



Government of Jammu and Kashmir  
Services Selection Board  
Sehkari Bhawan Rail Head Complex, Jammu  
([www.jkssb.nic.in](http://www.jkssb.nic.in))

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NOTICE

1. It is for the information of all the candidates who have applied for the posts advertised vide Advertisement Notification No 04 of 2017, that the items /syllabi are as such being annexed herewith.
2. The candidates are also intimated that there shall be negative marking for wrong answers (-0.25 for each wrong answer) attempted in the said examination.
3. This advance notice is for the purpose of intimation to the concerned candidates only.

Secretary  
Services Selection Board  
Jammu

No. SSB/Secy/Sel/2018/20-23

Dated: 01.01.2018

Copy to the:-

1. Director Information, J&K Government, Srinagar with the request to get the said notification published in at least three leading local newspaper of Jammu/Srinagar on three consecutive dates.
2. Private Secretary to the Ld. Chairman for information to Chairman.
3. I/c Web site.
4. Syllabus file.

**Syllabus All Posts (04 of 2017)**

| <b>S. No.</b> | <b>Advertisement No.</b> | <b>Name of the Department</b>  | <b>Posts for Sub-Department</b>                               | <b>Name of the post</b>             | <b>Cadre</b>             | <b>Total Posts</b> | <b>Syllabus Annexed</b> |
|---------------|--------------------------|--|---|-------------------------------------|--------------------------|--------------------|-------------------------|
| <b>1</b>      | <b>04/2017/01</b>        | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Public Works (R&amp;B)</i>                                 | <i>Junior Engineer (Civil)</i>      | <i>Div Cadre Kashmir</i> | <b>100</b>         | <b>Annexure – “A”</b>   |
| <b>2</b>      | <b>04/2017/02</b>        | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Public Works (R&amp;B)</i>                                 | <i>Junior Engineer (Mechanical)</i> | <i>Div Cadre Kashmir</i> | <b>27</b>          | <b>Annexure – “B”</b>   |
| <b>3</b>      | <b>04/2017/03</b>        | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Public Works (R&amp;B)</i>                                 | <i>Draftsman (Civil)</i>            | <i>Div Cadre Kashmir</i> | <b>30</b>          | <b>Annexure – “C”</b>   |
| <b>4</b>      | <b>04/2017/04</b>        | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Public Works (R&amp;B)</i>                                 | <i>Draftsman (Mechanical)</i>       | <i>Div Cadre Kashmir</i> | <b>16</b>          | <b>Annexure – “B”</b>   |
| <b>5</b>      | <b>04/2017/05</b>        | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Public Works (R&amp;B)</i>                                 | <i>Junior Assistant</i>             | <i>Div Cadre Kashmir</i> | <b>55</b>          | <b>Annexure – “D”</b>   |
| <b>6</b>      | <b>04/2017/06</b>        | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Food, Civil Supplies &amp; Consumer Affairs Department</i> | <i>Junior Assistant</i>             | <i>Div Cadre Kashmir</i> | <b>20</b>          | <b>Annexure – “D”</b>   |
| <b>7</b>      | <b>04/2017/07</b>        | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Power Development Department</i>                           | <i>Junior engineer (Electrical)</i> | <i>Div Cadre Kashmir</i> | <b>50</b>          | <b>Annexure – “E”</b>   |
| <b>8</b>      | <b>04/2017/08</b>        | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Power Development Department</i>                           | <i>Draftsman (Electrical)</i>       | <i>Div Cadre Kashmir</i> | <b>70</b>          | <b>Annexure – “E”</b>   |

|           |                   |  |  |                                |                          |           |                              |
|-----------|-------------------|--|--|--------------------------------|--------------------------|-----------|------------------------------|
| <b>9</b>  | <b>04/2017/09</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Power Development Department</i>                                | <i>Junior Stenographer</i>     | <i>Div Cadre Kashmir</i> | <b>30</b> | <b><i>Annexure – “D”</i></b> |
| <b>10</b> | <b>04/2017/10</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Power Development Department</i>                                | <i>Junior Assistant</i>        | <i>Div Cadre Kashmir</i> | <b>40</b> | <b><i>Annexure – “D”</i></b> |
| <b>11</b> | <b>04/2017/11</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Power Development Department</i>                                | <i>Technician-III</i>          | <i>Div Cadre Kashmir</i> | <b>30</b> | <b><i>Annexure – “F”</i></b> |
| <b>12</b> | <b>04/2017/12</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Youth Services, Sports &amp; Technical Education Department</i> | <i>Junior Assistant</i>        | <i>Div Cadre Kashmir</i> | <b>10</b> | <b><i>Annexure – “D”</i></b> |
| <b>13</b> | <b>04/2017/13</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Rural Development Department</i>                                | <i>IEC Worker</i>              | <i>Div Cadre Kashmir</i> | <b>25</b> | <b><i>Annexure – “G”</i></b> |
| <b>14</b> | <b>04/2017/14</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Rural Development Department</i>                                | <i>Jr Stenographer</i>         | <i>Div Cadre Kashmir</i> | <b>25</b> | <b><i>Annexure – “D”</i></b> |
| <b>15</b> | <b>4/2017/15</b>  | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Transport Department</i>  | <i>Motor Vehicle Inspector</i> | <i>Div Cadre Kashmir</i> | <b>20</b> | <b><i>Annexure – “H”</i></b> |
| <b>16</b> | <b>4/2017/16</b>  | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Transport Department</i>  | <i>Jr Steno</i>                | <i>Div Cadre Kashmir</i> | <b>05</b> | <b><i>Annexure – “D”</i></b> |
| <b>17</b> | <b>04/2017/17</b> | <i>Department of Disaster Management Relief, Rehabilitation</i>                      | <i>Transport Department</i>  | <i>Junior Assistant</i>        | <i>Div Cadre Kashmir</i> | <b>25</b> | <b><i>Annexure – “D”</i></b> |

|           |                   |  |   |                                |                          |           |                       |
|-----------|-------------------|--|---|--------------------------------|--------------------------|-----------|-----------------------|
|           |                   | <i>&amp; Reconstruction</i>  |   |                                |                          |           |                       |
| <b>18</b> | <b>04/2017/18</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Transport Department</i>               | <i>Driver</i>                  | <i>Div Cadre Kashmir</i> | <b>10</b> | <b>No Written</b>     |
| <b>19</b> | <b>04/2017/19</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Transport Department</i>               | <i>Mechanic (SMG)</i>          | <i>Div Cadre Kashmir</i> | <b>05</b> | <b>Annexure – “F”</b> |
| <b>20</b> | <b>04/2017/20</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Transport Department</i>               | <i>Junior Systems Engineer</i> | <i>Div Cadre Kashmir</i> | <b>10</b> | <b>Annexure – “H”</b> |
| <b>21</b> | <b>04/2017/21</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Transport Department</i>               | <i>AMVI</i>                    | <i>Div Cadre Kashmir</i> | <b>10</b> | <b>Annexure – “I”</b> |
| <b>22</b> | <b>04/2017/22</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Transport Department</i>               | <i>Sub MVI</i>                 | <i>Div Cadre Kashmir</i> | <b>10</b> | <b>Annexure – “I”</b> |
| <b>23</b> | <b>04/2017/23</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Transport Department</i>               | <i>MV Traffic Assistant</i>    | <i>Div Cadre Kashmir</i> | <b>20</b> | <b>Annexure – “J”</b> |
| <b>24</b> | <b>04/2017/24</b> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Labour &amp; Employment Department</i> | <i>Labour Officer</i>          | <i>Div Cadre Kashmir</i> | <b>07</b> | <b>Annexure – “K”</b> |
| <b>25</b> | <b>4/2017/25</b>  | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Labour &amp; Employment Department</i> | <i>Labour Inspector</i>        | <i>Div Cadre Kashmir</i> | <b>07</b> | <b>Annexure – “G”</b> |
| <b>26</b> | <b>04/2017/26</b> | <i>Department of Disaster Management Relief, Rehabilitation</i>                      | <i>Labour &amp; Employment</i>            |                                | <i>Div Cadre</i>         | <b>08</b> | <b>Annexure – “D”</b> |

|           |                                 |  |   |                          |                          |           |                       |
|-----------|---------------------------------|--|---|--------------------------|--------------------------|-----------|-----------------------|
|           |                                 | <i>&amp; Reconstruction</i>  | <i>Department</i>                         | <i>Junior Assistant</i>  | <i>Kashmir</i>           |           |                       |
| <i>27</i> | <i>04/2017/27</i>               | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>Labour &amp; Employment Department</i> | <i>Driver</i>            | <i>Div Cadre Kashmir</i> | <i>05</i> | <i>No Written</i>     |
| <i>28</i> | <i>04/2017/28</i>               | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>PHE/I&amp;FC Department</i>            | <i>JE (civil)</i>        | <i>Div Cadre Kashmir</i> | <i>50</i> | <i>Annexure – “A”</i> |
| <i>29</i> | <i>04/2017/29</i>               | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>PHE/I&amp;FC Department</i>            | <i>Draftsman (civil)</i> | <i>Div Cadre Kashmir</i> | <i>40</i> | <i>Annexure – “C”</i> |
| <i>30</i> | <i>04/2017/30</i>               | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>PHE/I&amp;FC Department</i>            | <i>Works Supervisor</i>  | <i>Div Cadre Kashmir</i> | <i>30</i> | <i>Annexure – “F”</i> |
| <i>31</i> | <i>04/2017/31</i>               | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>PHE/I&amp;FC Department</i>            | <i>Junior Assistant</i>  | <i>Div Cadre Kashmir</i> | <i>30</i> | <i>Annexure – “D”</i> |
| <i>32</i> | <i>04/2017/32 to 04/2017/41</i> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>School Education Department</i>        | <i>Junior Assistant</i>  | <i>District Cadre</i>    | <i>92</i> | <i>Annexure – “D”</i> |
| <i>33</i> | <i>04/2017/42 to 04/2017/51</i> | <i>Department of Disaster Management Relief, Rehabilitation &amp; Reconstruction</i> | <i>School Education Department</i>        | <i>Library Assistant</i> | <i>District Cadre</i>    | <i>85</i> | <i>Annexure – “L”</i> |
| <i>34</i> | <i>04/2017/52 to 04/2017/61</i> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i>  | <i>School Education Department</i>        | <i>Jr. Librarian</i>     | <i>District Cadre</i>    | <i>43</i> | <i>Annexure – “L”</i> |
| <i>35</i> | <i>04/2017/62 to 04/2017/71</i> | <i>Department of Disaster Management Relief Rehabilitation</i>                       | <i>Rural Development Department</i>       | <i>Multipurpose</i>      | <i>District Cadre</i>    | <i>50</i> | <i>Annexure – “J”</i> |

|           |   |   |   |  |                             |           |                              |
|-----------|---|---|---|--|-----------------------------|-----------|------------------------------|
|           |   | <i>&amp; Reconstruction</i>   |   | <i>Worker</i>                                      |                             |           |                              |
| <b>36</b> | <b>04/2017/72 to<br/>04/2017/81</b>       | <i>Department of Disaster<br/>Management Relief Rehabilitation<br/>&amp; Reconstruction</i> | <i>Rural Development<br/>Department</i>                     | <i>VLW</i>   | <i>District<br/>Cadre</i>   | <b>50</b> | <b><i>Annexure – “J”</i></b> |
| <b>37</b> | <b>04/2017/82 to<br/>04/2017/91</b>       | <i>Department of Disaster<br/>Management Relief Rehabilitation<br/>&amp; Reconstruction</i> | <i>RDD</i>  | <i>Jr. Assistant</i>                               | <i>District</i>             | <b>40</b> | <b><i>Annexure – “D”</i></b> |
| <b>38</b> | <b>04/2017/94 to<br/>04/2017/103</b>      | <i>Department of Disaster<br/>Management Relief Rehabilitation<br/>&amp; Reconstruction</i> | <i>Industries and<br/>Commerce (Geology<br/>and Mining)</i> | <i>Jr. Assistant cum<br/>Computer<br/>Operator</i> | <i>District<br/>Cadre</i>   | <b>20</b> | <b><i>Annexure – “D”</i></b> |
| <b>39</b> | <b>04/2017/104<br/>to<br/>04/2017/113</b> | <i>Department of Disaster<br/>Management Relief Rehabilitation<br/>&amp; Reconstruction</i> | <i>Industries and<br/>Commerce</i>                          | <i>Jr. Assistant cum<br/>computer<br/>operator</i> | <i>District<br/>Cadre</i>   | <b>20</b> | <b><i>Annexure – “D”</i></b> |
| <b>40</b> | <b>04/2017/114<br/>to<br/>04/2017/123</b> | <i>Department of Disaster<br/>Management Relief Rehabilitation<br/>&amp; Reconstruction</i> | <i>Industries and<br/>Commerce</i>                          | <i>Jr. Assistant cum<br/>computer<br/>operator</i> | <i>District<br/>Cadre</i>   | <b>20</b> | <b><i>Annexure – “D”</i></b> |
| <b>41</b> | <b>04/2017/124<br/>to<br/>04/2017/133</b> | <i>Department of Disaster<br/>Management Relief Rehabilitation<br/>&amp; Reconstruction</i> | <i>Industries and<br/>Commerce</i>                          | <i>Jr. Assistant cum<br/>computer<br/>operator</i> | <i>District<br/>Cadre</i>   | <b>20</b> | <b><i>Annexure – “D”</i></b> |
| <b>42</b> | <b>04/2017/134<br/>to<br/>04/2017/141</b> | <i>Department of Disaster<br/>Management Relief Rehabilitation<br/>&amp; Reconstruction</i> | <i>Animal and Sheep<br/>Husbandry<br/>Department</i>        | <i>Jr. Assistant</i>                               | <i>District<br/>Cadre</i>   | <b>24</b> | <b><i>Annexure – “D”</i></b> |
| <b>43</b> | <b>04/2017/142<br/>to<br/>04/2017/148</b> | <i>Department of Disaster<br/>Management Relief Rehabilitation<br/>&amp; Reconstruction</i> | <i>Revenue Department</i>                                   | <i>Patwari</i>                                     | <i>District<br/>Cadre</i>   | <b>37</b> | <b><i>Annexure- “M”</i></b>  |
| <b>44</b> | <b>04/2017/149</b>                        | <i>Department of Disaster<br/>Management Relief Rehabilitation</i>                          | <i>Law Department</i>                                       | <i>Legal Assistant</i>                             | <i>Divisional<br/>Cadre</i> | <b>24</b> | <b><i>Annexure-“N”</i></b>   |

