

Scheme of Practical Examination
XII – HSC Vocational – Paramedical Group
OA/OB/OC/PA/PB/PC
QA/QB/QC/RA/RB/RC

Introduction

Higher Secondary Vocational Courses are included under the broad category of Vocational Education. These courses include both educational process as well as acquisition of practical skills, knowledge and values relating to various occupations. Practical Training is an essential component of vocational courses. It helps in developing the required competencies with adequate precision. The practical training is achieved through Regular Practicals in Laboratory during Academic Session as well as OJT and Industrial Visits. Simultaneously Term work, Project work, should be perform and assign by the Full Time Teachers and it will be calculated in the Theory as a sessional Marks. Today employers are looking for individuals who are knowledgeable, skilled, more flexible and have capacity to adjust to the needs of organization. These programs will help in developing *generic skills or core* work skills and positive attitude.

Term Work : Term work includes the performance of students in Theory Class by assessment of attendance, Performance in class, theory work like note book throughout the year.

Project Work: Project work is an assignment given to students during each term/year by Full TimeTeacher, Activities such as specimen collection, market survey, field visits, participation in exhibition can be given as project work. Such activities could be given to individual or group of students.

On Job Training : In order to be Enriched with practical experience, a student can be sent to Diagnostic Centres, Pathology Laboratories, Clinical Laboratories, Blood Banks, Hospitals, Day Care Centres, Radiological Centres and Imaging Centres to get observations for X-ray, USG, CT Scan MRI, PET Scan and Nuclear Medicine and Higher Radiological as well as Radiotherapy Centres, NGOs, Old Age homes, Health Centres, Neonatal's Wards, Special Children's Centres, Optical Shops, Ophthalmic Hospitals and Higher Ophthalmic Centres and related establishments or Units to work in a real life situations, Under the guidance of an expert Practitioners. He will be evaluated by the teacher and the expert.

Students are sent to the nearby institute / establishments / laboratory to get hands on practice / experience in doing the job and gaining experience.

Following things are expected –

OJT sessions should be arranged during vacation for XIth students or as per convenience of Students and institutions/college for the duration of 30 days. The evaluated marks are to be awarded at the end of XII Std Practical examination.

Scheme of Practical Examination
XII – HSC Vocational – Paramedical Group
OA/OB/OC/PA/PB/PC
QA/QB/QC/RA/RB/RC

Instructions to the Head of the Institute

1. The Program of 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, 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 H.S.C Board Syllabus**) are made for conducting the practical examination in consultation with the internal.
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.
 - a) The following laboratory staff will be appointed for Practical Examinations.
 - b) Subject Expert - 1
 - c) Peon (Helper) - 1The Remuneration of above staff will be paid as per the H.S.C board Rules.

Scheme of Practical Examination
XII – HSC Vocational – Paramedical Group
OA/OB/OC/PA/PB/PC
QA/QB/QC/RA/RB/RC

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 80 % experiments of each paper).
2. The candidate should be given one long and one Short experiment in question paper from Each paper on the basis of Boards Practical Manual.. 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 examiner, if the candidate has not performed and entered the allotted experiment in the journal.
3. Examiner should personally verify at every stage whether each question in the given question paper is answered or not.
4. The assessment of answer books and the conduct of practical examination will be done jointly by both the examiners.
5. In case of any dispute the decision of the external examiner will be final.
6. The Internal examiner should check the journal and project work completed during the year by the candidate.
7. The marks for O.J.T. and I.V. should be given by the Internal examiner as per the marking scheme given by the Board office.

Following scheme of marking should be followed

a)	Experiment	60 marks	80 marks
	Oral and Journal	20 marks	
b)	Term Work		10 marks
c)	Project work		10 marks
d)	O.J.T - On Job Training		10 marks
d)	I.V – Industrial Visit		10 marks

Total Marks (Each paper) 120 marks

- 8) Scheme of Marking for assessment of O.J.T. work -----10 marks
- 9) Industrial Visit report submitted by each student 10 marks.

