# 3. Construction Technology (HA,HB,HC)

## Instructions to the Head of the Institute

1. The program of the practical examination is to be finalized and notified on the notice board by the Head of the institute in accordance with the instructions regarding the conduct of the examinations laid down by the Divisional Board.
2. In case the external examiner fails to report or inform the Head of the institute one day prior to the commencement of the examination, the Head of the institute, is authorized to make the necessary emergency appointment in his place and inform the Divisional Board accordingly.
3. The Head of the institute should see that proper arrangements **(Lab. Accommodation and Equipments as per HSC Board Syllabus)** are made for conducting the practical examination in consultation with the internal examiner.
4. The Head of the institute should immediately hand over the packet of related documents received from H.S.C. Board office to the examiners concerned, before the exams.
5. The Head of the institute should "Immediately" display the 'Instructions to candidate' on proper notice board along with the time table.
6. Both the internal and external examiners will be appointed by the Divisional Board.
7. The following laboratory staff will be appointed for a batch of 12 students:
   a) Expert Assistant (Instructor) - 1
   b) Workshop / Laboratory Assistant - 1
   c) Peon (Helper) - 1

   The REMUNERATION of above staff will be paid as per the H.S.C. board rules.

**Important note:-** Full time teacher will maintain the record of the above marks in consultation with the Performing full time instructor for the year and the record will be verified & signed by external examiner during the practical exam. While submitting these mark sheets of assessment, statement of absentee (No 01 & 02) is not necessary.

# 3. Construction Technology (HA,HB,HC)

## Instructions to the Examiners and Scheme of Marking

1. Experiment which have been conducted during the year should be kept for the practical examination. (Minimum 75% experiments of each paper)
2. The candidate should be given one experiment by lot system from each paper. Period of examination will be three hours for each paper. Change of experiment should be avoided as far as possible. However the internal examiner can change the allotted experiment in consultation with the external, if the candidate has not performed and entered the allotted experiment in the journal.
3. Examiner should see that in a batch every candidate performs a different experiment.
4. Examiner should personally verify at every stage whether each sub question in the given slip is answered or not.
5. The assessment of answer books and the conduct of practical examination will be done jointly by both the examiners.
6. In case of any dispute the decision of the external examiner shall be final.
7. The external examiner should check the journal and project work completed during the year by the candidate.
8. The marks for project, OJT and Industrial Visit should be given by both external and internal examiner as per the marking scheme and given by the Board office.
9. Following scheme of marking should be followed.

| | | | | |
|---|---|---|---|---|
| a) | Experiment | 60 | marks | 80 marks |
| | Oral | 20 | marks | |
| b) | Practical Journal | | | 10 marks |
| c) | Project | | | 10 marks |
| d) | O. J. T. | | | 10 marks |
| e) | Industrial visit | | | 10 marks |
| | **Total Marks (for each paper)** | | | **120 marks** |

10. Teachers and instructors will direct the students to prepare one record book per paper/subject containing the above four divisions. of practical Journal, Project, OJT & Industrial visit.

**11. Scheme of Marking for assessment of O.J.T. work.**

a) 1 month Attendance Report certified by head of the institute and the concerned authority where the training was completed. 3 marks

b) Certificate with necessary documents of at least 3 different skills achieved by the student during the Training program. 3 marks

c) Certified reports submitted by the students, of the day to day-work done by the student during his training period. Report should be strictly as per the Board Guidelines 4 marks

**12. Scheme of Marking for assessment of Industrial visit work.**

a) Certified Reports of the various activities observed by the student. 4 marks

b) Scan copy of Photographs should be attached with visit report. 3 marks

c) Number of visits performed by the candidate. 3 marks

**Important note:-** Full time teacher will maintain the record of the above marks in consultation with the performing full time instructor for the year and the record will be verified & signed by external examiner during the practical exam. While submitting these mark sheets of assessment, statement of absentee (No 01 & 02) is not necessary.

# 3. Construction Technology (HA,HB,HC)

## Instructions to CANDIDATE

1. Candidates should bring with them their certified practical journals, project report, OJ.T. and Industrial visit reports with concerned Certificates, project etc.
2. All report and journals should be certified by the head of the institution or Head of the Vocational Department with counter signature of practical in charge/instructor.
3. Candidates should remain present at least 15 minutes before the commencement of the examination.
4. Candidates should read the slip carefully and answer all the questions in the slip.
5. List of components should necessarily include ALL DETAILS.
6. Use of log-tables is allowed. Use of pocket calculator, Scientific calculator in not allowed.
7. In case of any difficulty, the candidate should approach the concerned examiner.
8. Students should bring compass box with drawing instruments.
9. Leave your table neat and clean.
10. Keep silence in the examination hall.

# STD - XII

# CONSTRUCTION TECHNOLOGY

## Paper--I Concrete technology – [HA]

## Practical Examination

1) Time for practical examination will be three hours.
2) Allotment of marks for practical examination is as under.
   Marks for the practical performed as per the list given will be 60 (sixty) & marks for oral within same time will be 20 (twenty). Total practical examination will be of – 80 marks.
3) Practical list will included groups. From each group practical will be allotted to examine.

4) Other than above 80 marks, assessment of 40 marks will be done as under.
   a) Term work – 10 marks
   b) Project work – 10 marks.
   c) OJT work – 10 marks.
   d) Industrial/construction visit – 10 marks.

   Total – 40 marks

**Important note:-** Full time teacher will maintain the record of the above marks in consultation with the performing full time instructor for the year and the record will be verified & signed by external examiner during the practical exam. While submitting these mark sheets of assessment, statement of absentee (No 01 & 02) is not necessary.