|           |                    |   |  |                                  |                       |           |                              |
|-----------|--------------------|---|--|----------------------------------|-----------------------|-----------|------------------------------|
|           |                    | <i>&amp; Reconstruction</i>   |  |                                  |                       |           |                              |
| <b>45</b> | <b>04/2017/150</b> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i> | <i>Law Department</i>                      | <i>Jr. Legal Assistant</i>       | <i>District Cadre</i> | <b>20</b> | <b><i>Annexure-“N”</i></b>   |
| <b>46</b> | <b>04/2017/151</b> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i> | <i>Law Department</i>                      | <i>Jr. Stenographer</i>          | <i>District Cadre</i> | <b>10</b> | <b><i>Annexure – “D”</i></b> |
| <b>47</b> | <b>04/2017/152</b> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i> | <i>Law Department</i>                      | <i>Jr. Assistant</i>             | <i>District Cadre</i> | <b>10</b> | <b><i>Annexure – “D”</i></b> |
| <b>48</b> | <b>04/2017/153</b> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i> | <i>Planning and Development Deptt</i>      | <i>Statistical Assistant</i>     | <i>District Cadre</i> | <b>70</b> | <b><i>Annexure – “O”</i></b> |
| <b>49</b> | <b>04/2017/154</b> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i> | <i>Planning and Development Deptt.</i>     | <i>Jr. Statistical Assistant</i> | <i>District Cadre</i> | <b>50</b> | <b><i>Annexure-“O”</i></b>   |
| <b>50</b> | <b>04/2017/155</b> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i> | <i>Planning and Development Deptt.</i>     | <i>Jr. Assistant</i>             | <i>District Cadre</i> | <b>30</b> | <b><i>Annexure – “D”</i></b> |
| <b>51</b> | <b>04/2017/156</b> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i> | <i>Finance Department</i>                  | <i>Jr. Assistant</i>             | <i>District Cadre</i> | <b>40</b> | <b><i>Annexure – “D”</i></b> |
| <b>52</b> | <b>04/2017/157</b> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i> | <i>Animal &amp; Sheep Husbandry Deptt.</i> | <i>Stock Assistant</i>           | <i>District Cadre</i> | <b>20</b> | <b><i>Annexure-“F”</i></b>   |
| <b>53</b> | <b>04/2017/158</b> | <i>Department of Disaster Management Relief Rehabilitation</i>                      | <i>Animal &amp; Sheep Husbandry Deptt.</i> | <i>Jr. Assistant</i>             | <i>District Cadre</i> | <b>05</b> | <b><i>Annexure – “D”</i></b> |

|           |                    |   |  |                              |                       |             |                            |
|-----------|--------------------|---|--|------------------------------|-----------------------|-------------|----------------------------|
|           |                    | <i>&amp; Reconstruction</i>   |  |                              |                       |             |                            |
| <b>54</b> | <b>04/2017/159</b> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i> | <i>Health and Medical Education Deptt.</i>     | <i>Medical Assistant</i>     | <i>District Cadre</i> | <b>20</b>   | <b><i>Annexure-“P”</i></b> |
| <b>55</b> | <b>04/2017/160</b> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i> | <i>Health and Medical Education Deptt.</i>     | <i>Jr. Dental Technician</i> | <i>District Cadre</i> | <b>20</b>   | <b><i>Annexure-“Q”</i></b> |
| <b>56</b> | <b>04/2017/161</b> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i> | <i>Health and Medical Education Deptt.</i>     | <i>Laboratory Assistant</i>  | <i>District Cadre</i> | <b>10</b>   | <b><i>Annexure-“R”</i></b> |
| <b>57</b> | <b>04/2017/162</b> | <i>Department of Disaster Management Relief Rehabilitation &amp; Reconstruction</i> | <i>Health and Medical Education Department</i> | <i>X-Ray Assistant</i>       | <i>District Cadre</i> | <b>10</b>   | <b><i>Annexure-“S”</i></b> |
|           |                    |   |  | <b><i>Total Posts</i></b>    |                       | <b>1660</b> |                            |



Secretary  
J&K Services Selection Board,  
Jammu

**ANNEXURE “A”**  
**Jammu & Kashmir Services Selection Board**  
**Junior Engineer (Civil)**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**1. Surveying:**

**10 Marks**

Importance of surveying, principles and classifications, measurements of distance and directions, chain surveying, compass surveying, leveling, tachometry, theodolite, traversing, contouring, plane table surveying, curves.

**2. Mechanics and Structural analysis:**

**15 Marks**

Introduction, Concept of rigid body scalar and vector quantities, Laws of forces, moment, friction, centre of gravity, simple machines, torsion, Properties of material, Bending moment and shear force in statically determinate beams. Simple stress and strain relationship. Stress and strain in two dimensions, principal stresses, stress transformation. Simple bending theory, flexural and shear stresses, unsymmetrical bending, shear centre. Thin walled pressure vessels, uniform torsion, buckling of column, combined and direct bending stresses. slope and deflection, Analysis of trusses

**3. RCC Structures:**

**15 Marks**

Concrete technology, Ingredients of concrete, water cement ratio, workability properties of concrete, admixtures, special concretes, Non destructive tests, basics of mix design. Concrete design-basic working stress and limit state design concepts, analysis of ultimate load capacity and design of members subjected to flexure, shear, compression and torsion by limit state methods. Basic elements of pre-stressed concrete, analysis of beam sections at transfer and service loads, one way slab, two way slab.

**4. Soil Mechanics:**

**10 Marks**

Origin of soils, properties, soil classification, three phase system, fundamental definitions, relationship and interrelationship, flow of water through soils, permeability & seepage, effective stress principle, deformation of soils, consolidation, compaction, shear strength characteristics, plate load test, SPT, Density control, Measurement of field density by core cutter and sand replacement method, soil exploration, bearing capacity and its methods

**5. Fluid Mechanics and Hydraulics:**

**15 Marks**

Properties of fluids, hydrostatic pressure, measurement of pressure, flow measurements, flow through pipes, flow through open channels, hydraulic pumps, principle of conservation of mass, momentum, energy and corresponding equations, potential flow, applications of momentum and Bernoulli's equation, laminar and turbulent flow, flow in pipes, pipe networks. Concept of boundary layer and its growth. Uniform flow, critical flow and gradually varied flow in channels, specific energy concept, hydraulic jump Forces on immersed bodies, flow measurements in channels, tanks and pipes. Dimensional analysis and hydraulic modeling Kinematics of flow.

**6. Irrigation Engineering:**

**10 Marks**

Introduction, water requirement of crops, hydrological cycle, Dams, Canals, dams, canal head works and regulatory works, cross drainage works, hydraulic structures, river training works, water-logging, drainage, ground water recharge, well hydraulics.

**7. Water supply and waste water Engineering:**

**10 Marks**

Introduction, quantity of water, quality of water, water treatment, conveyance of water, laying out of pipes, Building water supply, water supply fixtures and installation ,plumbing, sewerage system, laying and construction of sewers, sewage characteristics, Methods of disposal, sewage treatment , building drainage, air and noise pollution

**8. Highway Engineering:**

**10 Marks**

History of development of highway and planning ,Definitions of various terms used in highway engineering., Methods of road construction, IRC classification, Highway surveys and plans Geometric design, Different types of road materials in use, Binders, Types of pavement, CBR method ,sub grade preparation, WBM, WMM, Bituminous Macadam, dense bituminous macadam, special problems in hill road.

**9. Railway Engineering:**

**10 Marks**

History of Indian railways, Gauges used, permanent way its components, Types of rails, creep, welding, Rail fixtures and fastenings, Signaling, Points and Crossings, Bridge terminology, classification, components, foundations.

**10. Construction planning management:**

**15 Marks**

Network diagrams, PERT-CPM, cost optimization contracts, tenders, depreciation, valuation, organization, measurement books, cash book, functions of management, construction planning, quality control, inventory control, Estimation and costing definitions, methods of estimation and type of estimates.

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**ANNEXURE “B”**  
**Jammu & Kashmir Services Selection Board**  
**Posts: Jr. Engineer (Mechanical)/Draftsman Mechanical**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

- 1. Theory of Machines and Machine Design: 15 Marks**  
Four bar linkage and link motion, Flywheels and fluctuation of energy, Power transmission by belts-V-belts and Flat belts. Gears-Type of gears, gear profile and gear ratio calculation. Cams. Governors-Principles and classification. Design of keys, shafts, Riveted joint, couplings.
- 2. Engineering Mechanics and Strength of Materials: 15 Marks**  
Laws of forces, Equilibrium of Forces, Moment of Inertia, Laws of motion. Friction. Concept of simple machines, M A, V R, %age. Concepts of stress and strain, Elastic limit and elastic constants. Bending moments and shear force diagram. Stress in composite bars. Torsion in circular shafts. Columns: Euler's and Rankine's theories. Thin walled pressure vessels.
- 3. Thermal Engineering and Refrigeration & Air-conditioning: 20 Marks**  
Thermodynamics: Heat, work and temperature, First and second laws of thermodynamics. Carnot, Rankine, Otto and Diesel Cycles. P-v & P-T diagrams H<sub>2</sub>O. Saturated, wet & superheated steam. Definition of dryness fraction of steam, degree of superheat of steam. Rankine cycle of steam: Simple Rankine cycle, plot on P-V, T-S, h-s planes, Rankine cycle efficiency with & without pump work. Concept of COP, Carnot Cycle, Vapour compression cycle. Refrigerants. Psychometry, DBT, WBT, DPT.
- 4. Fluid Mechanics & Machinery: 15 Marks**  
Properties & Classification of Fluids, Newton's law of viscosity, Fluid Statics, Measurement of Fluid Pressure by Manometers, U-tube, Inclined tube. Fluid Kinematics : Stream line, laminar & turbulent flow, external & internal flow, continuity equation. Dynamics of ideal fluids : Bernoulli's equation, Total head; Velocity head; Pressure head. Measurement of Flow rate, Basic Principles & working of Venturimeter, Pitot tube, Orifice meter. Hydraulic Turbines & Centrifugal Pumps
- 5. Material Science & Production Engineering: 20 Marks**  
Structure of metals, Space lattice, Unit cell, BCC, FCC etc, Iron carbon diagram, Classification of Steels : mild steel & alloy steel. Heat treatment of steel. Welding – Arc Welding, Gas Welding, Resistance Welding, Special Welding Techniques i.e. TIG, MIG. Brazing & Soldering, Welding Defects & Testing. Foundry & Casting methods, defects,

different casting processes. Forging, Extrusion etc. Metal cutting principles, cutting tools. Basic Principles of machining with Lathe, Milling, Drilling, Shaping, Grinding. Machine tools & manufacturing processes.

**6. Metrology and Automobile Engineering: 15 Marks**

Tools used in Linear Measurements, Angular Measurement, Surface finish. Limits, fits & Tolerance, Error, Classification of Automobiles. Transmission, Steering, Braking, Suspension system. IC Engine Performance, IC Engine Combustion process, Cooling and Lubrication system in I.C Engine

**7. Industrial Management and CAD/CAM: 20 Marks**

Planning, Organizing, Leading, Controlling. Inventory Control, Inspection & Quality Control. Basic concepts of CAD/CAM. NC, DNC, CNC machines.

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**ANNEXURE “C”**  
**Jammu & Kashmir Services Selection Board**  
**Post: Draftsman (Civil)**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**INTRODUCTION-**

**25 marks**

- Drawing is a language of technicians. Drawing office organization. Drawing instruments, equipments materials their use, care & maintenance, safety precautions. Introduction to BIS code of practice and Architectural drawings.
- Importance of lettering, printing of letters and figures sizes, proportion etc. as per BIS code.
- Forms and proportions for single stroke lettering, Lettering stencils.
- Geometrical drawing. Definitions, construction of plain geometrical figures. Orthographic projection, dihedral angles and recommended methods of projection according to B.I.S codes.
- Principles, representation and construction of different types of scales, graphic scales, recommended scales for drawing with reference to BIS codes.
- Dimensioning technique, order of finishing, technical, Sketching, technique of sketching model drawing, orthographic sketching etc.
- Conventional signs and symbols as per B.I. S. Bricks characteristics of good bricks, hollow bricks and manufacture of bricks.
- Tiles, terracotta, stone ware and earthen ware, sand types, characteristics, cement, lime.

**INTRODUCTION-**

**30 marks**

- Sequence of construction of a building. Names of different parts of building. Bricks masonary- principles of construction of bonds. Tools and equipment used. Scaffolding.
- Stone masonary, terms used, principles of construction, classification, composite masonary and strength of walls. Timber: Structure- Indian timber uses.
- **Foundation:** Purpose, causes of failure of foundation, bearing capacity of soils, dead and live loads, examination of ground. Types of foundation. Drawing of footing foundation, setting out of building on ground excavation, shorting & simple machine foundations.
- Dampness in building and damp proof course. Method of prevention of dampness in building. Mortar-types, proportion & mixing. Plastering & pointing. White washing & distempering.
- Types of ground floor and methods of constructing granolithic, mosaic, brick tiles etc. floors.
- **Arches**-technical terms forms –brick and stone centering lintel. Market forms and sizes.

- Carpentry joints-terms, Classification of joints.
- **Door-** parts of door, location, sizes, and types.
- Windows and ventilators including steel window and ventilators fixtures and fastenings used in doors. Window and ventilators.
- **Roof-**Pitched roof types, roof covering, component parts of roof. Theory of trussing king and queen post trusses.
- Classification and construction of upper floors including waterproofing, general Principles of construction of masonry & R. C.C
- **Stairs:** Terms, forms, materials planning and designing of Stairs. Details of construction.
- Residential building. Principles of planning. Orientation-local building by law as including BIS code, type of residential building rooms, services, utilities which constitute as dwelling house. Estimating.
- Method and find out quantities for a single storied residential building.
- Perspective view types. Method of construction, technique of colouring and shading.
- Inking & tracing, operating of Leroy set & care of its accessories. Method of preparing Blue prints or Ammonia Prints, Folding of prints.
- Safety precaution & elementary first aid, forge and fuel. Lighting fire Common hand tools-their description and use. Description of plumbing operations.
- Safety precautions & elementary first aid- carpenter's hand tools, their names, description and use. Common joints. Use of nails, screws hinges, dowels etc. preparation of glue & putty, Grinding & sharpening of tools. Their care & maintenance. Use of different types of joints. Properties and uses of different timbers used in construction work.
- Safety precautions and elementary first aid. Artificial respiration and treatment of electrical Shock. Elementary electricity. General idea of supply system. Wireman's tool kits. Wiring materials. Electric fittings. System of wiring. Wiring installation for domestic lighting.

### **Safety precautions:-**

**25 marks**

- Tools their description, uses and their care.
- Details of different bonding wall and section according to BIS
- **Introduction:-** Chain surveying principles, Instruments employed, use, care & maintenance. Field problems. Field book plotting. Introduction to plane table survey, Instruments employed, use, care & maintenance. Prismatic compass. Planimeter and pentagraph.
- Instruments and accessories- their uses and description level book. Differential leveling. Application of chain and leveling to building construction. Plotting, preparation of contour computing earth work by spot level and contours. Setting out work.

- **Road:-** Introduction to roads, general principles of alignment . classification and construction of different types of roads.
- Indian railways-their gauges, construction of permanent ways . Different ail sections. Use of stone balst in railways track. Use and types of slippers , types of signals, fixtures & fastening in Railway Tracks including base plates and fishplates.
- **Bridges:-** Introduction to bridges , component parts of a bridge. Classification of culverts (I.R.C.)
- Bridges– types, location of bridge. Tunnels rules used for the sizes of different members.