Scheme of Practical Examination
XII – HSC Vocational – Paramedical Group
OA/OB/OC/PA/PB/PC
QA/QB/QC/RA/RB/RC

Instructions to the Candidate

1. Candidates should bring with them their certified journals, project report, O.J.T. and I.V reports with Concerned Certificates , project etc.
2. All reports and journals should be certified by the Head of the Institution or Head of the Vocational Department with counter signature of practical In-charge.
3. Candidates should remain present at least 15 minutes before the commencement of the examination.
4. Candidates should read the question paper carefully and answer all the questions in the question paper.
5. Apron is compulsory .
6. Use of Pocket calculator and Nutritive value Book let is allowed.
7. Use of any electronic gadgets (cell phone , I pod, etc) are not allowed.
8. In case of any difficulty, the candidate should approach the concerned examiner.
9. Leave your table neat and clean.
10. Keep silence in the examination hall.

**SCHEME OF
PRACTICAL EXAMINATION
IN SUBJECT
MEDICAL LAB TECHNICIAN
(OA / OB / OC)
STD. XII
HSC VOCATIONAL**

Maharashtra State Board of Secondary & Higher Secondary

Education Board

H.S.C. Examination

H.S.C. Vocational Course – Practical Exam,

Medical Lab Technology

Clinical Pathology and Haematology and Blood Bank (OA)

Each Student has-

Q.No. 1	Long Experiment 1	25 Marks	1 hour
Q.No. 2	Short Experiment 1	15 Marks	1/2 hour
Q.No.3	Identification Spot (10)	20 Marks	1/2 hour
Q.No. 4	Viva and Journal	20 Marks	1 Hour

Total – 3 hours.

Long Experiments

List 25 Marks each

1. Do the differential count of WBCs of given sample.
2. Prepare the smear from given sample, stain it and find out the abnormal WBCs and RBCs.
3. Do the Total Leucocytes counts of given sample and report.
4. Do the Absolute Eosinophil count of the given blood sample.
5. Do the total RBC count of the given blood sample and report.
6. Do the Peripheral blood smear of the given blood sample and enumerate the abnormal forms of RBCs.
7. Do the Haemoglobin Estimation by Drabkin's or Sahli's Method . You have been provided a blood sample.

8. Do the physical or chemical urine analysis of the given urine sample and write the report.
9. Do the CSF examination of the given sample and give the report (physical or chemical or microscopic)
10. Do the complete Semen analysis of the given sample and write a report.
11. Do the microscopic examination of the given stool sample. Write down the report.
12. Find out the blood groups of two samples. And state their compatibility.
13. Screen the given Donor for blood collection.
14. Do the ESR of given sample by Westergreen method and state its clinical significance.
15. Prepare the smear of given blood sample, stain it and state the type of anaemia.
16. Do the platelet count of given blood sample and report it.
17. Detect the blood groups of given two samples by tube method.

Short Experiments

Time : 1.5 hour

15 marks each

1. Perform the haemoglobin estimation of given blood sample by Sahlis Method.
2. Do the Total WBC count of the given blood sample and give the report.
3. Perform the Differential count of the given stained slide and report.
4. Do the Bleeding and Clotting time.(B.T. & C.T.)
5. Prepare the ideal smear of given blood sample and stain it with Leishmans' stain.
6. Do the Fields' staining of the slide to detect Malarial parasite.
7. Do the Sickle cell preparation by slide Slide method.
8. Do the ESR of given blood sample by any one of method.
9. Do the PCV of given blood sample by Wintrobe method.
10. Detect the blood groups by slide method.
11. Detect the Rh typing of given two blood sample by slide method.
12. Do the physical examination of given urine sample.
13. Do the chemical examination of given urine sample to detect Glucose and albumin.
14. Detect the bile salts and Bile pigments in the given urine sample.
15. Perform the tests for detection of Ketone bodies in the given urine sample and report.
16. Perform the test for detection of Occult blood in the given stool sample.
17. Detect the specific gravity of the given urine sample and report it.
18. Do the Microscopic examination of given urine sample.
19. Collect the blood sample of the patient by venipuncture for Glucose estimation.
20. Draw the figure of Neubaeur's chamber and focus it under microscope.

Q.NO.3 .Select 10 objects and arrange them for identification.

Each spot has 2 marks and 2 mints. Per spot.

20 marks.

