you use?
3. Cite three laboratory exercises you did.
4. Cite three excursions you made. State the object of each of the laboratory exercises and excursions.

AGRICULTURE

For one unit credit, answer any ten questions.

For one-half unit credit, answer five of the first six questions.

1. In what ways does air in the soil aid in the growing of crops? How can a farmer improve the aeration of a soil?

2. In order to get the lowest bacterial count in the milk, how would you milk a cow? Describe in full the operation and necessary utensils.

3. Compare the egg breeds of chickens with the general purpose breeds.

4. Two foods, (a) and (b), have the following digestible material per 100 pounds:

	Water	Ash	Protein	Carbohydrates	Fat
(a)	10.6	1.5	7.8	66.7	4.3
(b)	7.8	1.1	20.4	48.4	8.8

How many pounds of (a) must be mixed with 20 pounds of (b) to make a mixture with a nutritive ratio of 1:5.5?

5. What spray materials will aid in the control of fungi? of biting insects? of sucking insects?

6. Describe the different types of corn.

7. Name the four leading breeds of draft horses. Tell their origin, distinguishing characteristics, and relative importance in New York State.

8. Give brief directions for the proper pruning of a limb from a tree and for the treatment of the wound. Give reasons for each step in the operation.

9. A farmer wishes to raise 15 acres of corn, 25 acres each of wheat and of oats, 50 acres of hay, and 10 acres of potatoes. What rotation should he use?

10. Why should the crops be grown in the order that you gave in answer to question 9?

11. Give the most essential points in securing a stand of alfalfa.

12. Explain the dentition of the horse as used in the determination of age.

DRAWING

Two examinations are given, one in freehand drawing and one in mechanical drawing. Applicants may take either, or by special arrangement may take both. The examination will be given and judged on the assumption that those taking it have had approximately 150 actual hours of instruction and practice for each $\frac{1}{2}$ credit point desired. One (1) point is the maximum credit allowed in the subject.

Freehand Drawing

For this examination the applicant is required to make a pencil sketch of an object or group of objects. The objects used may be geometrical blocks with straight and curved lines and curved surfaces, simple pieces of pottery, furniture, or models with simple lines and surfaces. The purpose of the examination is to test the ability of the applicant to draw accurately and sympathetically just what he sees. Shading may or may not be required.

Mechanical Drawing

Questions may call for instrumental drawing of geometric constructions, orthographic and isometric projection, oblique section and intersection of solids, surface developments, etc., and working drawings of machine details, as bolts, nuts, pulleys, gears, various simple castings, etc. Data for the problems in any given examination will be furnished in the form of sketches or photographs with dimensions marked or stated.

SCHOLARSHIP EXAMINATION PAPERS

ENGLISH

Answer the first question, the second, and three of the others.

1. Write a composition, four or five pages in length, on one of the following topics: My Probable Specialty, The Important Work of President Taft, My Hobby and How it Has Helped Me, My Favorite Period in History, Why a Boy Should Study English, Work on a High-School Paper.

2. Give the dates at which the following were writing: Macaulay, Shakespeare, Burns, Johnson, Carlyle, Burke, Milton.

3. From what is the following extract taken? Explain the allusions.

Europe, within the same period, has been agitated by a mighty revolution, which, while it has been felt in the individual condition and happiness of almost every man, has shaken to the centre her political fabric, and dashed against one another thrones, which had stood tranquil for ages. On this, our continent, our own example has been followed; and colonies have sprung up to be nations. Unaccustomed sounds of liberty and free government have reached us from beyond the track of the sun; and at this moment the dominion of European power, in this continent, from the place where we stand to the south pole, is annihilated forever.

4. What are *pastoral conventions*? Discuss the pastoral conventions of Milton's minor poems.

5. Discuss in detail either a or b:

a. Burke as writer and as orator.

b. Burke's treatment of English government in Ireland.

6. Discuss, with illustrations, the chief qualities of Burns's poetry.

7. Choose either a or b.

a. Explain the dramatic function of the witches in Macbeth.

b.

What beast was't, then,
That made you break this enterprise to me?
When you durst do it then you were a man;
And, to be more than what you were, you would
Be so much more the man. Nor time nor place
Did then adhere, and yet you would make both:
They have made themselves, and that their fitness now
Does unmake you.

Explain the situation and its bearing on the characters involved.

