## PRIVATE SECONDARY EDUCATION AUTHORITY

**MONITORING OF NORMS AND STANDARDS IN A FACILITY RECKONED AS:**

# CHEMISTRY LABORATORY UP TO GRADE 13 – Year 2021/2022

## Subject Appellation and Level

- **CHEMISTRY Grades 12 & 13 – HSC/AL - CIE syllabus code: 9701** ☐
- **CHEMISTRY Grades 10 & 11- SC/OL – CIE syllabus code: 5070** ☐
- **SCIENCE Up to Grade 9 & 9+ (EP) (the *Chemistry* component only in schools where there is no Science Junior Laboratory) - NCF** ☐

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Name of School : _____Date of Verification :_____

Is the facility New / Relocated / Existing / Upgraded? _____

Number of sections and students using this facility:

| | Extended Program | | | | Regular | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grade** | **7** | **8** | **9** | **9+** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
| **No. of Sections** | | | | | | | | | | | |
| **No. of Students** | | | | | | | | | | | |
| **No. of Groups** | | | | | | | | | | | |

Educator in Charge: _____ Qualifications: _____

Specialist Room Attendant: _____ Qualifications: _____

**IMPORTANT NOTES:**

**The following conditions should be fulfilled to ensure a reasonable standard:**

- **The room and floor area provided should be appropriate.**
- **A minimum score of 75 % should be obtained in each of the four Sections A to D.**
- **Compulsory items in Section D, highlighted in bold characters, should be provided.**
- **Record of use of the Lab. should be kept as required.**

**Minimum requirements for a class of 20 students are specified. However, in case of need provision should be made to accommodate up to 4 additional students.**

| **(A) PHYSICAL FACILITIES – weightage: 30%** | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Description** | **Requirements** | **Marks Per Unit** | **Marks Item-wise** | **Existing** | **Score (for PSEA use only)** |
| **1. Floor Area And Room**<br><br>***NOTES:**<br>a) For existing *Labs*, the previously approved Floor Area shall be accepted and rated pro-rata.<br>b) For new Labs, the specified floor area shall be required. | **Concrete Building** | An area of 60 $m^2$ is required* | 75/$m^2$ | 4500 | | |
| | **CONDITIONS OF ROOM:** | | | 1500 **(Total Pro-rata on area)** | | |
| | Ceiling | Plastered & Crack-free | 10% | | | |
| | Walls | Crack-free Plastered & painted | 10% | | | |
| | Flooring | Flat & tiled /painted | 10% | | | |
| | Shape | Convenient | 10% | | | |
| | Set Up | Conducive | 10% | | | |
| | Cleanliness | Maintained | 10% | | | |
| | Proper Storage and Classification | Indexing & Accessibility | 10% | | | |
| | Lighting | Adequate | 10% | | | |
| | Ventilation | Natural/ Assisted | 10% | | | |
| | Utilities | Water/Gas/ Electricity | 10% | | | |
| **2. Store and Preparation Room**<br><br>**NOTE:**<br>For existing *Store and Preparation Rooms*, the previously approved Floor Area shall be accepted and rated pro-rata. | **Concrete Building** | An area of 10 $m^2$ is required | 75/$m^2$ | 750 | | |
| | **CONDITIONS OF ROOM:** | | | 250 **(Total Pro-rata on area)** | | |
| | Furniture | Appropriate | 10% | | | |
| | Sink | Functional | 10% | | | |
| | Cleanliness | Maintained | 10% | | | |
| | Proper Storage and Classification | Indexing & Accessibility | 20% | | | |
| | Lighting | Adequate | 10% | | | |
| | Ventilation | Natural/ Assisted | 20% | | | |
| | Utilities | Water/Gas/ Electricity | 20% | | | |

| Item | Description | Quantity | Marks Per Unit | Marks Item-wise | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| **3. Furniture & Accessories**<br><br>***NOTE: Worktables** should be of Laboratory type and fitted with taps, sinks, bunsen burners and power supply.<br><br>****NOTE: Demonstration Table** is rated only if it has ALL of the 4 facilities listed at a) to d). | i) Work Tables* | 15 $m^2$ | 30 | 450 | | |
| | ii) Stools | 20 | 21 | 420 | | |
| | iii) Demonstration Table (2m x 1m)** | $2m^2$ | 110 | 220 | | |
| | a) Tap and Sink *(Tap: Graded Type* | 1 Set | 110 | 110 | | |
| | b) Bunsen Burner with gas supply | 1 | 110 | 110 | | |
| | c) Power Point – *attached or nearby* | 1 | 110 | 110 | | |
| | d) 20 cm higher than work tables | - | 110 | 110 | | |
| ***NOTE: Conditions**<br><br>Problems identified with the conditions of **Furniture and Accessories**, if any, shall be evaluated on how far they affect teaching and learning on a scale of 1 to 10 before effecting deductions on marks for conditions. The marks may be totally forfeited in case of even a single grave problem with conditions. | iv) Chair for Teacher | 1 | 150 | 150 | | |
| | v) White Board *(Size: 243cm X 105cm) below size not rated* | 1 | 200 | 200 | | |
| | vi) Tap *(graded type)* & Sink *(of appropriate material)* | 8 Sets | 90 | 720 | | |
| | vii) Power Points (free) | 2 | 80 | 160 | | |
| | viii) Wall Clock | 1 | 100 | 100 | | |
| | ix) Shelves/Cupboards | Sufficient for Storage | 300 | 300 | | |
| | **Conditions i) to ix)*** | | | 800 | | |
| | | | **TOTAL Section A** | **10960** | | Score sect A |