- 1) Syringe
- 2) Sterilizer
- 3) Plain Bulb
- 4) Wintrobe tube
- 5) Stethoscope
- 6) Petridish
- 7) RBC Pipette
- 8) Timer(Watch)
- 9) Centrifuge tube
- 10) L.P.needle
- 11) Cover slips
- 12) Spirit Lamp
- 13) Slide of Lymphocyte
- 14) Slide of Eosinophil
- 15) Measuring Cylinder
- 16) Hb pipette
- 17) Test tube holder
- 18) Neubar's Chamber
- 19) Beaker
- 20) Microscope
- 21) Needle
- 22) WBC pipette
- 23) Stool slide to demonstrate ova & cyst.
- 24) Identification of Glucose percentage in urine.
- 25) Sphygmomanometer(B.P.apparatus)
- 26) Thermometer

- 27) Centrifuge machine
- 28) Dessicator
- 29) Capillary tube
- 30) Test tube
- 31) Cuvette
- 32) Filter paper
- 33) PH meter
- 34) Filter of colourimeter
- 35) Colourimeter
- 36) Slides
- 37) Antisera A & B
- 38) Sulphar Powder
- 39) Blood Cell counter
- 40) Lancet
- 41) Westergreen tube
- 42) Litmus paper blue
- 43) Chemical Balance
- 44) Hot air oven
- 45) Autoclave
- 46) Oil immersion objective
- 47) Tourniquet
- 48) EDTA Bulb
- 49) VDRL Slide
- 50) Field's stain A & B
- 51) Methylene Blue
- 52) Eye piece
- 53) Fluoride bulb

Maharashtra State Board of secondary & Higher Secondary

Education Board

H.S.C. Practical Examination

H.S.C. Vocational Medical Lab Technology

Histotechnology (OB)

Each Student has-

Q.No. 1	Long Experiment 1	25 Marks	1 hours
Q.No. 2	Short Experiment 1	15 Marks	1/2 hour
Q.No. 3	Identification Spot (10)	20 Marks	1/2 hour
Q.No. 4	Viva and Journal	20 Marks	1 hour

Total – 3hours.

Q.NO 1: Long Experiments List

25 Marks each

1. Do the PAP Staining and write the procedure
2. Do the H& E Staining and write the procedure
3. From the given three samples of the fluids. Find out in which the decalcification is completed, Adopt chemical method. Write procedure for neutralization.
4. Sharpen the given knife by Honing/Stropping method.
5. Prepare the Paraffin tissue block of given specimen.
6. Cut the sections from the given block. Adhere it on slide, do the deparaffinization.
7. Prepare the Bouin's fluid and 10% formalin from given material.
8. Do the complete dehydration of given specimens.
9. Prepare the Zenker's fluid with the help of given material.

Q.NO. 2 Short Experiment.**(15 Marks)**

1. Prepare the Smear for Exfoliative cytology by pull a part technique.
2. Prepare the paraffin tissue block of given specimen (Embedding) & write the procedure.
3. Adhere the given cut sections on the slide and write procedure.
4. Prepare the 10% Formaline and write the procedure.
5. Prepare the routine decalcifying fluids for decalcification.. Write the procedure.
- 6 Do the honing of given knife.
- 7 Prepare the formal saline
- 8 Do the stropping of given knife.
- 9 Prepare the Mayer's Egg albumin solution.
- 10 De-paraffinize the given slide.
- 11 Do the cleaning of given slide.
- 12 Do the mounting of given slide.

QNO.3. Spot. Select any 10 object from the list given below.

2 Marks for each identification 20 Marks Time : ½ hr.

2 minutes for each spot.

List of Spots

1. L-Shape Moulds
2. Ascending grades of alcohol
- 3 Paraffin Tissue blocks
- 4 Canada Balsam
- 5 Hammer
- 6 Microtome
- 7 Microtome Knife
- 8 Hone
- 9 Strop
- 10 Tissue Cassette
- 11 Coplin Jar(Vertical)
- 12 Coplin Jar(Horizontal)
- 13 DPX
- 14 Haematoxylene
- 15 Xylol I & II
- 16 Descending grades of alcohol
- 17 Staining Jars
- 18 Paraffin wax
- 19 Hot plate
20. Tissue floatation bath
- 21 Adhesive- Meyers albumin
- 22 Glycerin
- 23 10% formalin (Fixative)
- 24 PAP Smear Fixative
- 25 Block holder.