GREEK

A

Translate:

Xenophon's dream. A ford discovered.

"Ἐνθα δὲ αὐτοὶ τὴν πρόσθεν νύκτα ἦσαν ἐπὶ τοῦ ὄρους ἑώρων τοὺς Καρδούχους πολλοὺς συνειλεγμένους ἐν τοῖς ὄπλοις. ἐνταῦθα δὴ πολλὴ ἀθυμία ἦν τοῖς Ἕλλησιν, ὀρώσι μὲν τοῦ ποταμοῦ τὴν δυσπορίαν, ὀρώσι δὲ τοὺς διαβαίνειν κωλύοντας,

ὀρῶσι δὲ τοῖς διαβαίνουσιν ἐπικεισομένους τοὺς Καρδούχους ὀπισθεν. ταύτην μὲν
 5 οὖν τὴν ἡμέραν καὶ νύκτα ἔμειναν ἐν πολλῇ ἀπορίᾳ ὄντες. Ξενοφῶν δὲ ὄναρ
 εἶδεν· ἔδοξεν ἐν πέδαις δεδέσθαι, αὐταὶ δὲ αὐτῷ αὐτόμαται περιρρυῆναι, ὥστε
 λυθῆναι καὶ διαβαίνειν ὅποσον ἐβούλετο. ἐπεὶ δὲ ὄρθρος ἦν, ἔρχεται πρὸς τὸν
 Χειρίσοφον καὶ λέγει ὅτι ἐλπίδας ἔχει καλῶς ἔσεσθαι, καὶ διηγείται αὐτῷ τὸ
 10 ὄναρ. ὁ δὲ ἤδετό τε καὶ ὡς τάχιστα ἔως ὑπέφαινεν ἐθύοντο πάντες παρόν-
 τες οἱ στρατηγοί· καὶ τὰ ἱερὰ καλὰ ἦν εὐθὺς ἐπὶ τοῦ πρώτου. καὶ ἀπίοντες
 ἀπὸ τῶν ἱερῶν οἱ στρατηγοὶ καὶ λοχαγοὶ παρήγγελλον τῇ στρατιᾷ
 ἀριστοποιεῖσθαι.

Καὶ ἀριστῶν τι τῷ Ξενοφῶντι προσέτρεχον δύο νεανίσκω· ἤδεσαν γὰρ
 πάντες ὅτι ἐξείη αὐτῷ καὶ ἀριστῶντι καὶ δειπνοῦντι προσελθεῖν καὶ εἰ καθεῦδοι
 15 ἐπεγείραντα εἰπεῖν, εἰ τίς τι ἔχει τῶν πρὸς τὸν πόλεμον. καὶ τότε ἔλεγον ὅτι
 τυγχάνοιεν φρύγανα συλλέγοντες ὡς ἐπὶ πῦρ, κἄπειτα κατιδοῖεν ἐν τῷ πέραν
 ἐν πέτραις καθηκούσαις ἐπ' αὐτὸν τὸν ποταμὸν γέροντά τε καὶ γυναῖκα καὶ
 παιδίσκακας ὡσπερ μαρσίπους ἱματίων κατατιθεμένους ἐν πέτρᾳ ἀνθρώδει. ἰδοῦσι
 δὲ σφίσι δόξαι ἀσφαλὲς εἶναι διαβῆναι.

B

GRAMMAR

1. What cases are governed by (a) ἔπομαι, (b) κρατῶ, (c) χρῶμαι, (d) σύνοιδα, (e) μεταμέλει, (f) ἔχομαι, (g) κατακρίνω, (h) ὀργίζομαι?
2. Distinguish between (a) ἡ μέση ὁδός and μέση ἡ ὁδός; (b) οἱ οὐ παρόντες and οἱ μὴ παρόντες.
3. In what cases is the simple dative used to express agency?
4. Mention the commonest temporal conjunctions, and show by examples the various moods used in temporal clauses.
5. Show, by an example, the difference in meaning between εἰ with the future indicative and εἰάν with the subjunctive in future conditions.

C

COMPOSITION

Write the following sentences in Greek and also rewrite them after ἔφη, οἶδε and εἶπε respectively:

1. He would err (ἀμαρτάνω) if he should do this.
2. Artaxerxes arrested Cyrus with the avowed intention of putting him to death.
3. My conscience tells me (use σύνοιδα) I am doing wrong.