### **Introduction of Water Resources Engineering.**

**20 marks**

- Definition of terms used in irrigation.
- Hydrology like duty delta, intensity of irrigation, Hydrograpg, peak flow, runs off, catchments area CCA, corps like, Rabi, Kharif etc.
- Storage/ diversion head works definitions:
- Types of Dam –Masonry, concrete & composite Dams
- Gravity Dam, Arch and Buttress Dams, Earth and Rock fill dams.
  - a. **Reservoir-** types of Reservoirs viz. single purpose and multi-purpose, area/ capacity curves of Reservoir.
  - b. **Canals-** Canals, classification of canals and distribution system, canal structures viz. Head Regulators, Cross Regulators, Canal outlet, Escape etc, Drawing of canal alignment including longitudinal and cross sections of canals with the given data. Type of cross drainage Works viz. Aqueducts. Super passage, level crossing, Irrigation , culvert- Inlets and Outlets, General Description , Element of water power development and various civil engineering structure of Hydro Electric Schemes, i. e., fore bay. Penstock, Turbines, Power House etc.
- Introduction–terms used in public health engineering system of sanitation-house plumbing, sanitary fitting etc. Types of supply system and purification of water.
- Introduction to RCC uses, materials proportions and form work, including bending of bars and construction reference to BIS code Reinforced brickwork. Materials used for RCC, construction selection of materials course aggregate, fine aggregate cement – water, reinforcement, characteristics. Method of Mixing concrete- hand and machine, slump test.
- Forms of rivets, proportions. Types of riveted joints.
- Design of Riveted connection, failure of riveted joints.

### **Building Estimating.**

**20 marks**



- Types of estimate, standard method of taking out quantity, labour & material detailed & abstract estimate. Analysis of rates for simple items of work. Schedule of rates, specifications.
- Residential building, Planning of building, local by –laws including BIS code Types of residential building rooms , service utilities which constitute a dwelling house. Building by –laws of State urban Development authorities , Improvement trust etc.
  - What is a Computer-  
General terms used in computer
  - Elementary DOS commands.
  - Window command and their uses
  - Auto CAD commands and use of different Icons of Auto CAD
  - Knowledge about different co ordinate systems
  - Knowledge about 3d Drafting
  - Knowledge about Architectural Desk top and creating modeling.

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**ANNEXURE “D”**  
**Jammu & Kashmir Services Selection Board**  
**Post: Junior Assistant/Jr. Assistant cum Computer Operator/  
Steno Instructor/Jr. Stenographer**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**40 Marks/40 Minutes**

**A) English/General Awareness: 20 Marks**

The English paper will check the context dependent comprehension.

This will be done using comprehension passages and will focus on the following;

- Grammar** : Grammatical knowledge will be tested with focus on Articles, Verbs, Tenses, repositions, Voice, Synonyms, Antonyms, and Punctuation etc. **(10 marks)**

- Factual** : Passage will be about the local history, art and popular culture; aspirants will be tested on factual understanding of events, dates, people, idioms and phrases, etc. **(5 marks)**

- Job Related (Context)** : Candidates will be tested on types of communication; formal and non-formal, verbal and non-verbal, proof reading, interpreting guidelines, circulars, data and other work related issues etc. **(5 marks)**

**B) Numerical and Reasoning Ability 10 Marks**

The candidates will be tested primarily on the fundamental mathematical concepts and application oriented reasoning. The broad areas will include the following;

- Basic Arithmetic** ;Number System, Percentage, Average, Profit & Loss, Ratio & Proportion, Time & Work etc
- Reasoning** ; Number & Letter Series, Coding-Decoding, Analogy etc

**C) Basic Concepts of Computers 10 Marks**

The candidates’ understanding of the concepts of computers and its application will be tested and it will broadly cover the following;

- Computer terminology
- Hardware and Software
- Storage and Operating systems
- Safety and Security
- E-mail and Internet Usage

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**ANNEXURE “E”**  
**Jammu & Kashmir Services Selection Board**  
**Jr. Engineer (Electrical) / Draftsman (Electrical)**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**1. Electric Circuits and Fields:**

**15 Marks**

Basic concepts: Concepts of resistance, inductance, capacitance and various factors effecting them., Circuit laws: ohms law KCL, KVL, node and mesh analysis, resonance, ideal current and voltage sources, Source conversions Thevenin's, Norton's and Superposition and Maximum Power Transfer theorems, Simple Circuit solution using network theorems. Three phase circuits; Ampere's and Biot-Savart's laws; inductance; dielectrics; capacitance.

**2. Control Systems:**

**10 Marks**

Basic control system components; block diagrammatic description, reduction of block diagrams. Open loop and closed loop (feedback) systems and stability analysis of these systems.

**3. Electrical and Electronic Measurements:**

**15 Marks**

Bridges and potentiometers; PMMC, moving iron, dynamometer and induction type instruments; Extension of range, measurement of voltage, current, power, energy and power factor; instrument transformers; digital voltmeters and multimeters; phase, time and frequency measurement; Q-meters; oscilloscopes. Transducers: measurement of displacement, flow and temperature, Megger. Measurements of active and reactive power, Measurement of Energy.

**4. Electronic Devices and Circuits:**

**10 Marks**

Energy bands in silicon, intrinsic and extrinsic silicon. Carrier transport in silicon: diffusion current, drift current, mobility, and resistivity. p-n junction diode, Zener diode, tunnel diode, BJT, JFET, MOS capacitor, MOSFET, LED, avalanche photo diode .Small Signal Equivalent circuits of diodes, BJTs, MOSFETs. Simple diode circuits, clipping, clamping, rectifier. Biasing and bias stability of transistor and FET amplifiers. Single-and multi-stage, tuned voltage, operational, feedback, and power amplifiers. Frequency response of amplifiers. Simple op-amp circuits. Filters. Sinusoidal oscillators; criterion for oscillation; single-transistor and op-amp configurations. Function generators and wave-shaping circuits, 555 Timers IC and its applications. Power supplies.

**5. Digital Electronics and Microprocessor:**

**10 Marks**

Number systems: Binary, decimal, octal, hexadecimal, BCD number systems and their conversions, Binary and hexadecimal addition, subtraction multiplication, 1's and 2's complement methods of addition/subtraction. Boolean algebra, minimization of Boolean functions; logic gates; digital IC families (DTL, TTL, ECL, MOS, CMOS). Combinatorial circuits: arithmetic circuits, code converters, multiplexers, decoders, PROMs. Sequential circuits: latches and flip-flops, counters and shift-registers. ADCs, DACs. Semiconductor memories. Microprocessor (8085): architecture, instruction set, programming, memory and I/O interfacing. Study of peripheral chips-8251,8155, 8257,8259.

**6. Power Electronics and Drives:**

**10 Marks**

Semiconductor power diodes, transistors, thyristors, triacs and MOSFETs – static characteristics and principles of operation; triggering circuits; phase control rectifiers; bridge converters – fully controlled and half controlled; Choppers and Inverters; concepts of adjustable speed dc and ac drives.

**7. Electrical Machines:**

**25 Marks**

Single phase transformer – equivalent circuit, phasor diagram, tests, regulation and efficiency; three phase transformers – connections, parallel operation; autotransformer, Energy conversion principles, Electro-mechanical energy conversion ; DC machines–types, windings, generator characteristics, armature reaction and commutation, starting and speed control of motors; three phase induction motors– principles, types, performance characteristics, starting and speed control; single phase induction motors; synchronous machines – performance, regulation and parallel operation of generators, motor starting, characteristics and applications; servo and stepper motors. Braking of DC and AC motors

**8. Power Systems:**

**25 Marks**

Basic power generation concepts; transmission line models and performance; cable performance, insulation; corona and radio interference; distribution systems; power factor correction; economic operation; symmetrical components; principles of over-current, differential and distance protection; Generator, feeder, transformer and bus-bar protection, Lightning protection; solid state relays and circuit breakers; Sub-Station Practices, Load frequency control, Tariffs, Earthing. Utilisation of Electrical energy: Illumination, electrical heating and welding, electroplating.

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**ANNEXURE “F”**  
**Jammu & Kashmir Services Selection Board**  
**Matric level**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**Section I**

**English.**

**(17 Marks)**

Unseen Passage, Phrases, Pronouns, Homonyms/ homophones, Tenses, Clauses, Punctuation, Articles. Basic understanding of English Language, Essay and letter writing  
**(17 Marks)**

**Section-II**

**Mathematics**

**(28 Marks)**

**Unit 1**

**Algebra**

Pair of Linear Equation in two variables, Algebraic conditions for number of solutions. Simple situational problems may be included, simple problems on equations reducible to linear equation may be included.  
**(03 Marks)**

**Unit II**

**Polynomials and Quadratic equation**

Zerues of a Polynomial, Relationship between Zerues and coefficients of polynomial with particular reference to quadratic polynomials. Statement and simple problems on division algorithm for polynomials with real coefficients. Standard form of Quadratic equation  $ax^2+bx+c=0$ , ( $a \neq 0$ ), problems felated to day to day activities to be incorporated.  
**(05Marks)**

**Unit III**

**Trigonometry**

Tribonometric ratios of an acute angle of a right angled. Relationship between the ratios. Trigonometric indentities. Applications of the identity  $\sin 2A + \cos 2A = 1$ , Trigonometric ratios of complementary angles. Simple and believable problems on heights and distances. Angle of elevation/depression should be only 30, 45, 60.  
**(04 Marks)**

**Unit IV**

**Mensuration**

Problems on finding surface areas and volumes of combination of any two of the following cubes, cuboids, spheres, hemispheres and right circular Cylinders/ cones. Frustum of a cone. Problems involving converting one type of metallic solid into another and other mixed problems.  
**(08 Marks)**

**Unit V**

**Probability**

Repeated experiments and observed frequency approach to probability. Focus is on empirical probability. Classical definition of probability. Simple problems on single even, not using set rotation.  
**(08 Marks)**

**Section III****Physics****(20 Marks)****Unit I Light-Reflection and Refraction**

Reflection of light, spherical mirrors; Image formation; uses of spherical mirrors. Sign, conventions for spherical mirrors. Refraction of light, refraction through a glass, refractive index, conditions for total internal reflection. Spherical lenses, image formation, sign conventions, lens formula (only relation).

**(05 Marks)****Unit II The Human Eye and the Colorful World**

Human eye; power of accommodation; defects of vision and their correction. Glass prism (refraction and dispersion). Atmospheric refraction-twinkling of stars and color of sun at sunrise and sunset.

**(05 Marks)****Unit III Electricity**

Concept of electric charge. Electric current; electric potential and potential difference; Ohm's Law and experimental verification; resistance and its dependence. Heating effect of current-Electric power and energy.

**(05 Marks)****Unit IV Source of Energy**

Various sources of energy; Conventional sources of energy; improvement in technology for using conventional source of energy (Biomass and wind energy). Non-conventional sources of energy (Solar energy, Energy from Sea). Nuclear energy (Nuclear fusion and nuclear fission). Lasting of energy sources.

**(05 Marks)****Section-IV****Chemistry****(25 Marks)****Unit -I Chemical Reactions and Equation**

Chemical equation, writing of chemical equation; balancing chemical equations. Types of chemical reactions; viz Combination reactions; Decomposition reactions; Displacement reactions; Double displacement reactions; Oxidation and reduction. Effects of oxidation and reduction reactions in everyday life, viz, corrosion and rancidity.

**(05 Marks)****Unit-II Carbon and its Compounds**

Bonding in Carbon, Covalent bond, Allotropes of Carbon; Versatile nature of carbon; Saturated and unsaturated hydrocarbons; chains; branches and rings; homologous series and its characteristics. Chemical properties of carbon compounds viz. combustion; oxidation; addition and substitution reactions. Important Carbon compounds like Ethane and Ethanoic acid. Properties of Ethanoic acid. Soaps and Detergents.

**(05 Marks)****Unit-III Metals and Non-Metals**

Physical properties of metals and non-metals. Chemical properties of metals like action of water, air, acids, salts. Cause of reactivity of metals and non-metals. Properties of Ionic compounds. Corrosion of metals and its prevention.

**(05 Marks)**

**Unit IV Acids, Bases and Salts**

Idea about acids and bases; Chemical properties of acids and bases viz. Action of metals, metal carbonates, metal hydrogen carbonates (only in case of acids), metallic acids; non-metallic acids and bases. Similarities in acids and bases; reaction of acids and bases with water. Strength of acids and base solutions; pH and its importance. Idea of salts, their family and pH. Chemicals from common salts like Sodium hydroxide, Baking soda and Washing soda; Hydrated salts, plaster of paris. (10 Marks)

**Section -V Biology (30 Marks)**

**Unit-I Life Processes**

What are life processes? Nutrition-Autotrophic Nutrition. Heterotrophic Nutrition. How do animals obtain their nutrition? Nutrition in Human beings. Respiration. Transportation: Transportation in plants. Excretion: Excretion in Human beings, Excretion in plants. (05 Marks)

**Unit-II Control and Co-Ordination**

Animals- Nervous System, What happens in Reflex Action? Human Brain. How are these tissues protected? How does Nervous tissue cause action? Coordination in plants, immediate response to stimulus, movements due to growth. Hormones in Animals. (05 Marks)

**Unit-III How do Organisms Reproduce?**

The importance of variation. Modes of reproduction used by unicellular organisms. Fission, Fragmentation, Regeneration, Vegetative Propagation, Budding, Spore Formation, Sexual Reproduction: Why the sexual mode of reproduction? Reproduction in human Beings. Male Reproductive System, Female Reproductive System. What happens when the egg is not fertilized? Reproductive Health. (05 Marks)

**Unit-IV Heredity and Genetics**

Accumulation of variation reproduction, Heredity: Inherited traits, Rules for the interitance of traits, Mendel's contribution. How do these traits get expressed? Sex determination. Acquired and inherited traits.Speciation. Classification, tracing evolutionary relationships, fossils, evolution by stages. (05 Marks)

**Unit-V Our Environment**

Environment and Ecosystem- What are its components? Food chains and webs. How do our activities effect the environment? Ozone layer and how it is getting depleted. Managing the garbage we produce. (05 Marks)

**Unit-VI Management of Natural Resources**

Why do we need to Manage our Resources? Forests and Wild life, Stake holders, Sustainable Management, Dama, Water harvesting. Coal and Petroleum. An overview of Natural Resources Management. (05 Marks)

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**ANNEXURE “G”**  
**Jammu & Kashmir Services Selection Board**  
**Graduation Level**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**Unit-I      GENERAL ENGLISH      15 Marks**

- (I) Tenses
- (II) Rearranging of jumbled sentences.
- (III) Narration
- (IV) Models
- (V) Articles
- (VI) Comprehension with blanks to be filled in with Phrases, Pronouns, Homonyms / homophones.
- (VII) Clauses
- (VIII) Synonyms and antonyms
- (IX) Pairs of words and their use in meaningful sentences.
- (X) Idioms and phrases.
- (XI) Uses of Prepositions.