**Actual Marks Scored on Section A:** $\frac{\text{Score sect A}}{10960}$ **X 12000 = _____**

| **(B) INSTRUCTIONAL TOOLS & RECORDS – weightage: 30%** | | | | | | |
|---|---|---|---|---|---|---|
| **1. Practicals** | Number of Sessions | 20 | 250 | 5000 | | |

**NOTE: Reckoned pro-rata for the current academic year - max. 20 per class or group on 8.5 months.**

| **Requirements:** | **Grade** | **Ext. Prg.** | | | | **Regular** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Class/Group** | **7** | **8** | **9** | **9+** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
| **a)** 20 practical sessions per class for Grades 10 - 13 in the academic year spread over all three school terms.<br><br>**b)** 7 practical sessions per class for Grades EP & Reg. 7, 8 and 9 in the academic year.<br><br>**c)** Records to be kept class-wise and kept in the lab. | **A** | | | | | | | | | | | |
| | **B** | | | | | | | | | | | |
| | **C** | | | | | | | | | | | |
| | **D** | | | | | | | | | | | |
| | **E** | | | | | | | | | | | |
| | **Total (x 3 for EP & Reg. Grades 7-9)** | | | | | | | | | | | |
| | **Average (Gradewise)** | | | | | | | | | | | |
| | **Overall Average** | | | | | | | | | | | |
| | **Note for Guidance:** | *Grades EP & Reg. 7, 8 and 9 to be considered only if school does not have a Science Junior Lab.* | | | | | | | | | | |

| **2. Audio Visual Sessions** | Number of Sessions | 10 | 200 | 2000 | | |
|---|---|---|---|---|---|---|

**NOTE: Reckoned pro-rata for the current academic year - max. 10 per class or group on 8.5 months.**

| **Requirements:** | **Grade** | **Ext. Prg.** | | | | **Regular** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Class/Group** | **7** | **8** | **9** | **9+** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
| **a)** 10 Audio Visual sessions per class for Grades 10 - 13 in the academic year spread over all three school terms.<br><br>**b)** 4 Audio Visual sessions per class for Grades EP & Reg. 7, 8 and 9 in the academic year.<br><br>**c)** Records to be kept class-wise and kept in the lab.<br><br>**d)** Audio Visual Sessions - (video lessons, Computer Assisted Learning) | **A** | | | | | | | | | | | |
| | **B** | | | | | | | | | | | |
| | **C** | | | | | | | | | | | |
| | **D** | | | | | | | | | | | |
| | **E** | | | | | | | | | | | |
| | **Total (x 3 for EP & Reg. Grades 7-9)** | | | | | | | | | | | |
| | **Average (Gradewise)** | | | | | | | | | | | |
| | **Overall Average** | | | | | | | | | | | |
| | **Note for Guidance:** | *Grades EP & Reg. 7, 8 and 9 to be considered only if school does not have a Science Junior Lab.* | | | | | | | | | | |

| Item | Description | Quantity | Marks Per Unit | Marks | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| **3. Time-Table** | Time-Table of Practicals *(with school seal and year)* | 1 displayed | 100 | 100 | | |
| **4. Stock-Book** (New acquisitions to be highlighted.) | Up to date, signed and with school seal. | 1 | 150 | 150 | | |
| **5. Teaching and Learning Aids** **NOTES:** **i) Charts topics** 1. Periodic Table 2. Carbon Cycle 3. Water Cycle 4. Nitrogen Cycle 5. Pollution (air, water etc.) 6. Global Warming 7. Changes of State 8. Sources of Energy (Renewable / Non Renewable) 9. Hazardous Chemicals 10. Disposal of Hazardous Chemicals 11. Acids & Bases **ii) Charts size** Charts to be printed and of minimum size – A3. Contents should be readable with drawings and bold characters. | i) Reference Books for Theory *(Published in the past 3 years)* | 5 | 100 | 500 | | |
| | ii) Reference Books for Practicals *(Published in the past 5 years)* | 5 | 100 | 500 | | |
| | iii) Wall Charts *(re: list of topics & size in the first column )* | 11 | 40 | 440 | | |
| | iv) Multimedia | | | | | |
| | a) PC/Laptop | 1 | 200 | 200 | | |
| | b) Internet | Connected | 100 | 100 | | |
| | c) LCD Projector* | 1 | 240 | 240 | | |
| | d) Screen* | 1 | 70 | 70 | | |
| | ***NOTE**: A connectable LED TV of 55" may replace items c) and d).* | | | | | |
| | | | **TOTAL Section B** | **9300** | | Score sect B |