D

HOMER

Translate:

Ὡς φάτο, ῥίγησεν δ' ὁ γέρων, ἐκέλευσε δ' ἑταίροις
 ἵππους ζευγνύμεναι· τοὶ δ' ὄτραλέως ἐπίθοντο.
 ἂν δ' ἄρ' ἔβη Πρίαμος, κατὰ δ' ἠγία τεῖνεν ὀπίσσω·
 πὰρ δέ οἱ Ἀντήνωρ περικαλλέα βήσετο δίφρον.
 5 τῷ δὲ διὰ Σκαιῶν πεδίοι' ἔχον ὠκέας ἵππους.
 Ἄλλ' ὅτε δὴ ῥ' ἴκοντο μετὰ Τρῶας καὶ Ἀχαιοῦς,
 ἔξ ἵππων ἀποβάντες ἐπὶ χθόνα πουλυβότειραν

- ἐς μέσσον Τρώων καὶ Ἀχαιῶν ἐστιχῶντο.
 ὤρνυτο δ' αὐτίκ' ἔπειτα ἄναξ ἀνδρῶν Ἀγαμέμνων,
 10 ἄν δ' Ὀδυσσεὺς πολύμητις· ἀτὰρ κήρυκες ἀγανοὶ
 ὄρκια πιστὰ θεῶν σύναγον, κρητῆρι δὲ οἶνον
 μίσγον, ἀτὰρ βασιλεῦσιν ὕδωρ ἐπὶ χεῖρας ἔχευαν.
 Ἀτρεΐδης δὲ ἐρυσσάμενος χεῖρεσσι μάχαιραν,
 ἧ οἱ πὰρ ξίφεος μέγα κουλεὸν αἰὲν ἄωρτο,
 15 ἀρνῶν ἐκ κεφαλῶν τάμνε τρίχας· αὐτὰρ ἔπειτα
 κήρυκες Τρώων καὶ Ἀχαιῶν νεῖμαν ἀρίστοις.
 τοῖσιν δ' Ἀτρεΐδης μεγάλ' εὔχετο χεῖρας ἀνασχῶν.

1. Give the Attic substitutes for (a) φάτο, (b) ἦος, (c) χεῖρεσσι, (d) κεφαλῶν, (e) τοῖσιν.
2. Mark the scansion of ll. 7-9.
3. Tell what you know of the authorship of the Iliad and Odyssey, and the approximate time of their composition.

LATIN

1. Decline: *Juppiter; deus; vis; genu; sedile.*
2. Give the comparative and superlative degrees of: *magnificus; nequam; idoneus; parum; male.*
3. Give the principal parts of: *pario; pereo; paro; parco; gaudeo.*
4. Give the first person singular of: the future perfect indicative active of *suadeo*; the perfect subjunctive passive of *fero*; the future indicative of *eo* and *volo*; the present subjunctive of *nolo*.
5. Write a Latin sentence containing (correctly used): *patrem ejus; patrem suum; postquam; quamvis; quin.*

6. Translate:

Hoc decreto interposito cohortatus Aeduos, ut controversiarum ac dissensionis obliviscerentur atque omnibus omissis his rebus huic bello servirent eaque, quae meruissent, praemia ab se devicta Gallia exspectarent equitatumque omnem et peditum milia v sibi celeriter mitterent, quae in praesidiis rei frumentariae causa disponeret, exercitum in duas partes divisit: quattuor legiones in Senones Parisiosque Labieno ducendas dedit, sex ipse in Arvernos ad oppidum Gergoviam secundum flumen Elaver duxit; equitatus partem illi attribuit, partem sibi reliquit.

CAES. B. G. 7, 34.

7. Translate into Latin, marking all long vowels in what you write:

- (1) The leader must be obeyed by all.
- (2) He begs me not to go away.
- (3) It concerns both you and him.
- (4) O that he were only with us now!
- (5) Do not ask me what to do.
- (6) When he asked me whether my friend would remain at Rome one month or two months, I replied that I would not inform him, even if I knew. The friend referred to, however, told me a few days later, that he was going away from home on the first day of the next month to spend a few days in the country.