**Unit-II      GENERAL KNOWLEDGE AND CURRENT AFFAIRS      25 Marks**

- Important dates in Indian History / Freedom struggle, different dates and events.
- First in world (Adventure, Sports, Discoveries).  
First in India (Adventure, Sports, Discoveries).
- Popular names of Personalities (Religion, Politics, Scientific discoveries, Geographical, Sports, History)
- The Newspaper world – (Current Dailies & Weeklies of India).
- Books & Authors – General
- Languages.
- Capitals & Currencies.
- United Nations Organisations – Veto Powers  
No. of Countries as its Members.  
Principal organs and their functions.
- SAARC, ASEAN.
- Everyday Science
- World famous Awards - (1. in Science)  
(2. in Literature)  
(3. in Sports)
- National Awards - (1. in Science)  
(2. in Literature)  
(3. in Sports)



- The world of Sports
- Climate & Crops in India.
- Democratic institutions
- Forms of Government
- Political & Physical divisions of world & India
- Important rivers & Lakes in India.
- Current Events of National and International Level.
- Role of Mathematics in Economics.
- Agriculture in economic development; Industrialization and economic development.
- Indian Foreign Trade
- New economic reforms and growth of foreign trade.
- Inflation – Concept and types; Causes and consequences

**UNIT-III GENERAL KNOWLEDGE WITH SPECIAL REFERENCE TO J&K**

**20 Marks**

- (I) Abbreviations, Important dates, popular names of personalities and their achievements/  
Contribution (National and International).
- (II) Constitution of J&K – Formation, Fundamental rights, Directive Principles.
- (III) Weather, Climate, Crops, Means of Transport.
- (IV) Important power projects and their impact on State Economy.
- (V) Rivers and Lakes.
- (VI) Important Tourist Destinations.
- (VII) History of J&K State.
- (VIII) Historical places of the State and their importance.
- (IX) RTI Act.
- (X) Indus Water Treaty and its impact on State economy.

**Unit-VI GENERAL SCIENCE**

**20 Marks**

- (i) Various sources of energy; conventional sources of energy; improvement in technology for using conventional source of energy (Biomass and wind energy)
- (ii) Non-conventional sources of energy (Solar energy, Tidal energy).
- (iii) Mechanics, Rest, motion, Velocities, acceleration, Newton Laws of motion,
- (iv) Voltage, Current, Resistance, Power, D.C Batteries
- (v) Waves, light as a wave, Sound waves, Transverse and longitudinal waves.
- (vi) Structure of Atom
- (vii) Solids, Liquids and Gases(Basics)
- (viii) Life processes: Nutrition and its types, Respiration, Transportation of water, food and minerals in plants.
- (ix) Vitamins- Diseases related to vitamin deficiency.
- (x) Environmental pollution.
- (xi) Ecosystem – Its components, Food chains and Food webs.
- (xii) Ozone layer, its depletion, Green House Effect.
- (xiii) Importance of water in life

**Unit-V MENTAL ABILITY TEST**

**20 Marks**

- (I) Number series.
- (II) Letter series.
- (III) Coding decoding.
- (IV) Direction sense.
- (V) Blood relations.
- (VI) Mathematical reasoning.
- (VII) Speed, Distance and Time.
- (VIII) Statements and conclusions.
- (IX) Logical Reasoning.
- (X) Mental Reasoning.

**Unit-VII      Computer Applications**

**20 Marks**

- (I) Fundamentals of computer sciences
- (II) Hardware & Software
- (III) Input and output devices
- (IV) Operating system
- (V) M.S Word, M.S Excel, M.S Access and Powerpoint Presentation
- (VI) E\_mail & Internet

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**ANNEXURE ‘H’**  
**Jammu & Kashmir Services Selection Board**  
**Post:- Jr. System Engineer**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**Unit-I      GENERAL ENGLISH**

**20 Marks**

- Tenses
- Rearranging of jumbled sentences.
- Narration
- Models
- Articles
- Comprehension with blanks to be filled in with
  - Phrases, Pronouns, Homonyms / homophones.
- Clauses
- Synonyms and antonyms
- Pairs of words and their use in meaningful sentences.
- Idioms and phrases.
- Uses of Prepositions.

**Electronic Devices and Circuits:**

**20 Marks**

Energy bands in silicon, intrinsic and extrinsic silicon. Carrier transport in silicon: diffusion current, drift current, mobility, and resistivity. p-n junction diode, Zener diode, tunnel diode, BJT, JFET, MOS capacitor, MOSFET, LED, avalanche photo diode .Small Signal Equivalent circuits of diodes, BJTs, MOSFETs. Simple diode circuits, clipping, clamping, rectifier. Biasing and bias stability of transistor and FET amplifiers. Single-and multi-stage, tuned voltage, operational, feedback, and power amplifiers. Frequency response of amplifiers. Simple op-amp circuits. Filters. Sinusoidal oscillators; criterion for oscillation; single-transistor and op-amp configurations. Function generators and wave-shaping circuits, 555 Timers IC and its applications. Power supplies.

**Digital Electronics and Microprocessor:**

**20 Marks**

Number systems: Binary, decimal, octal, hexadecimal, BCD number systems and their conversions, Binary and hexadecimal addition, subtraction multiplication, 1's and 2's complement methods of addition/subtraction. Boolean algebra, minimization of Boolean functions; logic gates; digital IC families (DTL, TTL, ECL, MOS, CMOS). Combinatorial circuits: arithmetic circuits, code converters, multiplexers, decoders, PROMs. Sequential circuits: latches and flip-flops, counters and shift-registers. ADCs, DACs. Semiconductor memories. Microprocessor (8085): architecture, instruction set, programming, memory and I/O interfacing. Study of peripheral chips-8251,8155, 8257,8259.

**Computer Applications****20Marks**

- Fundamentals of computer sciences,
- Hardware & Software, Concept of Open Source Technologies
- Input & Output Devices,
- Flow Charts and Algorithms
- Operating System:- MS Word, MS Excel, MS Access, MS Power-Pont ,PDF
- Internet &E-mail
- Concept of Computer Virus & latest Anti-Virus.
- Terms and Abbreviations used in IT
  - Role of Mathematics in Economics.
  - Agriculture in economic development; Industrialization and economic development.
  - Indian Foreign Trade
  - New economic reforms and growth of foreign trade.
  - Inflation – Concept and types; Causes and consequences

**GENERAL KNOWLEDGE WITH SPECIAL REFERENCE TO J&K 20 Marks**

- Abbreviations, Important dates, popular names of personalities and their achievements/
- Contribution (National and International).
- Constitution of J&K – Formation, Fundamental rights, Directive Principles.
- Weather, Climate, Crops, Means of Transport.
- Important power projects and their impact on State Economy.
- Rivers and Lakes.
- Important Tourist Destinations.
- History of J&K State.
- Historical places of the State and their importance.
- RTI Act.
- Indus Water Treaty and its impact on State economy.

**MENTAL ABILITY TEST****20 Marks**

- Number series.
- Letter series.
- Coding decoding.
- Direction sense.
- Blood relations.
- Mathematical reasoning.
- Speed, Distance and Time.
- Statements and conclusions.
- Logical Reasoning.
- Mental Reasoning.

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**ANNEXURE “I”**  
**Jammu & Kashmir Services Selection Board**  
**Motor Vehicle Inspector / Sub Motor Vehicle Inspector /**  
**Assistant Motor Vehicle Inspector**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**Unit - I GENERAL ENGLISH** **25 Marks**

- I. English & Communication skills
- II. Basics of Information Technology
- III. Industrial Managements and Entrepreneurship Development

**Unit- II APPLIED SCIENCE** **15 Marks**

- I. Applied Physics
- II. Applied Chemistry
- III. Applied Mathematics

**Unit –III BASIC COURSES IN ENGINEERING / TECHNOLOGY** **15 Marks**

- I. Applied Mechanics
- II. Engineering Drawing
- III. Elements of Mechanical Engineering
- IV. Fundamentals of Thermal Engineering
- V. Hydraulic and Hydraulic Mechanic

**Unit-IV APPLIED COURSES IN ENGINEERING / TECHNOLOGY** **35 Marks**

- I. Auto Engineering Drawing
- II. Auto Engine
- III. Automotive Materials
- IV. Chasis, Body and Transmission
- V. MVA and Transport Management
- VI. Automotive Emission Control
- VII. Applied thermodynamics
- VIII. CADD
- IX. Theory of Machines
- X. CNC machines

- XI. Metrology and quality control
- XII. Maintenance

**Unit- V MECHANICAL ENGINEERING**

**30 Marks**

- I. Transmission of Power
- II. Internal combustion Engines
- III. Refrigeration and Air Conditioning Systems
- IV. Hydraulics
- V. Fundamental DynamicsEngineering Graphics & Coputer Modelling
- VI. Mechanics of Materials – I & II
- VII. Thory of Machines – I & II
- VIII. Applied Thermodynamic-I & II
- IX. Theory of Machines – I & II
- X. Hydraulic Machinery
- XI. Measurement and Instrumentation

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**ANNEXURE “J”**  
**Jammu & Kashmir Services Selection Board**  
**10+2 Level**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**Unit-I GENERAL ENGLISH**

**15 Marks**

- (i) Paragraph writing / Comprehension
- (ii) Editing / Proof Reading.
- (iii) Rearranging of jumbled sentences
- (iv) Dialogue
- (v) Narration
- (vi) Models
- (vii) Articles
- (viii) Paragraph writing with blanks to be filled in with the following Phrases, Pronouns, Homonyms / homophones, Tenses.
- (ix) Clauses
- (x) Punctuation
- (xi) Synonyms and antonyms
- (xii) Pairs of words and their use in meaningful sentences.
- (xiii) Idioms and phrases.
- (xiv) Uses of Prepositions

**Unit-II MATHEMATICS**

**15 Marks**

- (i) Problems on finding Surface areas and volumes of combinations of any two of the following cubes, cuboids, spheres, hemispheres and right circular cylinders / cones. Frustum of a cone.
- (ii) Problems involving converting one type of metallic solid into another and other mixed problems.
- (iii) Profit and loss
- (iv) Simple / Compound interest.
- (v) Linear equations with two variables.
- (vi) Progression / BODMAS
- (vii) Probability: Simple problems on Single event.

**Unit-III HISTORY**

**10 Marks**

- (i) Revolt of 1857 - Causes and Effects.
- (ii) Rise of National Movement - Factors.
- (iii) Formation of the Indian National Congress in 1885 and Role of Moderates.
- (iv) Factors leading to the rise of Extremism in the Congress with special reference to the Partition of Bengal.
- (v) Important dates and historical events with reference to India
- (vi) Boycott and Swadeshi Movement.



- (vii) Rise of Muslim League in 1906 : Cause.
- (viii) Khilafat Movement and the Non-Cooperation Movement.
- (ix) Quit India Movement.
- (x) Independence and Partition of India.

**Unit-IV CIVICS**

**10 Marks**

- (i) Fundamental Rights
- (ii) Fundamental duties.
- (iii) Directive Principles.
- (iv) Origin of democracy and its types. Direct and Indirect Democracy, Hindrance to Democracy.
- (v) Public opinion.
- (vi) Representaion.
- (vii) Franchise.
- (viii) Secret Ballot.
- (ix) Nomination.
- (x) Symbol.
- (xi) The Campaign
- (xii) Presidential elections.
- (xiii) Languages
- (xiv) Cities and Villages.
- (xv) The United Nations.

**Unit-V GEOGRAPHY**

**15 Marks**

- (i) Change of Seasons/ Planets/ Solar System/ Longitude - Latitude. Types of forests (with special reference of J&K State)
- (ii) Conservation and protection of forests.
- (iii) National / Zoological Parks and wildlife sanctuaries (Reference of J&K Sanctuaries and National Parks).
- (iv) Water resources. Sources of Water (with special reference of J&K State), Uses of water Resources. Conservation and management of water resources.
- (v) Rainwater Harvesting.
- (vi) Transport.
- (vii) Roads (Different routes of J&K State)

**Unit-VI GENERAL SCIENCE**

**15 Marks**

- (i) Gravitation / Heat / Light / Matter / Acids / Salts / Elements / Cells.
- (ii) Various sources of energy; conventional sources of energy; improvement in technology for using conventional source of energy (Biomass and wind energy)
- (iii) Non-conventional sources of energy (Solar energy, Energy from sea).
- (iv) Physical properties of metals and non-metals.
- (v) Chemical properties of metals like action of water, air, acids, salts; Reactivity series of metals.
- (vi) Occurance of metals; their extraction, enrichment of ores. Extraction of metals in accordance with activity series; refining of metals.

- (vii) Life processes: Nutrition and its types, Respiration, Transportation of water, food and minerals in plants, Excretion with reference to plants and animals.
- (viii) Environmental pollution.
- (ix) Ecosystem – Its components, Food chains and Food webs.
- (x) Ozone layer, its depletion, Green House Effect.
- (xi) Mendal’s contribution and experiments on pea plant.
- (xii) Types of reproduction in Plants and Animals.
- (xiii) Classification of Plants and Animals.

**Unit-VII (A) GENERAL KNOWLEDGE AND CURRENT AFFAIRS 10 Marks**

Abbreviations, Important Dates, Popular Personalities, Geographical Discoveries, Books and Authors, Principal Languages of India, Capitals and Currencies of Countries, United Nations Organisation, Members of United Nations Organisation (UNO), Other International Organisations and Groups, Members of SSARC, ASEAN, BRICS AND G-7, Space Programme of India, India’s Automic Research Programme, Awards, Honours and Prizes, Seven Wonders. The World of Sports, Exports and Imports, India GDP, Per capita Income, Thermal / Nuclear/ Hydro Power Plants in India.

**(B) GENERAL KNOWLEDGE WITH SPECIAL REFERENCE TO J&K 10 Marks**

- (i) Important dates, Popular names of personalities and their achievements / contribution.
- (ii) Constitution of J&K with reference to constituent Assembly.
- (iii) Centre-State relationship.
- (iv) Weather, Climate, Crops, Means of Transport.
- (v) Important projects and their impact on State Economy.
- (vi) Rivers and Lakes.
- (vii) Important Tourist Destinations.
- (viii) History of J&K State.
- (ix) Historical places and their importance.
- (x) Flora and Fauna of J&K State.

**Unit-VIII MENTAL ABILITY TEST 20 Marks**

- (i) Number series
- (ii) Letter series
- (iii) Coding decoding
- (iv) Direction sense
- (v) Blood relations
- (vi) Mathematical reasoning
- (vii) Speed, Distance and Time
- (viii) Statements and conclusions.

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**ANNEXURE “K”**  
**Jammu & Kashmir Services Selection Board**  
**Post:- Labour Officer**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**GENERAL ENGLISH**

**15 Marks**

- Tenses
- Rearranging of jumbled sentences.
- Narration
- Models
- Articles
- Comprehension with blanks to be filled in with
- Phrases, Pronouns, Homonyms / homophones.
- Clauses
- Synonyms and antonyms
- Pairs of words and their use in meaningful sentences.
- Idioms and phrases.
- Uses of Prepositions.

**GENERAL KNOWLEDGE WITH SPECIAL REFERENCE TO J&K**

**15 Marks**

- Abbreviations, Important dates, popular names of personalities and their achievements/Contribution (National and International).
- Constitution of J&K – Formation, Fundamental rights, Directive Principles.
- Weather, Climate, Crops, Means of Transport.
- Important power projects and their impact on State Economy.
- Rivers and Lakes.
- Important Tourist Destinations.
- History of J&K State.
- Historical places of the State and their importance.
- RTI Act.
- Indus Water Treaty and its impact on State economy.