**Actual Marks Scored on Section B:** $\frac{\text{Score sect B}}{9300}$ **X 12000 = _____**

**(C) SAFETY ITEMS – weightage: 10%**

| Item | Description | Quantity | Marks Per Unit | Marks Item-wise | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| 1. First Aid Kit | Equipped to treat cuts, burns and eye problems | 1 | 350 | 350 | | |
| 2. Fire Extinguisher | Capacity: 2 L or 2 Kg (serviced on time) | 1 | 400 | 400 | | |
| 3. Fire Blanket | 0.9m x 0.9 m | 1 | 350 | 350 | | |
| 4. Emergency Exit *(clearly indicated)* | Additional door for quick exit in case of emergency | 1 | 400 | 400 | | |
| 5. Safety Goggles | For protection of eyes while conducting practicals. | 20 | 20 | 400 | | |
| 6. Safety Charts Min. size: $A_3$ *(permanently affixed at appropriate places)* | Clear instructions about safety precautions<br>• Exit signs<br>• In case of fire<br>• Dangerous chemicals; etc | 5 | 80 | 400 | | |
| 7.<br>i) Main Switch /Circuit Breaker<br>ii) ELCB/RCD | Separate for the Chemistry Lab. and located at an accessible place inside the Lab. | 1<br>1 | 350<br>400 | 350<br>400 | | |
| 8. Gas conductors (**NOTE***: Gas tanks to be kept preferably outside the building with an internal gas switch)* | Rubber tubing connected to Bunsen Burners should be replaced before expiry date stated thereon. | 20 | 60 | 1200 | | |
| 9. Storage of chemicals | Safe storage, organisation and accessibility of chemicals, especially hazardous ones | Safe Storage Conditions<br>Accessibility | 200<br>100 | 200<br>100 | | |
| | | | **TOTAL Section C** | **4550** | | **Score sect C** |

**Actual Marks Scored on Section C:** $\frac{\text{Score sect C}}{4550} \times 12000 =$ _____

| **(D) EQUIPMENT & CONSUMABLES – weightage: 30%** | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Equipment** | **Quantity Required** | **Marks Per Unit** | **Marks Item-wise** | **Existing** | **Score (for PSEA use only)** |
| 1. | Ammeter 0 – 5 A | 5 | 24 | 120 | | |
| 2. | Aspirator 10 $dm^3$ glass/plastic | 2 | 60 | 120 | | |
| 3. | Aspirator 25 $dm^3$ glass/plastic | 1 | 60 | 60 | | |
| 4. | Aspirator 45 $dm^3$ glass/plastic | 1 | 60 | 60 | | |
| 5. | Balance beam + Box of weights | 1 | 60 | 60 | | |
| 6. | **Balance electronic (2 d.p.)** | **2** | **90** | **180** | | |
| 7. | Beakers 100 $cm^3$ | 30 | 6 | 180 | | |
| 8. | Beakers 250 $cm^3$ | 30 | 6 | 180 | | |
| 9. | Beakers 500 $cm^3$ | 5 | 24 | 120 | | |
| 10. | Beakers 500 $cm^3$ plastic | 20 | 6 | 120 | | |
| 11. | Beakers 1000 $cm^3$ | 5 | 36 | 180 | | |
| 12. | Beakers 2000 $cm^3$ | 2 | 60 | 120 | | |
| 13. | Beehive shelf | 2 | 30 | 60 | | |
| 14. | Boats porcelain | 4 | 15 | 60 | | |
| 15. | Boiling tube | 20 | 9 | 180 | | |
| 16. | Boiling Chips | 1 pk | 60 | 60 | | |
| 17. | Bosses for metal stand | 10 | 12 | 120 | | |
| 18. | Bottles 250 $cm^3$ dilute $H_2SO_4$ | 10 | 18 | 180 | | |
| 19. | Bottles 250 $cm^3$ dilute HC*l* | 10 | 18 | 180 | | |
| 20. | Bottles 250 $cm^3$ dilute $HNO_3$ | 10 | 18 | 180 | | |
| 21. | Bottles 250 $cm^3$ aq NaOH | 10 | 18 | 180 | | |
| 22. | Bottles 250 $cm^3$ aq $NH_4OH$ | 10 | 18 | 180 | | |
| 23. | Bottles 250 $cm^3$ aq KI | 10 | 18 | 180 | | |
| 24. | Bottles 250 $cm^3$ Lime Water | 10 | 18 | 180 | | |
| 25. | Bottles 250 $cm^3$ aq $AgNO_3$ | 10 | 18 | 180 | | |
| 26. | Bottles 250 $cm^3$ aq $Ba(NO_3)_2$ | 10 | 18 | 180 | | |
| 27. | Bottles 250 $cm^3$ aq $BaCl_2$ | 10 | 18 | 180 | | |
| 28. | Bottles 250 $cm^3$ aq $K_2Cr_2O_7$ | 10 | 18 | 180 | | |
| 29. | Bottles 250 $cm^3$ aq $KMnO_4$ | 10 | 18 | 180 | | |
| 30. | Bottles dropping for indicator | 20 | 3 | 60 | | |
| 31. | Bottles Reagent 250$cm^3$ (empty) | 100 | 1.2 | 120 | | |
| | | | **Sub - Total** | **4320** | | |