8. Translate:

Etsi vereor, iudices, ne turpe sit pro fortissimo viro dicere incipientem timere minimeque deceat, cum T. Annii ipse magis de rei publicae salute quam de sua perturbetur, me ad eius causam parem animi magnitudinem adferre non posse, tamen haec novi iudicii nova forma terret oculos, qui quocumque inciderunt, consuetudinem fori et pristinum morem iudiciorum requirunt.

CIC. PRO MIL. I, 1.

9. Translate:

At pius Aeneas, quamquam lenire dolentem
 Solando cupit et dictis avertere curas,
 Multa gemens magnoque animum labefactus amore,
 Jussa tamen divum exsequitur, classemque revisit.
 Tum vero Teucri incumbunt, et litore celsas
 Deducunt toto naves. Natat uncta carina,
 Frondentesque ferunt remos et robora silvis
 Infabricata, fugae studio.

VIRG. AEN. 4, 393-400.

Briefly outline the contents of the book of the Aeneid from which this passage is taken.

Write out the first three lines, indicating the metrical feet, the principal caesura, and the length of each syllable.

GERMAN

I

Fifteen minutes of the time will be devoted to a dictation exercise.

II

Translate:

a. Am Nachmittag tönte wieder das leise Klopfen an Anton's Tür, Tinkles erschien aufs neue. Er sah sich vorsichtig in der Stube um und trat, ohne auf Anton's finstere Stirn zu achten, nahe an ihn heran. „Erlauben Sie mir zu fragen,“ sprach er mit vertraulichem Kopfschütteln, „es ist in der Wahrheit, daß Sie ihm geborgt haben zwanzig 5
 Dukaten, und daß Sie ihm geben würden noch mehr, wenn er mehr haben wollte?“ Anton sah den Händler erstaunt an und sagte aufstehend: „Ich habe ihm das Geld gegeben und werde ihm noch mehr geben. Und jetzt sagt Ihr mir gerade heraus, was Euch im Kopfe herumgeht. Denn ich sehe, Ihr habt mir etwas mitzuteilen.“ 10
 Tinkles machte ein schlaues Gesicht und zwinkerte bedeutungsvoll mit den Augen. „Wenn er auch ist Ihr guter Freund, so nehmen Sie sich doch in acht, daß Sie ihm borgen kein Geld. Wissen Sie was, borgen Sie ihm keinen Gulden mehr,“ wiederholte er nachdrücklich. „Und weshalb nicht?“ frug Anton. „Euer guter Rat ist mir nichts 15
 wert, wenn ich nicht weiß, aus welchen Gründen Ihr mich warnt.“

—Freitag

b. Seine junge Frau scheint Ähnliches zu denken. Auch sie sieht in den Spiegel; ihre Blicke begegnen sich darin. Die Ehe soll die Gatten sich ähnlich machen. Hier traf die Bemerkung. Das Zusammenleben hatte hier zwei Gesichter sich ähnlich gemacht, die unter andern Um- 20
 ständen sich vielleicht ebenso unähnlich gesehen hätten. Und es hatte eigentlich nicht beide einander ähnlich gemacht, sondern nur eins davon dem andern. Die übereinstimmenden Züge, das konnte ein scharfes Auge sehen, waren nur ihm eigen; er hatte nur gegeben, aber nicht empfangen. Und doch wäre es umgekehrt besser gewesen für beide, 25
 wenn er es auch nicht eingestehen würde, und sie es nicht fühlte, wenig-

stens in diesem Augenblicke nicht. Vielleicht auch morgen und übermorgen noch nicht. Wie viel Zeit mag nötig sein, wie viel Schmerzen wird sie zu Hilfe nehmen müssen, von einem ursprünglich so schönen Menschenbilde abzuwaschen, womit die Gewohnheit von Jahren es beschmutzt hat! 30

—Ludwig.