**Indian Economy**

**(Pre Independence )**

**30 Marks**

Land System and its changes, Commercialization of Agriculture, Drain theory, Laizzez faire theory and critique. Manufacture and Transport: Jute, Cotton, Railways, Money and Credit.

**(after Independence)**

**a) The Pre Liberalization Era:**

- i) Contribution of Vakil, Gadgil and V.K.R.V Rao.

- ii) Agriculture: Land Reforms and land tenure system, Green Revolution and capital formation in agriculture
  - iii) Industry Trends in composition and growth, Role of Public and Private sector, Small scale and cottage industries.
  - iv) National and per capita income: patterns, trends, aggregate and sectoral composition and changes therein.
  - v) Broad factors determining National income and distribution, Measures of poverty, Trends in poverty and inequality.
- b) The Post Liberalization Era:**
- i) New Economic Reform and Agriculture: Agriculture and WTO, Food processing, Subsidies, Agricultural prices and public distribution system, Impact of public expenditure on agricultural growth.
  - ii) New Economics Policy and Industry: Strategy of Industrialization, Privatization, Disinvestments, Role of foreign direct investment and multinationals.
  - iii) New Economic Policy and Trade: Intellectual property rights: Implications of TRIPS, TRIMS, GATS and new EXIM policy.
  - iv) New Exchange Rate Regime: Partial and full convertibility, Capital account convertibility.
  - v) New Economic Policy and Public Finance: Fiscal Responsibility Act, Twelfth Finance Commission and Fiscal Federalism and Fiscal Consolidation.
  - vi) Planning: From central Planning to indicative planning, Relation between planning and markets for growth and decentralized planning: 73<sup>rd</sup> and 74<sup>th</sup> Constitutional amendments.
  - vii) New Economic Policy and Employment: Employment and poverty, Rural wages, Employment Generation, Poverty alleviation schemes, New Rural, Employment Guarantee Scheme.

**Indian society:**

**30 Marks**

- a) Social background of Indian nationalism.
- b) Modernization of Indian tradition.
- c) Protests and movements during the colonial period.
- d) Social reforms.
  - I) **Social Structure:**
    - a) Rural and Agrarian Social Structure:
    - b) Agrarian social Structure – evolution of land tenure system, land reforms
  - II) **Caste System**
    - a) Features of Caste System.
    - b) Untouchability – forms and perspectives.
  - III) **Tribal communities in India:**
    - a) Definitional problems
    - b) Geographical spread
    - c) Colonial policies and tribes.
    - d) Issues of integration and autonomy.

- IV) **Social Classes in India:**
  - a) Agrarian class structure.
  - b) Industrial class structure
  - c) Middle classes in India.
- V) **Systems of Kinship in India:**
  - a) Lineage and descent in India.
  - b) Types of kinship systems

**Financial Accounting:**

**15 Marks**

Accounting as a financial Information System; Impact of Behavioral Sciences. Accounting Standards e.g., Accounting for Depreciation, Inventories, Research and Development Costs, Long-term Construction Contracts, Revenue Recognition, Fixed Assets, Contingencies, Foreign Exchange Transactions, Investments and Government Grants, Cash Flow Statement, Earnings Per Share. Accounting for Share Capital Transactions including Bonus Shares, Right Shares, Employees Stock Option and Buy-Back of Securities. Preparation and Presentation of Company Final Accounts, Amalgamation, Absorption and Reconstruction of Companies.

**Financial Markets and Institutions:**

**15 Marks**

Indian Financial System: An Overview, Money Markets: Participants, Structure and Instruments. Commercial Banks. Reforms in Banking sector. Monetary and Credit Policy of RBI, RBI as a Regulator. Capital Market: Primary and Secondary Market. Financial Market Instruments and Innovative Debt Instruments; SEBI as a Regulator, Financial Services: Mutual Funds, Venture Capital, Credit Rating Agencies, Insurance and IRDA.

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**ANNEXURE “L”**  
**Jammu & Kashmir Services Selection Board**  
**Jr. Librarian / Library Assistant**  
**(School Education Department)**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**Unit-I**

**Marks 20**

- Types of Libraries and their Features
- Role of Libraries in contemporary Society
- Five Laws of Library Sciences
- Library legislation in different states of India
- Intellectual Property Rights( IPR)
- National and International Library Associations: ILA, IASLIC, IATLIS, SIS IFLA, FID ALA, ASLIB SLA etc.
- National and intercalation Agencies : UNESCO, OCLC, PRRLF, UGC,
- INFLIBNET, DELNET ,etc
- Information Centers, DRTC, ISI, INSDOC( NISCAIR),NASSDOC, DESIDOC, SENDOC, etc

**Unit-II**

**Marks 20**

- Basic Terminology: call Number, Class Number, Book Number, Isolates
- Classification; concept, purpose and species
- Features of DDC, UDC, and CC
- Five Fundamental Categories
- Notation: Definition and Purpose
- Library Catalogue; Definition and purpose
- OPAC AND WebOPAC
- Cannons of Classification and Cataloguing

**Unit-III**

**Marks 20**

- Principles of Book Selection
- Selection Tool; Print and Non-Print Materials
- Processing of Documents; Accessioning, Classification, Cataloguing labeling and shelving
- Serials/ Journals; Selection and procurement
- Book Transaction System: Traditional and Modern
- Stock verification of Books; Methods and Tools
- Weeding Process

**Unit-IV**

**Marks 20**

- Information Sources: Print and No- Print ; Primary, Secondary and Tertiary Sources

- Types of Dictionaries, Encyclopedias
- Geographical and Biographical Sources
- Indexing and Abstracting Sources
- Types of Bibliographies
- Bibliographies Sources

**Unit-V**

**Marks 20**

- Types of Reference service ,Ready reference service, Long Rang Reference Service
- Reference Librarian: Role Skills and Competences
- User Education/ Information Literacy Skills
- CAS/SDI
- International Information System; INIS, AGRIS, MEDLARS/MEDLINE, INSPEC
- Information Seeking Pattern

**Unit-VI**

**Marks 20**

- Computer Genesis
- Computer Generations
- Primary and Secondary Memory; Storage Devices
- Operating System: MS DOS, Windows, Linux
- Programming; Algorithm, Flowcharts, Languages
- MS-WORD , MS-Excel –Ms-Power point, DBMS,CDS/ISIS, WINISIS

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**ANNEXURE “M”**  
**Jammu & Kashmir Services Selection Board**  
**Post:- Patwari**

**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

|               |                                       |                |
|---------------|---------------------------------------|----------------|
| <b>Unit-I</b> | <b>GENERAL ENGLISH(ObjectiveType)</b> | <b>20Marks</b> |
|---------------|---------------------------------------|----------------|

- (I) Tenses
- (II) Rearranging of jumbled sentences.
- (III) Narration
- (IV) Models
- (V) Articles
- (VI) Comprehension with blanks to be filled in with Phrases, Pronouns, Homonyms/homophones.
- (VII) Clauses
- (VIII) Synonyms and antonyms
- (IX) Pairs of words and their use in meaningful sentences.
- (X) Idioms and phrases.
- (XI) Uses of Prepositions.

|                |                                       |                |
|----------------|---------------------------------------|----------------|
| <b>Unit-II</b> | <b>GENERAL STUDIES(ObjectiveType)</b> | <b>30Marks</b> |
|----------------|---------------------------------------|----------------|

- (i) Various sources of energy; conventional sources of energy; improvement in technology for using conventional source of energy(Biomass and wind energy)
- (ii) Non-conventional sources of energy (Solar energy, Tidal energy).
- (iii) Solids, Liquids and Gases(Basics)
- (iv) Vitamins- Diseases related to vitamin deficiency.
- (v) AIDS-Causes and Prevention.
- (vi) Environmental pollution.
- (vii) Ecosystem–Its components, Food chains and Food webs.
- (viii) Ozone layer, its depletion, Green House Effect.
- (ix) Globalization/Liberalization
- (x) Disaster Management
- (xi) Inflation
- (xii) Human Rights
- (xiii) Panchayat Raj
- (xiv) Indian Freedom Struggle (1857Onwards)
- (xv) United Nations Organization (Principal organs and their functions)
- (xvi) SAARC/NAM



- (i) Constitution of India with special reference to:-
- a) Citizenship
  - b) Fundamental Rights
  - c) Fundamental Duties
  - d) Election Commission of India
  - e) Supreme Court
  - f) Centre-State relations
  - g) Article 370

- (i) Legislature (Both Houses)-Composition and Election.
- (ii) State Judiciary.

**Unit-V GENERAL KNOWLEDGE WITH SPECIAL REFERENCE TO JAMMU & KASHMIR**

(Objective Type)

**25 Marks**

- (i) Topography of J&K State.
- (ii) Climates of J&K State:-
  - a) Temperate (Valley)
  - b) Arid (Ladakh)
  - d) Sub-Tropical (Jammu)
- (iii) Historical places and monuments
- (iv) Major River systems in J&K.
- (v) Hydro-Power projects in J&K.
- (vi) Tourist places in J&K.
- (vii) Land Reforms.
- (viii) Indus Water Treaty.
- (ix) Wildlife sanctuaries / National Parks of J&K.
- (x) Natural Resources of J&K.

**Unit-VI MENSURATION (Objective Type)**

**15 Marks**

- a) Area of Triangle, Square, Rectangle, Rhombus, Trapezium, Circle, Right Circular Cylinder.
- b) Volume of Cube, Cuboid, Sphere, Hemisphere, Cone.
- c) Field Book/Units of Measurement of Land.

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## **Guidelines for checking working knowledge of Urdu**

### **Naib Teshildar & Patwari**

The exam intends to check the “*working knowledge of Urdu*” of the candidates. The same will be tested through a Reading and a Writing test (total comprising of 100 marks in a duration of two hours), to be conducted on the same day. The candidates belonging to ‘OM’ Category will be required to score at least 40% marks (overall) in the said exam with at least 33% marks in both Reading and Writing sections to be considered as having ‘*working knowledge of Urdu*’ for the purpose of this exam/qualified. The candidates belonging to other categories (except OM) are required to score at least 35% marks (overall) with at least 33% in each Section. The test of Reading Section will be computer based having multiple choices. There will be negative marking (0.25 per question) in Reading Section for wrong answers.

#### **Reading Section -50 Marks**

1/- Candidates would be required to answer a total of 50 questions out of 5 given passages, each carrying 10 questions of one mark each.

#### **Writing Section – 50 Marks**

|   |           |
|---|-----------|
| Letter writing of minimum 150 words on a particular situation.                  | -10 marks |
| One English passage to be translated into Urdu.                                 | -10 marks |
| One Urdu passage to be translated into English.                                 | -10 marks |
| One Essay of 300 words on any topic of social relevance.                        | -10 marks |
| Ten sentences to be made on given words bringing out clear meaning of the words | -10 marks |

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**ANNEXURE “N”**  
**Jammu & Kashmir Services Selection Board**  
**LEGAL ASSISTANT / JR. LEGAL ASSISTANT**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**CONSTITUTIONAL LAW:**

**15 Marks**

- Salient features of Indian Constitution.
- Parliamentary form of Government.
- President of India- Election, Qualifications, Impeachment, Position, Powers and Privileges.
- Cabinet System, Collective responsibility-Individual responsibility, President-Prime Minister relationship
- Principles
  - Distribution of Legislative Powers (Art. 245, 246 & 254)
  - Failure of Constitutional Machinery (Art. 356)
  - J&K Special Status (Art. 370)
- Constitutional Amendments – Methods and limitation (Art. 368)
- Freedom of Trade and Commerce
- Regulatory and Compensatory measures (Articles 301-304).
- Articles 141 and 143.
- Appointment and impeachment of the Judges of the High Courts and Supreme Court.
- Services under the Constitution- Doctrine of Pleasure (Art. 310), Restrictions (Art. 311)
- Fundamental Rights (Articles 14-16, 19-22 and 25-30).
- Constitutional remedies. Writ Jurisdiction
  - Scope of Article 32
  - Scope of Article 226
- Directive Principles of State Policy; Relationship between Directive Principles and Fundamental Rights.
- Emergency Provisions: Arts 352 to 354, 358 and 359.

## ADMINISTRATIVE LAW:

10 Marks

- Classification of Administrative Action:
  - Definition of administrative actions.
  - Need for classification
  
  - Identification of legislative action
  
  - Identification of quasi-judicial and administrative actions. Legislative powers of administration.
  
  - Necessity for delegation of legislative powers and its constitutional validity.
- Principles of Natural Justice:
  - a) No man shall be judge in his own cause.
  - b) No man shall be condemned unheard.
- Administrative Discretion
  - Need for Administrative Discretion
  - Administrative Discretion and rule of law
  - Need for safeguards.
- Doctrine of Excessive Delegation of Discretion
  - Constitutionality of discretionary powers
  - Administrative discrimination and arbitrariness
- De tournant De prevoir
  - Malafide exercise of discretion Improper purpose
  
  - Irrelevant considerations  
Unreasonableness
  
  - Non-exercise of discretionary powers
- Liability of the Government
  - Statutory-immunity
  - Act of State
  - Contractual liability of Government

- Government privileges in legal proceedings
- Public accountability
- Ombudsman
- Vigilance Commission.

### **MUSLIM LAW:**

**05 Marks**

- Sources and Schools of Muslim Law.
- Nature, scope, validity and classification of marriage under Muslim Law
- Polygamy, Divorce and matrimonial remedies under Muslim Law
- Dissolution of Muslim Marriage Act, 1939.
- Maintenance under section 125 of the Code of Criminal Procedure, 1973.
- Maintenance under Muslim Women (Protection of Rights on Divorce) Act, 1986

### **HINDU LAW:**

**05 Marks**

- Nature, concept and essential conditions of Hindu Marriage.
- Grounds of divorce and divorce by mutual consent under Hindu Law
- Matrimonial remedies under Hindu Law:
  - Nullity of marriage
  - Restitution of conjugal rights
  - Judicial separation
  - Dissolution of marriage
- Joint family and coparcenary under Mitakshara law
- Karta-his powers, privileges and obligations.
- Adoption and Guardianship.

### **Law of Contract**

**15 Marks**

- Agreement and contract – Definitions, elements and kinds.
- Proposal and acceptance: their various forms, essential elements, communications and revocation.
- Intention to create legal relationship.

- Consideration: its need, meaning, kinds, essential elements-privity of contract, promissory estoppel, exceptions to consideration; adequacy of consideration; present, past and executory consideration; unlawful consideration and its effects; views of Law Commission of India on consideration; evaluation of the doctrine of consideration.
- Capacity to contract: meaning, definition of minor, necessities supplied to a minor, agreements beneficial and detrimental to a minor affirmation- restitution in cases of minor's agreement-fraud by minor- agreements made on behalf of a minor's agreement and tested-evaluation of the law relating to minor's agreement.
- Quasi-contracts of certain relations resembling those created by contracts
- Damages: kinds- Remoteness of damages- ascertainment of damages.
- Specific performance of contracts.
- Contract that can be specifically enforced.
- Rescission and cancellation.
- Injunction.
- Indemnity: Definition, nature and extent of liability of the indemnifier, commencement of liability of the indemnifier.
- Guarantee: Definition, basic essentials for a valid guarantee contract, Nature and extent of surety's liability, discharge of surety's liability.
- Bailment: Definition, kinds of bailees, duties of bailor and bailee towards each other, rights of bailor and bailee, finder of goods as a bailee.
- Agency: Kinds of agents and agencies; Distinction between agent and servant; Essentials of agency transaction; Various methods of creation of agency; delegation.
- Sale of Goods: Concept of sale as a contract; Essentials of a contract of sale; Implied terms in contract of sale; Rule of Caveat Emptor and the exceptions thereto; Changing concept of Caveat Emptor; Unpaid seller and his rights.