| Item | Equipment | Quantity Required | Marks Per Unit | Marks Item-wise | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| 32. | Bottles Reagent 100/125cm$^3$ (empty) | 80 | 0.75 | 60 | | |
| 33. | Bottles wide neck (for solids) | 10 | 6 | 60 | | |
| 34. | Brush burette | 5 | 12 | 60 | | |
| 35. | Brush test tube | 20 | 6 | 120 | | |
| 36. | Bucket (10L) | 2 | 30 | 60 | | |
| 37. | Bunsen Burner tap – 2 way (in use) | 10 | 18 | 180 | | |
| 38. | **Bunsen Burners (in use)*** | **20** | **9** | **180** | | |
| 39. | Burette Stands | 25 | 4.8 | 120 | | |
| 40. | **Burettes 50 cm$^3$ + Jet + rubber tubing** | **25** | **4.8** | **120** | | |
| 41. | Capillary tubes (pieces) for M.pt | 75 | 0.8 | 60 | | |
| 42. | Chromatography paper | 1 reel | 120 | 120 | | |
| 43. | Clamps for metal stand | 10 | 12 | 120 | | |
| 44. | Clips | 25 | 2.4 | 60 | | |
| 45. | Condenser (water), liebig | 2 | 30 | 60 | | |
| 46. | Copper Wires – Insulated (2 colours) | 10 m each | 6 | 60 | | |
| 47. | Copper Foil | 2 Sheets | 30 | 60 | | |
| 48. | Cork borer set | 1 | 60 | 60 | | |
| 49. | Corks bark assorted | 100 | 0.6 | 60 | | |
| 50. | Corks rubber assorted | 50 | 1.2 | 60 | | |
| 51. | Crocodile clips | 10 | 6 | 60 | | |
| 52. | Crucible + lid | 30 | 2 | 60 | | |
| 53. | Cylinder measuring 10 cm$^3$ | 15 | 8 | 120 | | |
| 54. | Cylinder measuring 25 cm$^3$ | 15 | 8 | 120 | | |
| 55. | Cylinder measuring 50 cm$^3$ | 15 | 8 | 120 | | |
| 56. | Cylinder measuring 100 cm$^3$ | 15 | 8 | 120 | | |
| 57. | Cylinder measuring 250 cm$^3$ | 10 | 12 | 120 | | |
| 58. | Cylinder measuring 500 cm$^3$ | 5 | 24 | 120 | | |
| 59. | Cylinder measuring 1000 cm$^3$ | 4 | 30 | 120 | | |
| | | | **Sub - Total** | **2640** | | |

***Bunsen burner will not be rated if gas conductor(s) do not bear clearly the expiry date or expired.**

| Item | Equipment | Quantity Required | Marks Per Unit | Marks Item-wise | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| 60. | Cylinder measuring 2000 $cm^3$ | 2 | 60 | 120 | | |
| 61. | Delivery Tube | 10 | 6 | 60 | | |
| 62. | Deflagrating spoon | 2 | 30 | 60 | | |
| 63. | Desiccator (medium) | 2 | 30 | 60 | | |
| 64. | Dropping pipettes with teats | 25 | 2.4 | 60 | | |
| 65. | Electrode Copper (100 X 5mm) | 4 | 15 | 60 | | |
| 66. | Electrode Graphite (100 X 5mm) | 4 | 15 | 60 | | |
| 67. | Evaporating Basin | 2 | 30 | 60 | | |
| 68. | Filter paper (9 cm diameter) | 5 pk | 24 | 120 | | |
| 69. | Filter paper (12.5 cm diameter) | 5 pk | 24 | 120 | | |
| 70. | Flask conical 100 $cm^3$ | 20 | 6 | 120 | | |
| 71. | Flask conical 250 $cm^3$ | 30 | 4 | 120 | | |
| 72. | Flask conical 250 $cm^3$ with side arm | 5 | 12 | 60 | | |
| 73. | Flask distillation 250 $cm^3$ | 2 | 60 | 120 | | |
| 74. | Flask distillation 500 $cm^3$ | 2 | 60 | 120 | | |
| 75. | Flask flat bottom 250 $cm^3$ | 5 | 12 | 60 | | |
| 76. | Flask flat bottom 500 $cm^3$ | 5 | 12 | 60 | | |
| 77. | Flask round bottom 500 $cm^3$ | 5 | 24 | 120 | | |
| 78. | Flask volumetric 100 $cm^3$ | 25 | 4.8 | 120 | | |
| 79. | Flask volumetric 250 $cm^3$ | 25 | 4.8 | 120 | | |
| 80. | Flask volumetric 500 $cm^3$ | 2 | 60 | 120 | | |
| 81. | Flask volumetric 1000 $cm^3$ | 2 | 60 | 120 | | |
| 82. | Fractionating column | 1 | 60 | 60 | | |
| 83. | Funnel glass 7.5 cm diameter | 20 | 3 | 60 | | |
| 84. | Funnel plastic 7.5 cm diameter | 20 | 3 | 60 | | |
| 85. | Funnel separating | 2 | 30 | 60 | | |
| 86. | Funnel tap | 10 | 6 | 60 | | |
| 87. | Funnel thistle | 2 | 30 | 60 | | |
| 88. | Gas jar with cover | 5 | 12 | 60 | | |
| 89. | Gas Lighter | 5 | 12 | 60 | | |
| 90. | Glass cutter | 1 | 60 | 60 | | |
| | | | **Sub - Total** | **2580** | | |