c. Im zweiten Stock befand sich ein Zimmer, welches man das Gartenzimmer nannte, weil man sich daselbst durch wenige Gewächse vor dem Fenster den Mangel eines Gartens zu ersetzen gesucht hatte. Dort war, wie ich heranwuchs, mein liebster, zwar nicht trauriger, aber doch sehnsüchtiger Aufenthalt. Über jene Gärten hinaus, über Stadtmauern und Wälle sah man in eine schöne fruchtbare Ebene; es ist die, welche sich nach Höchst hinzieht. Dort lernte ich Sommerzeit gewöhnlich meine Lektionen, wartete die Gewitter ab und konnte mich an der untergehenden Sonne, gegen welche die Fenster gerade gerichtet waren, nicht satt genug sehen. Da ich aber zu gleicher Zeit die Nachbarn in ihren Gärten wandeln und ihre Blumen besorgen, die Kinder spielen, die Gesellschaften sich ergötzen sah, die Kegelfugeln rollen und die Regel fallen hörte, so erregte dies frühzeitig in mir ein Gefühl der Einsamkeit und einer daraus entspringenden Sehnsucht, das, dem von der Natur in mich gelegten Ernst und Ahnungsvollen entsprechend, seinen Einfluß gar bald und in der Folge noch deutlicher zeigte. 35 40 45

—Goethe.

d. Traulich in der warmen Stube
 Saßen bei der Abendmahlzeit
 Der Trompeter und der Pfarrherr;
 Auf der Schüssel hatte dampfend 50
 Ein gebraten Huhn gepranget,
 Doch getilgt war's und entschwunden;
 Nur ein würz'ger Bratenduft noch
 Schwebte lieblich durch die Stube,
 Gleich dem Liebe, drin der tote 55
 Sänger bei der Nachwelt fortlebt.
 Auch die leeren Teller zeigten,
 Daß ein ganz gesunder Hunger
 Kürzlich hier beschwichtigt ward. 60
 Großen Steinfrug jetzt erhob der
 Pfarrherr, und er füllt' die Gläser
 Und begann zum Gast zu sprechen.

—Scheffel.

e. Frommer Stab! O hätt' ich nimmer
 Mit dem Schwerte dich vertauscht!
 Hätt' es nie in deinen Zweigen, 65
 Heil'ge Eiche, mir gerauscht!
 Wärst du nimmer mir erschienen,
 Hohe Himmelkönigin!
 Nimm, ich kann sie nicht verdienen,
 Deine Krone, nimm sie hin! 70

Ach ich sah den Himmel offen
 Und der Sel'gen Angesicht!
 Doch auf Erden ist mein Hoffen,
 Und im Himmel ist es nicht!
 Mußttest du ihn auf mich laden,
 Diesen furchtbaren Beruf!
 Konnt' ich dieses Herz verhärten,
 Daß der Himmel fühlend schuf!

75

—Schiller.

III

1. Change the direct discourse in I a to the indirect and revise the word order.
2. Explain all the subjunctives in the above passage.
3. Decline in both numbers: *mein liebster*, *zwar nicht trauriger, aber doch sehnsüchtiger Aufenthalt* (l. 34); *dem von der Natur in mich gelegten Ernstern und Ahnungsvollen* (l. 44); *vertraulichem Kopfschütteln* (l. 4).
4. Account for the cases of *sich* (ll. 20 and 21), *beide* (l. 25), *mir* (l. 67), *dem Liede* (l. 55), *Gast* (l. 62), *der Schüssel* (l. 50), *jene Gärten* (l. 35), *Höchst* (l. 37), *welche* (l. 42), *sich* (l. 34).
5. Account for: *davon* (l. 22), *womit* (l. 30), *drin* (l. 55), *daraus* (l. 44).
6. Conjugate the indicative and subjunctive present of *mag* (l. 28), and in the same modes the past of *müssen* (l. 29).
7. Comment on the forms of: *auf Erden* (l. 73), *gebraten* (l. 51), *erhub* (l. 60), *frug* (l. 15).
8. Explain the use of the relative pronouns *welcher*, *der*, and *wer* and illustrate each by an example taken from the above passages. Decline each in singular and plural.
9. Give a synopsis in all tenses and modes, active, of the second person singular of *herumgehen* (l. 10), of the passive of *sehen* (l. 10).
10. What sort of prefix is *wieder* in *wiederholte* (l. 14)? Name others of the same kind and state the rules concerning their use.

IV

a

Translate into German:

A certain German gentleman, who was a great scholar, and had quite a high reputation abroad, visited England. As soon as it became known in London that this scholar had arrived, he received several invitations from prominent men there. He accepted that of a certain Lord N., and at dinner had the misfortune to break an elegant goblet. He was perfectly unconcerned about the mishap, but the lord, somewhat displeased, as it seemed, asked him if that were customary in Germany. The German, also a little out of patience at this question, answered calmly: "Well, not exactly a common custom, yet it may happen, and if it did, it would enter nobody's mind to lose any words about it."

b

Write a German letter of not more than 150 nor less than 100 words in which you tell a friend the story of a German ballad that you have read or committed to memory.