## **Company Law**

**10 Marks**

- Concept of registration and incorporation; Memorandum of Association, Doctrine of ultra vires; Articles of Association; Doctrine of constructive notice and indoor management; Prospectus-statement in lieu of prospectus;
- Promoters- position, duties and liabilities;
- Directors- position, appointment, qualifications, vacation of office, removal, resignation, powers and duties of directors; meeting registers, loans, remuneration of directors, role of nominee directors- compensation for loss of office- managing directors- compensation for loss of office-managing directors and other managerial personnel;
- Meetings- kinds- procedure- voting;
- Debentures- meaning- fixed and floating charge- kinds of debentures- shareholder and debenture holder- remedies of debenture holders.
- Protection of minority rights.

- Winding up- types- by court- reasonable- grounds- who can apply- power of court- consequences of winding up order- voluntary winding up by members and creditors- winding up subject to supervision of courts- liability of past members- payment of liabilities- preferential payment, unclaimed dividends, winding up of unregistered company.

## **Labour Laws**

**10 Marks**

- Definition of Trade Union and the right to form the Trade Union.
- Legal Control and Protection of Trade Union: Registration, amalgamation, rights, immunities, liabilities and dissolution. Trade Union Funds.
- Collective bargaining.
- Strikes, lock-outs, lay off and retrenchment. Transfer and closure.
- Unfair labour practices.
- Disciplinary proceedings.
- Labour welfare: concept, classification and importance.
- Obligations of employer for health, safety and welfare.
- Working hours of adults and Annual Leave with wages.
- Employment of young persons: prohibition of employment of children, regulation of employment of young persons.
- Concept of minimum wage, fair wage, living wage and need based minimum wage.
- Procedure for fixation and revision of minimum wages.
- Components of wages: dearness allowance, principle of fixation.
- Definition of wage under Payment of Wages Act, 1936 and responsibility for payment of wages.
- Concept of employer, workmen, dependent, disablement.
- Workmen's compensation: employer's liability for compensation, amount and distribution of compensation.
- Employee's State Insurance: benefits, ESI fund and contribution.

## **CRIMINAL LAW**

**10 Marks**

- Indian Penal Code: General defences (Sections 76-106); Group liability (Sections 34 & 149); Unlawful Assembly, Rioting and Affray; Abetment; Criminal Conspiracy; Criminal Attempt; Offences against body (Sections 299-304, 319-326, 339-343, 349-353 and 359-363); Offences against property (Sections 378, 379, 383, 384, 390-392, 395, 405, 415-417, 425 and 426).

## **JURISPRUDENCE**

**10 Marks**

- Meaning and scope of Jurisprudence; Nature and definition of “Law”; Schools of Law (Analytical positivism, Natural Law, Historical School and Sociological School); Sources of Law (Legislation, precedents, customs and juristic writings); Rights and duties-concept and co-relationship); Concept of person, Ownership and Possession.

## **INTERNATIONAL LAW AND HUMAN RIGHTS**

**20 Marks**

- Origin, Development, Definition, Nature and Theories of International Law; Its relation with Municipal Law.
- Sources of International Law, Custom. Treaties. General Principles of Law and writings.
- Subjects of International Law: State including Recognition of States; Individuals and peoples; International Organizations.
- Jurisdiction of States: Territorial, Personal and Universal.
- Extradition and Asylum.
- Law of State Responsibility.
- Peaceful Settlement of Disputes including settlement by ICJ.
- Use of Forces under International Law.
- Human Rights: Origin, development and nature of Human Rights; International Bill of Human Rights; Regional Systems of Human Rights Law; Protection of Human Rights Act and International Humanitarian Law.

## **ENVIRONMENTAL LAW**

**10 Marks**

- Environmental Pollution: Meaning and issues.
- Constitutional provisions-Art. 14, 19(1)(g), 21, 48A & 51A, right to wholesome environment-evolution and application. PIL and protection of Environment.
- Water and Air Pollution Control Acts:
  - Standards, CPCB and SPCB, Consent Mechanism, Control Areas and Restraint Orders
  - Citizen Suit and Access to Environmental Information
- Corporate and Governmental Liability for Environmental Offences
- Environmental Protection Act, 1986 and other environmental legislations International Environmental Law and Norms:
  - Stockholm Declaration, Global Warming and Ozone Conventions
  - Sustainable development, Public Trust Doctrine
  - Precautionary Principle, Polluter Pays Principle
- Local Environmental Laws and Problems in J&K:
  - Forest Act, 1930, J&K Wildlife Protection Act, JEK Forest (Conservation) Act (Summary of the provisions with special emphasis on Forest Dwellers and Forests, medicinal plants and related traditional knowledge)



- Protection of Biodiversity in J&K- Local Laws and Central Acts- Forest (Protection) Force Act
- Preservation and protection of lakes and waterways in J&K- Existing related laws and future needs.

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**ANNEXURE “O”**  
**Jammu & Kashmir Services Selection Board**  
**Statistical Assistant/Jr. Statistical Assistant (JSA)**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**General Knowledge And Current Affairs**

**15 Marks**

- Important dates in Indian History / Freedom struggle, different dates and events.
- First in world (Adventure, Sports, Discoveries).
- First in India (Adventure, Sports, Discoveries).
- Popular names of Personalities (Religion, Politics, Scientific discoveries, Geographical, Sports, History)
- The Newspaper world – (Current Dailies & Weeklies of India).
- Books & Authors – General
- Languages.
- Capitals & Currencies.
- United Nations Organisations – Veto Powers
- No. of Countries as its Members.
- Principal organs and their functions.
- SAARC, ASEAN.
- Everyday Science
- World famous Awards - (1. in Science)  
(2. in Literature)  
(3. in Sports)
- National Awards - (1. in Science)  
(2. in Literature)  
(3. in Sports)
- The world of Sports
- Climate & Crops in India.
- Democratic institutions
- Forms of Government
- Political & Physical divisions of world & India
- Important rivers & Lakes in India.
- Current Events of National and International Level.
- Role of Mathematics in Economics.
- Agriculture in economic development; Industrialization and economic development.
- Indian Foreign Trade
- New economic reforms and growth of foreign trade.
- Inflation – Concept and types; Causes and consequences

**GENERAL KNOWLEDGE WITH SPECIAL REFERENCE TO J&K** **10 Marks**

- Abbreviations, Important dates, popular names of personalities and their achievements/Contribution (National and International).
- Constitution of J&K – Formation, Fundamental rights, Directive Principles.
- Weather, Climate, Crops, Means of Transport.
- Important power projects and their impact on State Economy.
- Rivers and Lakes.
- Important Tourist Destinations.
- History of J&K State.
- Historical places of the State and their importance.
- RTI Act.
- Indus Water Treaty and its impact on State economy.

**Statistical Methods** **15 Marks**

- Classification and Tabulation of Data
- Measures of central Tendency and Dispersion their relative merits and demerits.
- Theory of Probability
- Elementary Knowledge of Theoretical Distributions (Binomial, Poisson and Normal).
- Correlation and regression- Concept and definition and simple applications.
- Theory of Attributes- Basic concepts and their applications,
- Co-efficient and Association and Coefficient of Contingency.
- Hypothesis Testing- Chi Square Test & T-Test.

**Applied Statistics** **15 Marks**

- Sampling Techniques- Simple Radom Sampling with and without replacement,
- Stratified Sampling,
- Ratio and Regression estimates,
- Cluster Sampling and Systematic Sampling,
- Sampling and Non- Sampling errors
- Analysis of Time Series components,
- Measurement of Trend and Seasonal variation.
- Theory of Index Numbers: Tests of Index numbers- Wholesale and consumer price Index numbers.
- Interpolation and Extrapolation.
- Demography-Census, its features and functions.
- Methods of Census taking.
- Vital Statistics- Measures of fertility ,Crude fertility rates, specific fertility rates, gross and net reproduction rates., Measures of Mortality

**General Economics** **25 Marks**

- Meaning, Scope and Methodology,
- Theory of consumers demand using indifference curve technique.
- Consumer Surplus-Basic concept & measurement.

- Theory of distribution:- Marginal productivity Theory, Ricardian Theory of Rent, Kenysian Theory of Interest.
- Pricing under various forms of Market.
- Theory of production:- Returns to Scale & Returns to Factor
- Factors of production& Production functions.
- Concept of Economic Growth and its measurement
- Characteristics and problems of developing economy- Demography and economic development.
- Rationale of Planning in Developing Countries.
- Poverty Concepts & Measurement.
- Unemployment- Concept & Measurement.
- Objectives & Strategies of Indian Planning.
- Problems of resource mobilization- Successes & Failures.
- Decentralization & Role of PRIs.
- Planning for Inclusive Growth & Development Schemes.
- Fiscal and Monetary Policy.
- Inflation & Deflation.
- Concepts of National Income.
- RBI and Developmental Banks.
- SEBI, Foreign Trade, Balance of Payments
- Deficit Financing.

### **Computer Applications**

**10Marks**

- Fundamentals of computer sciences,
- Hardware & Software, Concept of Open Source Technologies
- Input & Output Devices,
- Flow Charts and Algorithms
- Operating System:- MS Word, MS Excel, MS Access, MS Power-Pont ,PDF
- Internet &E-mail
- Concept of Computer Virus & latest Anti-Virus.
- Terms and Abbreviations used in IT

### **Principles of Business Management**

**15Marks**

- Nature Scope and Significance of Management and Administration. The modern concept of Management.
- The process of Management
- Process of Control: Production Planning & Control, Quality Control, Inventory Control, Budgetary Control and Cost Control. PERT, CPM and GNATT Charts.
- Personnel Management : Definition, meaning and Scope, Performance appraisal, Evaluation and Monitoring, Human Resource Planning.

- Marketing Management : Definition, Meaning and Scope, Marketing Environment in India, Consumer Behavior, Marketing Strategies, Challenges of Marketing In India, Social Responsibilities & Marketing Ethics.
- Financial Management : Definition, meaning and Scope, , Financial Statement Analysis:, Income & Expenditure Statement, Profit & Loss Account, Balance Sheet, Ratio Analysis, Working Capital Analysis, Fund Flow Statement, Cash Flow Statement, Capital Budgeting/Financial Leverage, Price level Accounting, Cost of Capital & Capital Structure , Issue of Shares & Debentures, Dividend Policy, Bonus , Share Markets: Primary & Secondary, Inventory & Receivable Management, Budgeting & Budgetary Control, Standard costing & Cost Sheets, Marginal Costing and Break Even Analysis, Differential Cost Analysis.
- Income Tax : Calculation of Income Tax-Salary
- Public Finance: Nature Scope and Importance of Public Finance.
- Registration of Companies- Memorandum of Associations, Articles of Associations, Mergers, Acquisition, Diversification, Expansion.
- Zero Based Budgeting & Performance Budgeting.
- Indian Financial System.

### **Mathematics**

**15Marks**

- Set Theory - Basic Concepts & Applications.
- Matrices & Determinants, Simultaneous Linear Equations- Cramer's Rule.
- Analytical Geometry.
- Differentiation- Basic Concepts (Addition, Product & Chain rule)
- Optimization using Differential techniques.
- Integration-Reduction & Substitution Method.
- Linear Differential Equations.
- Differential Equations Existence theorem for the solution of  $dy/dx = f(x,y)$ .

Interpolation, Extrapolation & Inverse interpolation.



**ANNEXURE “P”**  
**Jammu & Kashmir Services Selection Board**  
**Medical Assistant**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**First Aid and Emergency Health Services**

**07 Marks**

- Outline of the First-Aid
- Structure and functions of the body
- Dressing and Bandages (use of Triangular Bandages and Cotton Roller Bandage, Rubber Bandage and Different types of Dressing).
- Cardio-pulmonary Resuscitation. Wounds.
- Haemorrhage
- Shock
- Electric Shock
- Different methods of artificial respiration.
- Asphyxia.
- Fractures and Dislocation.
- Unconsciousness and Fainting
- Epilepsy and Hysteria.
- Poisons including food poisoning.
- Common Conditions:
  - Foreign body in ear, eye and nose
  - Cramps
  - Frost-Bite
  - Bites and Stings etc.
  - Epistaxis
  - Snake Bite
  - Dog Bite
- Transport of injured persons
- Use of common medicines

**STERILIZATION/DISINFECTION**

**07 Marks**

Physical, Chemical and Mechanical Methods etc. Disposal of contaminated Media, sterilization of syringes, glass wares, apparatus etc. Biomedical waste management.

**SURGICAL INSTRUMENTS, THEIR NAMES & USES,  
PREPARATION OF PATIENT FOR OPERATION, PRE & POST**

**OPERATIVE PATIENT CARE**  
**SURGICAL INSTRUMENTS (Their Names & Uses)**  
**(Their Preparation & Uses)**

**SURGICAL INSTRUMENTS:**

**05 Marks**

- Instruments for general surgery
- Operation of the face and neck
- Operations of the Nose, Throat and Ear
- Ophthalmic Surgery
- Operations on the Chest
- Operations on the Genito-Urinary Tract
- Gynecological and Obstetric
- Operations Orthopaedic Operations
- Neuro-Surgical Operations
- Operations on the Vascular System
- Trauma Surgery

**PREPARATION OF INSTRUMENTS TRAY:** **05 Marks**

- Major procedures tray
- Basic/Minor procedures tray
- Limited procedures tray
- Thyroid tray
- Long instruments tray
- Biliary Tract Procedures tray
- Choledochoscopy tray
- Basic rigid Sigmoidoscopy tray



- Gastrointestinal procedures tray
- Rectal procedures tray

**GYNECOLOGIC AND OBSTETRIC TRAYS:**

**05 Marks**

- Dilatation of the Cervix and Curettage of the Uterus (D&C) tray.
- Cervical Cone tray
- Laparoscopy tray
- Abdominal Hystrectomy tray
- Caesarian section tray
- Vaginal Hysterectomy tray

**GENITOURINARY TRAYS:**

**05 Marks**

- Vasectomy tray
- Open Prostatectomy tray
- Kidney tray

**THORACIC TRAYS**

**02 Marks**

- Mediastinoscopy tray
- Thoractomy tray
- Pcemaker tray

**CARDIOVASCULAR TRAYS:**

**02 Marks**

- Vascular procedures tray

- Vascular Shunt tray
- Cardiac Procedures tray

**ORTHOPAEDIC TRAYS:** **05 Marks**

- Basic Orthopaedic procedures tray
- Minor Orthopaedic procedures tray
- Hip replacement tray
- Knee or Ankle Arthroscopy tray

**NEUROLOGIC PROCEDURES TRAY** **02 Marks**

- Craniotomy tray
- Laminectomy tray

**OTORHINOLARNGOLOGIC (ENT TRAYS):** **02 Marks**

- Basic Ear procedures tray
- Nasal Procedures tray
- Myringotomy tray
- Tonsillectomy and Adenoidectomy tray
- Tracheostomy tray
- Antral Puncture tray

**OPHTHALMIC TRAYS:** **05 Marks**

- Basic Eye procedures tray
- Eyelid and Conjunctival procedures tray
- Basic Eye Muscle procedures tray
- Dacryocystorhinostomy tray
- Corneal Procedures tray
- Cataract Extraction and Lens procedures tray

- Glaucoma procedure tray
- Basic Eye procedures Microscope tray
- Retinal procedures tray

**PEDIATRIC TRAYS:** **03 Marks**

- Pediatric major procedures trays
- Pediatric minor procedures trays
- Pediatric Gastrointestinal procedures trays

**PREPARATION OF PATIENT FOR OPERATION, PRE & POST  
OPERATIVE PATIENT CARE**

**15 Marks**

**PRE-OPERATIVE CONSIDERATIONS:**

- Psychological support of the surgical patient.