| Item | Equipment | Quantity Required | Marks Per Unit | Marks Item-wise | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| 91. | Glass rod assorted | 30 | 4 | 120 | | |
| 92. | Glass tubing assorted | 15 | 8 | 120 | | |
| 93. | Gloves rubber | 20 | 3 | 60 | | |
| 94. | Ignition tubes soda glass | 50 | 1.2 | 60 | | |
| 95. | Iron Nails (Small) | Adequate quantity | 60 | 60 | | |
| 96. | Light bulbs (2.5, 3.5V) | 10 | 6 | 60 | | |
| 97. | Metal stands | 10 | 12 | 120 | | |
| 98. | Molecular Model Kit | 2 | 30 | 60 | | |
| 99. | Mortar and pestle | 2 | 30 | 60 | | |
| 100. | pH meter | 1 | 120 | 120 | | |
| 101. | Pipe clay triangles | 20 | 3 | 60 | | |
| 102. | Pipette 10 $cm^3$ with bulb | 30 | 6 | 180 | | |
| 103. | Pipette 25 $cm^3$ with bulb | 30 | 6 | 180 | | |
| 104. | Pipette fillers | 20 | 6 | 120 | | |
| 105. | Pipette graduated (10ml) | 20 | 6 | 120 | | |
| 106. | Platinum/ Nichrome wire pieces | 2 | 30 | 60 | | |
| 107. | Porcelain pieces | 1 pk | 60 | 60 | | |
| 108. | **Power supply (12V dc supply, 2 V steps)** | **5** | **24** | **120** | | |
| 109. | Quick-Fit set for simple exp. | 1 | 60 | 60 | | |
| 110. | Rubber bung (assorted) | 20 | 3 | 60 | | |
| 111. | Rubber tubing (7 mm) | 10 m | 12 | 120 | | |
| 112. | Rubber tubing (10mm) | 5 m | 24 | 120 | | |
| 113. | Spatula polythene/metal | 20 | 6 | 120 | | |
| 114. | **Stop watches/clocks** | **20** | **6** | **120** | | |
| 115. | Test tube fusion Pyrex | 30 | 4 | 120 | | |
| 116. | Test tube racks | 20 | 6 | 120 | | |
| 117. | Test tubes 125 X 16 Pyrex rimmed | 200 | 0.6 | 120 | | |
| 118. | Test tubes 150 X 24 Pyrex rimmed | 50 | 1.2 | 60 | | |
| 119. | Test tube holders | 20 | 6 | 120 | | |
| | | | **Sub - Total** | **2880** | | |

| Item | Equipment | Quantity Required | Marks Per Unit | Marks Item-wise | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| 120. | **Thermometer ( - 10 $^0$C - 110 $^0$ C) X 1˚C** | **25** | **4.8** | **120** | | |
| 121. | Thermometer ( - 10 $^0$C - 110 $^0$ C) X 0.5˚C | 25 | 4.8 | 120 | | |
| 122. | Thermometer - alcohol | 1 | 120 | 120 | | |
| 123. | Thermometer - digital | 1 | 120 | 120 | | |
| 124. | Thermometer - clinical | 1 | 120 | 120 | | |
| 125. | Tiles porcelain white | 20 | 6 | 120 | | |
| 126. | Trays plastic | 5 | 12 | 60 | | |
| 127. | Tripod stands | 20 | 6 | 120 | | |
| 128. | Trough (Glass or Metal) | 2 | 30 | 60 | | |
| 129. | Tube U-shaped | 2 | 30 | 60 | | |
| 130. | Variable resistor | 5 | 12 | 60 | | |
| 131. | Voltameter Hoffmann's | 2 | 60 | 120 | | |
| 132. | Voltmeter (High Resistance) | 5 | 24 | 120 | | |
| 133. | Wash bottles Polythene 25 $cm^3$ | 20 | 6 | 120 | | |
| 134. | Watch glass | 20 | 3 | 60 | | |
| 135. | Water Still or Deioniser | 1 | 180 | 180 | | |
| 136. | Weighing bottles, polyethene | 20 | 3 | 60 | | |
| 137. | Wire Gauze ceramic center | 25 | 4.8 | 120 | | |
| 138. | Y-tube | 2 | 30 | 60 | | |