FRENCH

I

1. Explain the uses of the subjunctive mood in dependent clauses. Give an example to illustrate each use.

2. Give the forms of the conjunctive object pronouns (direct and indirect) and explain their position (1) with reference to the verb; (2) with reference to each other if two are used. Illustrate by examples.

3. Give *three* verbs that take no preposition before a following infinitive; *three* that take *à* before a following infinitive; *three* that take *de* before a following infinitive. Write sentences to illustrate. (*Do not use the verbs given in 4*).

Translate:

- | | |
|---|---|
| 4. (a) Il venait me trouver.
Il venait de me trouver.
Il vient à sentir sa force. | (c) Que pensez-vous de cela?
Je ne pense pas à cela? |
| (b) J' ai manqué de tomber.
Il a manqué de faire son devoir. | (d) Prenez garde à le faire.
Prenez garde de le faire.
(e) Il m'a décidé à entrer.
Nous avons décidé d'entrer. |

II

1. Give a synopsis of the following verbs with the conjugation of a different tense of each verb: *aller, mener, appeler, venir, vêtir, mouvoir, écrire, naître*.

III

Translate into French:

1. The gentleman, with whose son I was traveling in Switzerland last summer, has just died.

2. That hat that that lady is wearing is the one we saw at the milliner's.

3. I do not want this wine, it is too cheap. Do you want some of the good wine, or do you prefer milk?

4. Some of the stained glass windows in the European cathedrals are master-pieces.

5. Who is that gentleman over there, and what does he want? Which one do you mean? The one with a straw hat.

6. I was in France two months several years ago. I have been in Ithaca only a week.

7. If I saw him, and if he recognized me, I should tell him what I think of his conduct.

8. The girls whom we met in the mountains this summer, are going to enter the university this fall.

9. She was born the fifteenth of August eighteen hundred and ninety-three and died the eleventh of July of the following year.

10. Good morning, Miss. Will you please tell me how far it is to the station and how long it takes to get there? Thank you, what time is it now please?

IV

Translate:

The success of Racine saddened the old age of Corneille, and pecuniary troubles darkened his last days. It is well known that Corneille received a pension of two thousand francs, which ceased being paid to him at the death of Colbert. In the last months of his life, illness exhausted his resources. Boileau, having been informed of his cruel situation, hastened to Versailles and offered the king the sacrifice of his own pension. "I cannot without shame," he said to Madame

de Montespan, "receive a pension from the king, whilst a man like Corneille is deprived of one." Louis XIV hastened to send a hundred louis to the illustrious patient. Two days later, Corneille expired at the age of seventy-eight.

V

1. Translate into idiomatic English:

1. Je lui donnerai la monnaie de sa pièce.
2. Qu'est-ce que ça fait?
3. Cela fera mon affaire.
4. Passe pour cette fois, mais que cela n'arrive plus.
5. Cela y est pour quelque chose.
6. Plus on est de fous, plus on rit.
7. Il y a quelque anguille sous roche.
8. Il n'a pas fait semblant de me voir.
9. Cela saute aux yeux.
10. J'ai beau tâcher, je ne peux pas me passer de cela.

2. Translate:

André Lhéry, romancier connu, dépouillait avec lassitude son courrier, un pâle matin de printemps, au bord de la mer de Biscaye, dans la maisonnette où sa dernière fantaisie le tenait à peu près fixé depuis le précédent hiver.

"Beaucoup de lettres, ce matin-là, soupirait-il, trop de lettres."

Il est vrai, les jours où le facteur lui en donnait moins, il n'était pas content non plus, se croyant tout à coup isolé dans la vie. Lettres de femmes, pour la plupart, les unes signées, les autres non, apportant à l'écrivain l'encens des gentilles adorations intellectuelles. Presque toutes commençaient ainsi: "Vous allez être bien étonné, monsieur, en voyant l'écriture d'une femme que vous ne connaissez point." André souriait de ce début: étonné, ah! non, depuis longtemps il avait cessé de l'être. Ensuite chaque nouvelle correspondante, qui se croyait généralement la seule au monde assez audacieuse pour une telle démarche, ne manquait jamais de dire: "Mon âme est une petite sœur de la vôtre; *personne, je puis vous le certifier, ne vous a jamais compris comme moi.*" Ici, André ne souriait pas, malgré le manque d'imprévu d'une pareille affirmation il était touché, au contraire. Et, du reste, la conscience qu'il prenait de son empire sur tant de créatures, éparses et à jamais lointaines, la conscience de sa part de responsabilité dans leur évolution, le rendait souvent songeur. —Loti; *Les Désenchantées.*