**03 Marks**

**PROTECTION OF THE PATIENT IN SURGERY:**

**05 Marks**

- Admission Procedure
- Transfer Procedure Position
- Environmental Controls
- Electro Surgery
- Operative Records
- Counting Procedure
- Sterilization
- Emergencies and Disasters

**SAFETY FOR MEDICAL ASSISTANT, PHARMACIST IN A OPERATION**

**THEATRE:**

**03 Marks**

- In service education
- Body Mechanic
- Fatigue factors
- Radiation Safety
- Infection control
- Chemical hazards.

## **Anatomy and Physiology**

### Course Content

**Unit-I** Introduction to terms used

**Marks 17**

**Unit-II** Organization of body

- |                    |                                 |
|--------------------|---------------------------------|
| • Cell:            | Types, Structures and Functions |
| • Tissues:         | Types, Structures and Functions |
| • Glands:          | Types & Functions               |
| • Membranes:       | Types & Functions               |
| • Organs & Systems |                                 |

**Unit: - III Skeletal systems**

- Bones: types, structure, functions
  - Axial Skeleton
  - Appendicular skeleton
- Joints:- Definition structure and functions

**Unit-IV Muscular system**

- Position and action of chief muscles of the body.

## **Unit-V Cardio-Vascular Systems**

- Heart: Position, Structure differences, name and position of chief blood and lymph vessel and function
- Circulation of Blood: systemic pulmonary and portal circulation coronary circulation
- Cardio-Vascular System
- Heart: position, structure, conduction system, functions and cardiac cycle.
- Blood vessel:- types, Structural differences, name and position of chief blood and lymph vessel and functions
- Circulation of Blood: Systemic Pulmonary and portal circulation coronary circulation
- Blood composition and functions, blood groups and RH factor  
Blood Pressure and Pulse

## **Unit-VI Lymphatic system**

Lymph vessels, glands ducts and lymph circulation, lymph tissues in the body , Spleen and reticulo-endothelial system

## **Unit-VII Respiratory system**

- Structure and functions of respiratory organs
- Physiology of respiration Characteristics of normal respiration and its deviations

## **Unit-VII Digestive system**

Structure and function of organs of digestion

## **Unit-VII Process of digestion and absorption**

Metabolism: meaning and metabolism of food constituents.

## **Unit-IX Excretory Systems**

Organs of Excretion such as –Lungs colon, Kidney and skin  
Structure and function o organs of urinary systems

Structure and functions of the Skin

Fluid and electrolyte balance

### **Unit-IX Nervous system**

- Types, structure and functions of neuron.
- Central Nervous system; Structure and functions
- Autonomic Nervous system: Structure and functions

### **Unit-X Endocrine system**

Structure and functions of pituitary, pancreas, thyroids-parathyroid, thymus and supra renal glands

### **Unit-XII Sense Organs**

Structure and function of eyes, ear, nose and tongue  
Physiology of vision, hearing and equilibrium

### **Unit-XIII Reproductive system**

- Structure and functions of female reproductive and accessory organs Process of reproduction, menarche, menstrual cycle and menopause
- Reproductive health
- Structure and function of male reproductive organs.

## **Applied physics and chemistry**

### **Unit-I Unit and Measurement**

- Introduction
- Units of length
- Unit of Mass
- Unit of Equivalents
- Principles of Physics

### **Unit-II Mater**

- States of matter

- General properties of solids
- General properties of liquids
- Practical Application

### **Unit-III Mechanics**

- Centre of Gravity
- Archimedes principle
- Traction
- Friction
- Levers and pulleys

### **Unit-IV Pressure**

- Introduction
  - Concept of pressure
  - Hydrostatic pressure
- Atmospheric pressure
- Barometer
- Siphon
- Effects of changes in atmospheric
- Pressure on Human Body
- Practical Application

### **Unit-V Heat**

- Production of Heat
- Measurement of Temperature
- Clinical Thermometer
- Transmission of
- Heat Application of
- Heat Sterilization

### **Unit-VI Ionizing and Radiation**

- Radioactivity
- Radioisotopes
- Clinical Uses of Radioisotopes and
- Radio Elements

- Radiation Hazards

## Chemistry

Unit I Oxygen

Unit II Water

Unit III Solutions

Unit VI Ionization

Unit VI Acids and Bases

Unit VI Salt

Unit VII Metals and Non –Metals

**Marks 07**

### Nutrition

Unit Introduction

- Changing concepts-foods habits and customs
- Relationship of nutrition to health

### Unit II Food

- Constituents
  - Normal Requirements Sources
  - Deficiencies
- Balance Diet **Unit III Normal dietary requirements and deficiency diseases of each of the constituents of food**
- Factors affecting selection and planning of meals
  - Method of calculating normal food requirements
  - Low cost menu

Unit VI **Community Nutrition**

Marks 15

- Concept of community nutrition
- Nutritional needs for special groups i.e., infants, children, pregnant women, lactation mothers, old people etc.
- Nutrition education: needs and methods
- Substitute for non-vegetarian food
- Methods of improving an ill-balanced diet



- Community nutrition programme
- Food hygiene and law related to food.
- Sterilization/Disinfection/Bio-Medical Waste/ sepsis, Asepsis
- Natural, Physical, Chemical and Mechanical method etc
- Community Health

### **Public Health and Hygiene**

- Modern concept of public health
- Comprehensive Health care
- Five year plans, priorities allocation of medical and health services
- Health and family planning organizations set up at the nation the state, the District and Block levels
- Functions of primary Health Centre , CHC Distt. Hospital and Sub centers.

### **Unit-II Epidemiological Methods Approaches and investigations**

#### **Unit-III Health Education**

- Health Education(Information, Education and Communication)
- Principles Ethics, Attributes of Health Educator
- Various Methods of Health Education

#### **Unit-IV National Health Programme**

- National Malarial Eradication programme
- National leprosy Eradication programme
- National tuberculosis control programme
- National Aids control programme
- National programme for control of Blindness
- National iodine Deficiency Disorders programme
- National Universal Immunization Programme
- National Family Welfare programme
- National Guinea-Worm Eradication programme
- National Cancer Control Programme
- National filarial Control Programme

- National Water Supply and Sanitation Programme

**Unit V Records Keeping and vital statistics**

**Unit –VI Minor Ailments**

- Classification,, early detection and management
- Standing instructions/orders

**Unit –VI Environmental Hygiene**

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**ANNEXURE “Q”**  
**Jammu & Kashmir Services Selection Board**  
**Junior Dental Technician**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**General Human Biology & Disease:-**

**15 Marks**

- 1.Elementary Physics and Chemistry.
- 2.Characteristics of living matter.
- 3.The Structure of living matter.
- 4.The Tissues
- 5.Systems and various parts of human body.
- 6.Development and types of Bones.
- 7.Bones of Head & trunk.
- 8.Bones of the Limb.
9. Joints and Articulations
10. Structure and Action of muscles
11. The Chief Muscles of the Body
12. The Blood
13. The heart and Blood Vessels
14. The Circulatory system
15. The Respiratory System
16. The Digestive System
17. The Liver , Biliary system and -----
18. Nutrition and Metabolism
19. Endocrine Glands and Exec-----
20. The Urinary System
21. The Nervous system.
22. The Ear.
23. The Eye
24. The Skin
25. The Reproductive System etc.

**Dental Anatomy & Physiology Pharmacology, Pathology including  
Microbiology.**

**General & Dental Anatomy.**

**10 Marks**

- Elementary Knowledge of the jaws and teeth, Important between deciduous and permanent teeth. Chronology of eruption , elementary knowledge of occlusion of teeth. Relationship of teeth with investing tissues, muscles of mastication facial expressions and elementary knowledge of temporary mandibular joints.

**General & Dental Physiology and Histology. 10 Marks**

- Elementary knowledge of the structure and function of various dental and oral tissues e.g. gingival, peridontal membrane, alveolar process, cementum, enamel, dentine, mucous-membrance , pulp.
- Salivary glands and functions of salivary, mastication.

**General and Dental Pharmacology. 05 Marks**

- The therapeutics of drugs commonly used in dentistry and their effects. Practical diagnosis, dispensing of drugs.

**Dental Radiology 05 Marks**

- Technical aspect of Dental Radiograph i.e. the taking processing and mounting of Dental Radiographs , Radiation Hazards and protection against radiation.

**GENERAL DENTISTRY INCLUDING ORAL SURGERY. 35 Marks**  
**Chairside Assistants.**

1. Reception of Patient.
2. Lay –out of reception room and Dental Surgery and Hygienist Clinic.
3. Chairside Assistance and Techniques
4. Local anesthesia and equipment.
5. Methods of Sterilization and care of Dental Instruments.
6. Basic principles in surgery.
7. The use of instruments in Dental practice.
8. Examination of Oral Cavity and Charting of teeth etc.

9. Instructions to patients and recalls.

10. Maintenance of Dental Unit/Instrument.

**PROSTHODONTICS WITH COSMETOLOGY.**

**10 Marks**

1. Introduction and applied anatomy.
2. History taking and Examination.
3. Simple surgical preparation, impression taking.
4. Selection of patient.
5. Phonetics and anatomical articulation.
6. Clasp retained partial denture-plan , treatment, design and management.
7. Partially edentulous arches.
8. Connectors- major and minor and functions.
9. Retainers direct and indirect.
10. Dentures functions, biomechanics, Survey, diagnosis, planning ,  
Partial and temporary relining, resilient lining , aids to retention and relief.
11. Cosmetology and appearance.
12. Dental Materials and its manipulation.

**ORTHODONTICS:-**

**10 Marks**

1. Etiology, Classification and malocclusion.
2. Skeletal maturation, growth, dentition with special reference to endocrines.
3. Classification of dentofacial abnormalities , anthropometrics, cephalometrics.
4. Examination of patient, differential diagnosis and treatment planning .
5. Principle of mechanotherapy
6. Basics about tweed method, twin wire appliance, activators , plates appliances including tissue reaction and evaluation of treatment.

**GENERAL HYGIENE, NUTRITION, COMMUNITY WELFARE,**

**CONSERVATIVE & PREVENTIVE DENTISTRY**  
**DENTAL HYGIENE AND ORAL PROPHYLAXIS**

**10 Marks**

1. Definition of Hygiene.
2. Objective of Dental Hygiene.
3. Oral prophylaxis-various methods.
4. Stains on teeth-and their management.
5. Dental Plaque, Dental calculus.
6. Brief description and the role of oral Prophylaxis in Gingivitis, Peridontitis etc.

**CLINICALS:-**

1. Instruments, technique of Oral Prophylaxis.
2. Polishing of teeth.
3. Topical application of fluorides.
4. Care of Oral Cavity and appliances during treatment of Maxillo-facial cases.

**CONSERVATIVE & PREVENTIVE SURGERY.**

**10 Marks**

1. Dental Caries-Prevalence and Prevention.
2. Periodontal Diseases, saliva in relation to Dental Health and diseases.
3. Dental Health & Diseases. Dietary habits and dental Health, Malocclusion, Oral Cancer.

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**ANNEXURE “R”**  
**Jammu & Kashmir Services Selection Board**  
**Laboratory Assistant**  
**(Health & Medical Education Department)**  
**Multiple Choice Based Written test**  
**Reference Guidelines and Syllabus**  
**120 Marks/120 Minutes**

**ANTOMY THEORY**

**10 Marks**

1. INTRODUCTION
  - Different Parts of the human body, Common Anatomical Terms, Anatomical Positions and important planes.
  - Animal Cell.
  - Tissue of the body, classification and function.
  - Primary tissues of the body.
2. SKELETAL SYSTEM
  - Joints & Movements
  - Muscle & Monce.
3. GASTRO-INTESTINAL SYSTEM
  - Mouth and Pharynx.
  - Salivary Glands and Tonsils.
  - Oesophagus and Stomach.
  - Location of different organs in the Abdomen in situ.
  - Liver and Gall Bladder.
  - Spleen and Pancreas.
4. GENITO-URINARY SYSTEM
  - Kidney
  - Ureters, Bladder and Urethra.
  - Male Reproductive System.
  - Female Reproductive System.
5. RESPIRATORY SYSTEM
  - Thoracic Cavity, Pleura and Lungs.
6. CARDIO-VASCULAR SYSTEM
  - Heart and Pericardium.
  - Arterial System.
  - Venous and Lymphatic System.
7. NERVOUS SYSTEM
  - Meanings and cerebrospinal fluid.

- Brain, Spinal Cord and the Nerves.

**8. LOCO-MOTOR SYSTEM**

- Parts of Upper Limb: - Bones Land marks and important vessels.

**PHYSIOLOGY THEORY**

**10 Marks**

**1. BLOOD**

- Composition and General function of Blood.
- Description of Blood Cells: - Normal Counts and function.
- Anti-conagulants. 03

**2. CARDIO-VASCULAR SYSTEM** 01

- Functions of hart and blood vessels.
- Circulation:- Systemic Circulation  
Pulmonary Circulation.

**3. RESPIRATORY SYSTEM** 02

- Name of the Structure involved in respiration and their function
- External and Internal Respiration. How respiration and expiration are brought about.
- Transport of O<sub>2</sub> and CO<sub>2</sub> in the blood.
- Definition of Respiratory Rate, Tidal Volume, Vital Capacity, Cyanosis, Hypoxia.

**4. EXCRETORY SYSTEM** 01

- Functions of Kidney.
- Formation & Composition of Urine-normal and abnormal constituents.

**5. SKIN**

- Functions of Skin. 01

**6. DIGESTIVE SYSTEM** 02

- Composition and functions of Saliva. Mastication and deglutition.
- Functions of Stomach, Composition of Gastric Juice, Pancreatic Juice, Bile and Succusentericus.

**7. ENDOCRINE GLANDS** 01

- Definition, name and the hormones secreted by them.
- Major action of each hormone.

**8. REPROCUCTIVE SYSTEM** 02

- Male Genital System.
- Female Genital System.