| Item | Chemicals | Quantity Required | Marks Per Unit/100g/ 100$cm^3$ | Marks Item-wise | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| 139. | Acetaldehyde – (ethanal) | 500 $cm^3$ | 12 | 60 | | |
| 140. | Acetamide – (ethanamide) | 500 g | 12 | 60 | | |
| 141. | Acetic acid - (ethanoic acid) | 1000 $cm^3$ | 6 | 60 | | |
| 142. | Acetone – (propanone) | 2000 $cm^3$ | 3 | 60 | | |
| 143. | Adipic acid – (hexanedioic acid) | 100 g | 60 | 60 | | |
| 144. | Aluminium ammonium sulfate | 500 g | 12 | 60 | | |
| 145. | Aluminium bromide | 500 g | 24 | 120 | | |
| 146. | Aluminium chloride | 500g | 24 | 120 | | |
| | | | **Sub - Total** | **2520** | | |

| Item | Chemicals | Quantity Required | Marks Per Unit/100g/ 100cm$^3$ | Marks Item-wise | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| 147. | Aluminium nitrate | 500 g | 24 | 120 | | |
| 148. | Aluminium potassium sulfate | 500 g | 24 | 120 | | |
| 149. | Aluminium sulfate | 500 g | 24 | 120 | | |
| 150. | Aluminium powder | 500 g | 24 | 120 | | |
| 151. | Amino ethanoic acid (glycine) | 200 g | 30 | 60 | | |
| 152. | **Ammonia solution conc.** | **5000 cm$^3$** | **3.6** | **180** | | |
| 153. | Ammonium carbonate | 500 g | 12 | 60 | | |
| 154. | Ammonium chloride | 500 g | 12 | 60 | | |
| 155. | Ammonium iron (II) sulfate | 500 g | 24 | 120 | | |
| 156. | Ammonium iron (III) sulfate | 500 g | 24 | 120 | | |
| 157. | Ammonium metavanadate | 500 g | 12 | 60 | | |
| 158. | Ammonium nitrate | 500 g | 12 | 60 | | |
| 159. | Ammonium sulfate | 500 g | 12 | 60 | | |
| 160. | Barium chloride | 500 g | 24 | 120 | | |
| 161. | Barium nitrate | 500 g | 24 | 120 | | |
| 162. | Benzoic acid | 500 g | 12 | 60 | | |
| 163. | Bromine liquid | 250 cm$^3$ | 24 | 60 | | |
| 164. | Butan – 1 - ol | 200 cm$^3$ | 30 | 60 | | |
| 165. | Butan – 2 - ol | 200 cm$^3$ | 30 | 60 | | |
| 166. | **Calcium carbonate (precipitated)** | **500 g** | **24** | **120** | | |
| 167. | Calcium chloride | 500 g | 12 | 60 | | |
| 168. | **Calcium hydroxide** | **1000 g** | **18** | **180** | | |
| 169. | Calcium metal | 500 g | 24 | 120 | | |
| 170. | Calcium nitrate | 500 g | 12 | 60 | | |
| 171. | Calcium oxide | 500 g | 24 | 120 | | |
| 172. | Calcium sulfate (hydrated) | 250g | 24 | 60 | | |
| 173. | Camphor | 200 g | 30 | 60 | | |
| 174. | Charcoal powder | 400 g | 15 | 60 | | |
| 175. | Chromium (III) chloride | 500 g | 12 | 60 | | |
| 176. | Chromium (III) nitrate | 500 g | 12 | 60 | | |
| 177. | Chromium (III) sulfate | 500 g | 12 | 60 | | |
| | | | **Sub - Total** | **2760** | | |