3. Translate:

Il faut, dans ce bas monde, aimer beaucoup de choses,
Pour savoir, après tout, ce qu'on aime le mieux:
Les bonbons, l'Océan, le jeu, l'azur des cieus,
Les femmes, les chevaux, les lauriers et les roses.

Il faut fouler aux pieds des fleurs à peine écloses;
Il faut beaucoup pleurer, dire beaucoup d' adieux.
Puis cœur s'aperçoit qu'il est devenu vieux,
Et l'effet qui s'en va nous découvre les causes.

De ces biens passagers que l'on goûte à demi,
Le meilleur qui nous reste est un ancien ami.
On se brouille, on se fuit.—Qu'un hasard nous rassemble.

On s'approche, on sourit, la main touche la main,
Et nous nous souvenons que nous marchions ensemble,
Que l'âme est immortelle, et qu'hier c'est demain.

—Alfred de Musset.

FIRST MATHEMATICAL PAPER

Give all the chief steps of your work and reasoning, clearly arranged and not crowded. Abridge and simplify the work when you can, explaining if necessary.

Get your results into their simplest forms. In geometry give carefully constructed figures, and accompany all solutions with complete demonstrations. All clear abbreviations are allowed. The questions may be answered in any order.

1. Simplify

$$x^2(x^2+a^2)^{-\frac{1}{2}} + (x^2+a^2)^{\frac{1}{2}} + \frac{a^2 \left\{ 1 + x(x^2+a^2)^{-\frac{1}{2}} \right\}}{x + \sqrt{x^2+a^2}}$$

2. Solve for x and y :

$$\begin{cases} 8x + y - 1 = 0, \\ 4x^2 - 2xy - y^2 + 2x + 4 = 0. \end{cases}$$

3. A, B, and C could do a piece of work in 4 days working together. But, after they had worked 2 days, A stops; and, after 2 days more, the work is only three-fourths done and B stops. C finishes the remainder in 3 days. How long would it take each man to do the work alone?

4. Water is running into a 33 gal. tank at the rate of 25 gal. per hour. It leaks out of a hole at the bottom at a rate which increases because of the increasing depth of the water. If, starting with the tank empty, at the end of one hour it contains 16 gals., at the end of two hours 24 gal., three hours 28 gal., four hours 30 gal., etc., will the tank ever overflow? If not, *show why not*.

5. Prove that the three altitudes of a triangle meet in a point.

6. In the same or equal circles, chords unequally distant from the center are unequal, and the chord at the less distance is the greater.

7. Construct the circle which is tangent externally to three given circles, the given circles having equal radii and lying entirely outside of one another.

8. Six circles of 1 inch radius are drawn, each tangent to a seventh circle of the same size and tangent to one another. The entire set of circles is then surrounded by a regular hexagon each side of which is tangent to two of the circles. Find the length of a side of this hexagon.

SECOND MATHEMATICAL PAPER

1. If an equilateral triangle whose side is a is revolved about one of its sides as an axis, find the area generated by the other two sides.

2. How high must a person be above the earth's surface to see one-third of the surface, assuming the radius of the earth to be 4000 miles?

3. Show how to draw a common perpendicular to two given lines not lying in the same plane.

4. Find all the solutions of the trigonometric equation $\sin x + \cos x = \sec x$.

5. If $\sin A = \frac{2p}{p^2+1}$, $\sin B = \frac{2q}{q^2+1}$, express $\tan(A+B)$ in terms of p and q . Give

the results in factored form.

6. Show how to express $\log_b a$ in terms of logarithms to the base 10. Give full proof of any general theorem made use of.

7. In how many ways can 8 books be arranged on a shelf so that two particular books will not be together?

8. A vat in the form of a rectangular parallelepiped is 8x10x12 feet. If the volume is increased 500 cu. ft. by equal elongations of the dimensions, find the elongation in feet correct to two decimal places.

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