Following note should be write on question paper.

a) Assume suitable data if necessary.
b) Use pencil to draw the sketches.
c) Figure to right indicates full marks.

5) Nature of question paper of 60 marks would be as following & 20 marks will be for oral exam. On the subject.

## Scheme of Practical Examination

## Std:- XII

## Construction Technology (HA, HB, HC)

## Concrete Technology (HA)

Time: 3 Hours Marks 60+20(Oral)=80

**Note:**

1. **Use suitable data if necessary-**
2. **Use pencil to draw sketches**
3. **Figure to right indicates full marks.**

**Q. 1 Solve (any one)** **10**

1. Determine the fineness modulus of aggregates (coarse) of 20 m.m. size
2. Determine the workability of concrete by slump cone test.
3. Determine workability of concrete by compaction factor test method.
4. Bulking of sand
5. Water content in aggregates.

**Q. 2 Erection of RCC Form work with Steel cutting, bending, binding and placing of reinforcement in the following given construction items (any one)** **30**

1. Lintel and Chejja
2. Column Footing
3. Beam Slab
4. Round Column
5. Stair case
6. Scaffolding
   a) Single Scaffolding
   b) Double Scaffolding

**Q.3 Prepare a visit report visited by you in your Locality.(any one)** **10**

1. Ready Mix Plant
2. Machinery and equipments used in construction industry.
3. Reinforcement
4. Form Work
5. Concreting

**Q.4 Solve any one** **10**

1. Write short note on compressive strength.
2. Write the procedure how to determine specific gravity of sand.
3. Describe the procedure of rebound hammer method and ultrasonic pulse velocity .
4. Construction and use of concrete mixer.
5. Write the mix design procedure of grade M20.

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## Scheme of Practical Examination
## Std :- XII

## Construction Technology (HA, HB, HC)

## Estimates and Contracts (HB)

Time: 3 Hours Marks 60+20(Oral)=80

**Note:**

1. **Use suitable data if necessary-**
2. **Use pencil to draw sketches**
3. **Figure to right indicates full marks.**

**Q.1 Work out the quantities of items. (Any One)** 20

(Drawing i.e. plan and section of the following given should be set by Internal and External Examiners jointly.)

1. Compound Wall
2. Brick Steps
3. R.C.C. works
   a) Footing b) columns c) Beams d) Slab e) Lintel / chhajja
4. Circular/Rectangular water tank.
5. 2 rooms, 3 rooms (using centerline method or short wall, long wall method).

**Q. 2 Calculate the quantities of materials required for the following items. (Any Two)** 10

1) P.C.C.
2) R.C.C.
3) Brick Masonry
4) Cement Plaster
5) Stone work

**Q.3 Derive the rate analysis for the following item of work (Any one)** 10

1) Earthwork in Excavation
2) P.C.C.
3) Brick Masonry
4) Stone Masonry
5) Cement plaster
6) R.C.C. work
7) Distempering
8) Cement paint

**..2..**

**(2)**

**Q.4 Draft a tender notice with respect to provisions of item rate/percentage rate contract.** 10
(Points to be covered in the notice the location, type of work, duration, cost of project etc.)

**OR**

**Q.4 A) Prepare a page format of measurement book .** 5

**B) Enlist various types of contracts. Explain any two of them.** **5**

**Q.5 Prepare a visit report of PWD/Govt. office visited by you in your locality.** 10
(Contract method /Tender method and documents used for it.)

**OR**

**Q.5 A) Prepare a checklist of quality control for R C C work.** 5

**B) Prepare a page of stockbook and record five entries of receipt and issue each.** 5

**Note**: Internal and external examiner will jointly decide the proportion of concrete, mortar of various items and also options for various questions.

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## Scheme of Practical Examination

## Std :- XII

## Construction Technology (HA, HB, HC)

## Surveying (HC)

Time: 3 Hours Marks 60+20(Oral)=80

**Note:**

1. **Use suitable data if necessary-**
2. **Use pencil to draw sketches**
3. **Figure to right indicates full marks.**

**Q.1 Solve any one .** 10

1. Write short notes on Tape, cross staff, chains, ranging rods.
2. Draw the various symbols in surveying. (any five)
   North direction, Railway bridge, Lake or Pond, Bench Mark, Excavation, Embankment, Cultivated land.
3. Write short note on optical square with the help of sketch.
4. Write short note on Prismatic Compass with sketch.

**Q.2 Perform the practicals (any one) (Each batch five students)** **40**

1. Determine the distance between two points by using metric chain of 20 m or 30 m chain (by using direct or indirect ranging method) distance between the two points will be given by examiner.
2. Plot the cross staff survey on the field and calculate its area. ( 5 to 8 points should be given by the examiner)
3. Prepare a traverse of regular geometrical shape (triangle, square, pentagon, hexagon etc.) by using the fore and back bearing measuring for each of side by prismatic compass.
4. Observe the readings by dumpy level at stations and calculate the RL by HI/Rise and Fall method. Change the instrument. Apply arithmetical check. ( number of stations, readings and change point should be given by the examiner.)
5. Prepare contour map for the block corner given on the ground. Calculate the RL of corners by HI/Rise and Fall method. (assume the contour interval and size of block specified by the examiner.)
6. Determine the vertical angle of two stations by theodolite with repeatition method. (two stations should be specified by the examiner from the given instrument.
7. Determine the co-ordinate (NEZ) from the given instrument station with the co-ordinate 100,1000,1500 etc. (assume the height of instrument and height of reflection by actual instrument.)

**Q.3 Solve any one** **10**

1. Temperory adjustment of Dumpy level.
2. Write various characteristics of contouring.
3. Construction and use of Theodolite.
4. Explain construction of Total station.

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