| Item | Chemicals | Quantity Required | Marks Per Unit/100g/ 100cm$^3$ | Marks Item-wise | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| 178. | Citric acid | 200 g | 30 | 60 | | |
| 179. | Copper (II) carbonate | 500 g | 24 | 120 | | |
| 180. | Copper (II) chloride hydrated | 500 g | 12 | 60 | | |
| 181. | Copper (II) chloride anhydrous | 500 g | 12 | 60 | | |
| 182. | Copper (II) nitrate | 500 g | 12 | 60 | | |
| 183. | Copper (II) oxide | 500 g | 24 | 120 | | |
| 184. | **Copper (II) sulfate crystals** | **1000 g** | **18** | **180** | | |
| 185. | **Copper (II) sulfate anhydrous** | **500 g** | **24** | **120** | | |
| 186. | Copper turnings | 500 g | 12 | 60 | | |
| 187. | Devarda's alloy | 500 g | 12 | 60 | | |
| 188. | Disodium hydrogen phosphate | 200 g | 30 | 60 | | |
| 189. | Disodium tetraborate (borax) | 200 g | 30 | 60 | | |
| 190. | 2,4 – Dinitrophenylhydrazine | 50 g | 120 | 60 | | |
| 191. | Ethanedioic acid (oxalic) | 500 cm$^3$ | 12 | 60 | | |
| 192. | Ethanol – 95% (absolute) | 2500 cm$^3$ | 7.2 | 180 | | |
| 193. | Ethyl ethanoate | 500 cm$^3$ | 12 | 60 | | |
| 194. | **Hydrochloric acid conc.** | **5000 cm$^3$** | **3.6** | **180** | | |
| 195. | Hydrogen peroxide (100 vol.) | 2500 cm$^3$ | 4.8 | 120 | | |
| 196. | Iodine solid | 100 g | 120 | 120 | | |
| 197. | Iron (II) carbonate | 500 g | 12 | 60 | | |
| 198. | Iron (II) chloride | 500 g | 12 | 60 | | |
| 199. | Iron (II) ethanedioate (oxalate) | 500 g | 12 | 60 | | |
| 200. | Iron (II) nitrate | 500 g | 12 | 60 | | |
| 201. | Iron (II) oxide | 500 g | 12 | 60 | | |
| 202. | Iron (II) sulfate | 500 g | 24 | 120 | | |
| 203. | Iron (III) chloride | 500 g | 12 | 60 | | |
| 204. | Iron (III) oxide | 500 g | 12 | 60 | | |
| 205. | Iron(III) sulphate | 500 g | 24 | 120 | | |
| 206. | Iron filings | 500 g | 12 | 60 | | |
| 207. | Magnesium bromide | 500 g | 12 | 60 | | |
| 208. | Magnesium carbonate | 500 g | 24 | 120 | | |
| 209. | Magnesium nitrate | 500 g | 12 | 60 | | |
| | | | **Sub - Total** | **2760** | | |

| Item | Chemicals | Quantity Required | Marks Per Unit/100g/ 100cm$^3$ | Marks Item-wise | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| 210. | Magnesium oxide | 500g | 24 | 120 | | |
| 211. | Magnesium ribbon | 25 g | 240 | 60 | | |
| 212. | Magnesium sulfate | 500 g | 24 | 120 | | |
| 213. | Manganese (II) sulfate | 500 g | 12 | 60 | | |
| 214. | Manganese (IV) oxide | 500 g | 12 | 60 | | |
| 215. | Methanal (Formaldehyde) | 200 cm$^3$ | 30 | 60 | | |
| 216. | 2 – Methyl propan – 2 - ol | 500 cm$^3$ | 12 | 60 | | |
| 217. | Methylated spirit (Local) | 1000 cm$^3$ | 6 | 60 | | |
| 218. | Naphthalene | 200 g | 30 | 60 | | |
| 219. | Nickel (II) carbonate | 200 g | 30 | 60 | | |
| 220. | Nickel (II) nitrate | 200 g | 30 | 60 | | |
| 221. | **Nitric acid conc.** | **5000 cm$^3$** | **3.6** | **180** | | |
| 222. | Paraffin oil | 500 cm$^3$ | 12 | 60 | | |
| 223. | Phenol crystals | 200 g | 30 | 60 | | |
| 224. | Phosphoric acid | 500 g | 12 | 60 | | |
| 225. | Potassium bromate | 500 g | 12 | 60 | | |
| 226. | Potassium bromide | 500 g | 24 | 120 | | |
| 227. | Potassium chloride | 500 g | 24 | 120 | | |
| 228. | Potassium dichromate (VI) | 200 g | 30 | 60 | | |
| 229. | Potassium hydrogensulfate | 250 g | 24 | 60 | | |
| 230. | Potassium iodate | 500 g | 12 | 60 | | |
| 231. | **Potassium iodide** | **2000 g** | **9** | **180** | | |
| 232. | Potassium hydroxide | 1000 g | 18 | 180 | | |
| 233. | **Potassium manganate (VII) (permanganate)** | **1000 g** | **12** | **120** | | |
| 234. | Potassium nitrate | 500 g | 24 | 120 | | |
| 235. | Potassium oxalate (ethanedioate) | 200 g | 30 | 60 | | |
| 236. | Potassium sulfate | 500 g | 12 | 60 | | |
| 237. | Potassium sulfite | 500 g | 12 | 60 | | |
| 238. | Potassium persulfate | 200 g | 30 | 60 | | |
| 239. | Propan – 1 - ol | 200 cm$^3$ | 30 | 60 | | |
| | | | **Sub - Total** | **2520** | | |