Maharashtra State Board of Secondary & Higher Secondary

Education Board

H.S.C. Examination

H.S.C.Vocational Course – Practical Exam,

Medical Lab Technology

Clinical Biochemistry (OC)

Each Student has-

Q.No. 1	Long Experiment 1	25 Marks	1 hour
Q.No. 2	Short Experiment 1	15 Marks	1/2 hour
Q.No. 3	Identification Spot (10)	20 Marks	1/2hour
Q.No. 4	Viva and Journal	20 Marks	1 Hour

Total – 3 hours.

Q.NO 1: Long Experiments List

25 Marks each

1. Do the Estimation of Blood Glucose by GOD POD method. Write Principle, requirements, Procedure, Normal Values and Clinical Significance.
2. Do the Estimation of Blood Urea by DAM/Enzymatic method. Write Principle requirements, Procedure, Normal Values and Clinical Significance.
3. Do the Estimation of Serum Uric Acid by End Point/Enzymatic method. Write Principle requirements, Procedure, Normal Values and Clinical Significance.
4. Do the Estimation of Serum Creatinine by End Point/Kinetic method. Write Principle requirements, Procedure, Normal Values and Clinical Significance.
5. Do the Estimation of Serum Total Proteins by End Point method. Write Principle requirements, Procedure, Normal Values and Clinical Significance.

6. Do the Estimation of Serum Calcium by OCPC method. Write Principle requirements, Procedure, Normal Values and Clinical Significance.
7. Do the Estimation of Serum Phosphorus by End Point method. Write Principle requirements, Procedure, Normal Values and Clinical Significance.
8. Do the Estimation of Serum Bilirubin by End Point method. Write Principle requirements, Procedure, Normal Values and Clinical Significance.
9. Do the Estimation of Serum Cholesterol by End Point/Enzymatic method. Write Principle requirements, Procedure, Normal Values and Clinical Significance.
10. Do the Estimation of Serum Triglyceride by End Point/Enzymatic method. Write Principle requirements, Procedure, Normal Values and Clinical Significance.
11. Do the Estimation of S.G.P.T/S.G.O.T. by End point /Kinetic method. Write Principle requirements, Procedure, Normal Values and Clinical Significance.
12. Do the Estimation of Na / K by End point /Flame photometer method. Write Principle requirements, Procedure, Normal Values and Clinical Significance.
13. Do the Estimation of Alkaline Phosphatase. Write Principle requirements, Procedure, Normal Values and Clinical Significance.
14. Do the Chemical Examination of Urine (Albumin, Glucose and Bile Salt).
15. Do the Chemical Examination of Ketone, Bile Salt and Bile Pigments.

NOTE: 1. In Clinical Biochemistry Experiments Flow Chart (Procedure sheet) to be provided to the Students.

2. Calculator is allowed.

Q.NO. 2 Short Experiments.(Any one experiment from the Following) Marks:15

1. Do the Physical Examination of Urine.
2. Detect Urine Sugar by Benedict's Method.
3. Detect Urine Proteins by Heat method / S.S.A. method.
4. Detect Bile Salt and Bile Pigments from given Urine Sample.
5. Do the Occult Blood Test of given Urine sample.
6. Detect the Ketone bodies by Rothera's method.
7. Detect Specific Gravity of given Urine Sample.
8. Detect Serum Albumin from given sample.
9. Detect Urobilinogen from given Urine Sample.
10. Prepare Saturated Solution.
11. Prepare 10% Barium Chloride solution.
12. Prepare Buffer Solution.
13. Prepare Normal Saline.

Q.NO.3. Spot. (Any Ten Spot Each carry 2 marks.)

20 Marks.

1. Folin-wu-tube.
2. Volumetric Flask
3. Auto pipette.
4. Colorimeter
5. Centrifuge Machine.
6. Centrifuge tube.
7. Cuvette.
8. Serological Pipette.
9. pH Meter.
10. Burette.
11. Conical Flask.
12. Filter Paper.
13. Funnel .
14. Analytical Balance.
15. Flame Photometer.(Figure)
16. Voltage Stabilizer.
17. Measuring Cylinder.
18. Round Bottom Flask.
19. Desiccator.
20. Reagent Bottle.

21. Tourniquet.
22. Heparin Bulb.
23. Na Citrate bulb.
24. Vacutainer
25. Urinometer.
26. Test tube Holder.
27. Pipette Stand.
28. Litmus Paper Blue.
29. Litmus Paper Red.
30. Test tube Rack.
31. pH paper.
32. Tripod Stand.