| Item | Chemicals | Quantity Required | Marks Per Unit/100g/ 100cm$^3$ | Marks Item-wise | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| 240. | Propan – 2 - ol | 200 cm$^3$ | 30 | 60 | | |
| 241. | Salicylic acid(2-hydroxy benzoic acid) | 200 g | 30 | 60 | | |
| 242. | **Silver nitrate** | **50 g** | **240** | **120** | | |
| 243. | Sodium acetate (ethanoate) | 500 g | 12 | 60 | | |
| 244. | Sodium bromide | 500 g | 12 | 60 | | |
| 245. | **Sodium carbonate (decahydrate)** | **1000 g** | **18** | **180** | | |
| 246. | Sodium carbonate (anhydrous) | 500 g | 24 | 120 | | |
| 247. | Sodium chloride (Analar) | 500 g | 24 | 120 | | |
| 248. | Sodium hydrogencarbonate | 500 g | 24 | 120 | | |
| 249. | **Sodium hydroxide pellets** | **2000 g** | **9** | **180** | | |
| 250. | Sodium metal | 100 g | 60 | 60 | | |
| 251. | Sodium nitrate | 500 g | 24 | 120 | | |
| 252. | Sodium nitrite | 500 g | 12 | 60 | | |
| 253. | Sodium oxalate (ethanedioate) | 200 g | 30 | 60 | | |
| 254. | Sodium potassium tartrate | 200 g | 30 | 60 | | |
| 255. | Sodium sulfate (anhydrous) | 500 g | 12 | 60 | | |
| 256. | Sodium sulfite (anhydrous) | 500 g | 12 | 60 | | |
| 257. | Sodium thiosulfate | 1000 g | 6 | 60 | | |
| 258. | Starch soluble (local) | 500 g | 12 | 60 | | |
| 259. | Stearic acid | 200 g | 30 | 60 | | |
| 260. | Steel wool | 500 g | 12 | 60 | | |
| 261. | Sulfur flowers/sticks | 500 g | 12 | 60 | | |
| 262. | **Sulfuric acid concentrated** | **5000 cm$^3$** | **3.6** | **180** | | |
| 263. | Tin | 200 g | 30 | 60 | | |
| 264. | Zinc carbonate | 500 g | 12 | 60 | | |
| 265. | Zinc chloride | 500 g | 12 | 60 | | |
| 266. | Zinc metal granulated | 500 g | 24 | 120 | | |
| 267. | Zinc metal powder | 500 g | 24 | 120 | | |
| 268. | Zinc nitrate | 500 g | 12 | 60 | | |
| 269. | Zinc oxide | 500 g | 24 | 120 | | |
| 270. | Zinc sulfate | 500 g | 12 | 60 | | |
| | | | **Sub - Total** | **2700** | | |

| Item | Chemicals | Quantity Required | Marks Per Unit/100g/ 100cm$^3$ | Marks Item-wise | Existing | Score (for PSEA use only) |
|---|---|---|---|---|---|---|
| | **INDICATORS** | | | | | |
| 271. | Cobalt Chloride Paper | 1 pk of 10 | 60 per pk | 60 | | |
| 272. | Bromophenol Blue | 25 g | 480 | 120 | | |
| 273. | **Litmus Paper Red** | **20 pks of 10** | **9 per pk** | **180** | | |
| 274. | **Litmus Paper Blue** | **20 pks of 10** | **9 per pk** | **180** | | |
| 275. | Litmus solution | 200 cm$^3$ | 60 | 120 | | |
| 276. | **Methyl orange** | **25 g** | **480** | **120** | | |
| 277. | Phenolphthalein | 25 g | 480 | 120 | | |
| 278. | Screened Methyl Orange | 25 cm$^3$ | 0.3 | 120 | | |
| 279. | Thymol Blue | 25 g | 480 | 120 | | |
| 280. | Thymolphthalein | 25 g | 480 | 120 | | |
| 281. | **(Universal) – pH paper** | **1 reel** | **120** | **120** | | |
| 282. | Universal indicator | 500 cm$^3$ | 16 | 120 | | |
| | | | **Sub - Total** | **1500** | | |
| | | | **Total on Sect D** | **27180** | | **Score sect D** |

**Marks For Equipment & Consumables (D):** $\frac{\text{Score sect D}}{27180} \times 12000 = \_\_\_\_\_$

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**MARK SCHEME AND SCORE**

| SECTION | WEIGHTAGE | TOTAL MARKS | ACTUAL MARKS SCORED | % SCORE Section-wise |
|---|---|---|---|---|
| **A. Physical Facilities** | 30% | **12000** | | |
| **B. Instructional Tools & Records** | 30% | **12000** | | |
| **C. Safety Items** | 10% | **4000** | | |
| **D. Equipment and Consumables** | 30% | **12000** | | |
| **OVERALL** | **100%** | **40000** | | |

**REMARKS AND SHORTCOMINGS**
*(With particular reference to conditions at page 1 and score obtained)*

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Signature of PSEA Supervisor/Senior Supervisor (s)

Date:----------

Signature of Manager

Date:----------

*Norms and Standards* developed by the Supervision Section
BC/NAB – updated June 2021