- Names of Primary and Accessory Sex organs in male and female, Secondary Sexual characters in male and female.
  - Functions of Ovary, formation of Ova, actions of Ovarian Hormones.
  - Functions of Testis – Spermatogenesis and actions of testosterone.
9. BLOOD GROUP, ABO and Rh, basis for classification, basis for determination, importance and Blood Groups. 01
10. CEREBROSPINAL FLUID, Formation, composition and functions.01

### **BIO-CHEMISTRY THEORY**

**10 Marks**

1. Elementary knowledge of Inorganic Chemistry – Atomic Weight, Molecular weight, Equivalent weight-Acids, basis and Salts-indicators-molar solutions, Buffer Solution, Titration (Acid Base) Definition of Solutions. Methods of expressing concentration: Dilution.
2. Elementary knowledge of Organic Chemistry-Organic Compounds. Aliphatic and Aromatic. Alcohols, Aldehydes, Ketones, Amines, Esters, Phenol, Acids Colloids etc.
3. Elementary of Analytical Chemistry-Instrumentation, Centrifuge Balances, Colorimeter, Spectrophotometer, FlamephotometerFluorimeter etc.

### **CLINICAL BIOCHEMISTRY THEORY**

**20 Marks**

1. Aims and Scope Biochemistry.
2. CARBOHYDRATES – Importance, Definition, Classification, some properties.
3. PROTEINS-Amino Acids, essential amino acids, peptides, denaturation of proteins, Physiologically important proteins, functions of plasma proteins.
4. LIPIDS-Definition, classification, steroids, examples.
5. NUCLEICACIDS-DNAAND RNA, their importance.
6. HAEMOGLOBIN.
7. ENZYMESAND CO-ENZYMES-Elementary.
8. GASTRIC JUICE collection, Acidities.
9. CARBOHYDRATE-METABOLISM- elementary aspects, definition of Glycolysis, Glycogenoysis Hormonal regulation of Blood Sugar, Diabetes-Mellitus-Ketosis, Gcosuria, Renal Glycosuria, Pentosuria.
10. METABOLISM OF LIPIDS – elementary aspects, Triglyeerides, Cholestrol. PlasmanLipoprotiens-Ketone bodies and Ketonuria.
11. PROTIEN METABOLISM – Formation of Urea. Creatinine Proteinuria. Edema, Transaminases.
12. WATER AND MINERAL METABOLISM – Dehydration, Calcium, Phosphorus, Sodium, Potassium, Chloride, Iron, Lodine, their physiological functions and disease state.
13. HARMONES – definition, functions of some important hormones.
14. Blood and cerebrospinal Fluid functions of Blood & CSF.
15. Urine Normal and abnormal tests.

1. Requirement and use of Common Laboratory Equipment
  - Incubator, Hot Air Oven. Autoclave. Water Bath. Anaerobic Jar. Vacuum Pump. Media Pouring Chamber, Refrigerator. Centrifuge.
2. Microscope
  - Principal, Operation, Care and use of Microscope.
3. Sterilization and Disinfection
  - Classification and general principles of Sterilization. Physical. Chemical and Mechanical Methods. Disposal of contaminated Media, Syringes, Glassware, Apparatus.
4. Classification and Morphology of Bacteria
  - Brief Outline of :-
    - Structure of Cell, Capsule, Flagella and Spores.
    - Growth of Bacteria
    - Nutrition of Bacteria.
5. Staining of Bacteria
  - Simple, Grams, Ziehl-Neelsen, Albert. Spore Stain.
  - Composition and preparation of staining reagents.
6. Cultivation of Micro-Organisms-I (In detail)
  - Classification of Media, Composition of Laboratory culture Media and Special Media.
7. Cultivation of Micro-Organisms-II (In detail)
8. Identification of Bacteria:
  - Cultural Characters, Bio-Chemical reactions and serotyping.
9. Normal flora of micro-organisms in the human body.
10. Gram Positive and Gram Negative co---Staphylo----PenumococcusNeissriae (In brief).
11. Gram Negative Bacilli:
  - Salmonella. Shigella. E. Coli. Klebsiella, Proteus. Pseudomonas Vibrio cholera Haemophilus. (In Brief)
12. Gram Positive Bacilli:
  - Aerobic
    - a) Corynebacterium diphtheria. (In Brief).
    - b) Mycobacterium tuberculosis and Mycobacterium leprae.

- Anaerobic bacilli – Clostridia. (In Brief).
13. Antibiotic Sensitivity test – Principles and methods of determination of sensitivity. Candida. Asperigillus. Dermatophytes. (In Brief).
  14. HIV & AIDS:
    - Brief Account
  15. Immunity, Antigens, Antibodies and antigen antibody reaction and their applications in diagnosis of diseases.
  16. Principles, Procedures and Diagnostic significance of agglutination. Precipitation. Neutralisation and complement fixation reactions.
  17. Collection and processing of Clinical materials like Sputum. Urine Swabs. Stool. Blood, CSF and Aspirates.

## **CLINICAL PATHOLOGY AND HAEMATOLOGY**

**23 Marks**

### **THEORY:**

1. Introduction of Haematology.
2. Collection of Blood
3. Antieoagulants.
4. Red Cell Count:
  - Haemocytometer
  - Methods
  - Caloculation.
5. White Cell Count. (Total Leucocyte Count):
  - Morphology of White Cells.
  - Normal Values.
  - Romanowsky Stains
  - Staining Precedures
  - Counting Methods.
6. Absolute EosiNophil Count.
7. ErythrocyteSedimentaion Rate (ESR)
  - Westergren's Method.
  - Wintrobe's Method.
  - Factors effecting ESR.
  - Importance and Limitations.
  - Normal Values.
8. Packed Cell Volume.
  - Macro and Micro Methods.
  - Normal Values.

9. Haemoglobin Estimation and its clinical importance.
10. Red Cell Indices
  - Calculations and Importance.
11. Retienloocyte Count:
  - Methods
  - Appearance
  - Normal Values.
12. Sickle Cell Preparation.
13. Osmotic Fragility Test:
  - Scorning Test.
  - Qualitative and Quantitative Test
  - Normal Values.
  - Factors allocating fragility.
  - Interpretation.
14. Peripheral Blood Film
15. Preparation of Bone Marrow Smears
16. Coagulation Tests.
  - Process of Coagulation.
  - Factors of Coagulation.
  - Tests of Coagulation.
    - a. Bleeding time.
    - b. Whole Blood Coagulation Time.
    - c. Clot Retraction Test.
    - d. Prothrombin Test.
    - e. Toomiquet test.
    - f. Platelet Count.
17. Urimanalysis.
  - Normal Constituent.
  - Physical Examination.
  - Chemical Examination.
  - Microscopic Examination.
18. CSF Examination.
  - Normal and abnormal Cell Count.
19. Semen Analysis.
  - Physical Preterition.
  - Motility.
  - Morphology.
20. Coomb's Test

**HISTOTECHNOLOGY THEORY****10 Marks**

1. Introduction.
2. Cell, Tissues and Their functions.
3. Examination Methods of Tissues and Cells.
4. Fixation of Tissue:
  - Classification of fixatives:
    - a) Simple fixatives and their properties.
    - b) Micro anatomical fixatives.
    - c) Cytological fixatives.
5. Tissue Processing:
  - Collection of Specimen.
  - Labeling and Fixation.
  - Dehydration.
  - Cleaning
  - Impregnation.
6. Section Cutting:
  - Microtomes and their knives.
  - Techniques of Section Cutting.
  - Mounting of Sections.
  - Frozen Section.
7. Staining.
  - Dyes and their properties.
  - Theory of Staining.
  - Staining Techniques with haemotoxlin and cosin.
  - Mounting of Sections.
  - Common Special Stains.
8. Decalification.
  - Fixation.
  - Decalification
  - Detection of end point.
  - Neutralization and processing.
9. Exfoliative Cytology:
  - Types of Specimen and preservation.
  - Preparation and fixation of Smears.
  - Papanicolaou Staining Technique.
  - Sex Chromatin Staining.
10. Museum Technique.
  - Reception of Specimen.
  - Preparation of Fixation.

- Restoration of Colour.
- Preservation.
- Presentation.

**11. Autopsy Technique:**

- Assisting in Autopsy.
- Preservation of Organs & Processing of Tissues.

**12. Waste disposal and safety in Laboratory.**

**LABORATORY MANAGEMENT AND ETHICS**

**05Marks**

**1. Role of the Laboratory in the Health Care Delivery System:**

- General
- Human Health & Diseases.
  - a. Types of Diseases.
  - b. Process of Diagnosis
  - c. Laboratory at different levels.
  - d. Duties and responsibilities of Laboratory personnel.

**2. Laboratory Service in the Health Care Delivery System in India.**

- Laboratory Service in India.
- The Health Administration System in India.
  - a. At the National Level.
  - b. At the State Level.
  - c. At the District Level.
  - d. At the Village Level.
  - e. Voluntary health Organizations in India.

**3. Laboratory Planning:**

- General Principals.
- Laboratory Goals.
- Operational Data.
  - a. Market Potential
  - b. Hospital/Laboratory relatives.
  - c. Competitions.
  - d. Laboratory Trends.
  - e. Planning at different levels.
  - f. Guiding Principles for planning Hospital laboratory Services:
    - Factors.
    - Guiding Principles for Planning.
    - Functional Criteria.
    - Operational demand.
    - Sections of a Hospital Laboratory.
    - Common area.

- Design aspect.
  - Space requirement.
- g. Planning for a basic health Laboratory.

**4. Laboratory Organization (Laboratory Management Techniques):**

- General Principles.
- Components and functions of a laboratory.
- Staffing the Laboratory.
- Job Descriptions.
- Job Specification
- Work schedule
- Personnel re-arrangement and work load assessment.

**5. Care of Laboratory Glassware, Equipments and Instruments and Chemicals etc.**

- General Principles.
- Care and cleaning of glassware.
- Making simple glass wares in Laboratory.
- Care of equipments, instruments and apparatus etc.
- Laboratory Chemicals, their proper use and care.
- Labelling.

**6. Specimen Handling**

- General Principles.
- Collection Techniques and containers for specimen.
- Types of Specimens.
- Specimens entry.
- Specimens transfer and distribution and re-assignment.
- Specimens disposal.
- Specimens Preservation.

**7. Laboratory Safety.**

- General Principles
- Laboratory Hazards.
- Safety Programmes.
- First-Aid

**8. Blood Bank. 10 Marks**

- i) Introduction and Historical aspects.
- ii) Human Blood Group Antigens, their inheritance and antibodies.
- iii) ABO Blood Group System.
  - a) Sub-Group
  - b) Source of Antigens, types of antibodies.
- iv) Rh. Blood Group System.
  - a) Nomenclature and types of Antigens.
  - b) Mode of inheritance.
  - c) Types of Antibodies.
- v) Other Blood Group System.

- Vi) Techniques of Grouping and Cross Matching.
- Vii) **Blood Collection.**
  - a) Selection and screening of Donor.
  - b) Collection of Blood.
  - c) Various anticoagulants used.
  - d) Storage of Blood.
- Viii) **Blood Transfusion:**
  - a) Procedures and Complications.
  - b) Blood Transfusion Reaction, Types, Investigation and Presentation of Transfusion Reaction.
- IX) **Coomb's Test.**
- X) **Organization, Operation and Administration and Blood Bank.**

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**ANNEXURE “S”**  
**Jammu & Kashmir Services Selection Board**  
**X-RAY ASSISTANT**  
**Multiple Choice Based Written test**  
*Reference Guidelines and Syllabus*  
*120 Marks/120 Minutes*

**1) ANATOMY AND PHYSIOLOGY**

**15 Marks**

**GENERAL:**

Introduction to the Human body. Terms used in Anatomy, (Surface anatomy, markings and locations of different body parts and important body planes.  
Planes and Regions of Thoracic, Abdominal and pelvic Cavities.

**Cardiovascular System.**

Heart, pericardium, Arterial system, Venous system, Capillary, systemic circulation.

**Digestive System:**

Mouth, oesophagus, stomach, small intestine, large intestine, spleen, liver, Salivary Gland, Gall Bladder, pancreas, Physiology and Digestion Absorption and Assimilation of Food.

**Respiratory System:**

Noise, pharynx, larynx, trachea, Bronchi, lungs, pleura, physiology of Respiration-Expiration and Inspiration, Internal and External Respiration, Breathing control, vital capacity. Tidal volume and Dead space.

**Reproductive system:**

a) Male Reproductive system: Male Reproductive organs, Spermatogenesis, Testosterone and Secondary sexual characters.

Female Reproductive System: Vulva, internal reproductive organs menstrual cycle, ovarian hormones & Female breast.

**Excretory System:**

Introduction to Excretory body organs, structure of kidneys, ureters, Urinary, Bladder, Urethra, Physiology of filtration Reabsorption and secretion.

**Nervous System:**

Brain Meninges, ventricles spinal cord nerves and cerebro spinal fluids.

### **Endocrine system –**

Definition, Pituitary Gland, Pineal gland, Thymus Gland, Adrenal Glands, Thyroid, Parathyroid Glands.

### **Sense Organs-**

Structure and function of Eye, Skin, Ear and Tongue.

### **Musculoskeletal System-**

Skull, vertebral column, shoulder girdle, Thoracic cage. Bones upper limbs, Bones of lower limbs, type of bony joints and movements.

### **2) Transformers-**

**15 Marks**

Principles construction of step up & down and Auto transformers, construction of high tension Transformers, rectification. Self rectification.

### **X-Ray**

Production of x-ray, properties, interaction with matter (Photo electric effect and pair production) luminescent effect, photographic effect, ionizing effect & biological effects.

### **Units and Measurements of X-Rays-**

Roentgen, Rad, Rem, R.B.E. Radiation badges, ionization chambers.

### **x-Ray Tube-**

Construction of x-ray tube Targets, cooling and insulation, x-ray circuits, timers and rectifiers in x-ray, circuits, inter locking circuits, stationary and Rotatory anode tube.

Quantity and Quality x-ray, H.V.T or VVL linear absorption coefficient grids, cones cylinders, filters, focal spot size LBD FFD or LSD and OFD  
Fluoroscopy and Image intensifier

### **3) Radiographic photography Techniques- (Dark room Techniques)**

**25 Marks**

#### **Dark Room-**

Definition and location of dark room, ideal design of dark room, light and radiation protection devices, safe light test, ventilation, dry and wet benches, Duplicator.

### **Radiographic Films-**

Ortho-chromatic films , panchromatic films, Base, Bonding layer, emulsion and super coating of films. Non screen films CTA base and polyester base films. The structure of Double coated & single coated film.

### **X-Ray Cassettes-**

Construction of various cassettes, cassettes care, mounting of intensifying screen in cassettes.

### **Intensifying screens-**

Luminescence (Phosphorescence and fluorescence) construction of screens. Type of phosphors and pigments film screen contact, speed of screens-slow parafast care of intensifying screens . Intensification factors numerical proof and rare earth screens.

- a) Mounting of intensifying screens.
- b) Screen film contact.

### **Film Processing-**

Auto processing material for processing equipment and annual processing control on temperature chemical in Dark room the PH Scale.

X-ray Developer  
X-Ray Fixer  
Film Rinsing Washing & Drying  
Preparation of processing chemicals, loading and unloading of cassettes,

### **Presentation of Radiograph-**

record filling and report distribution.

### **Film Artifacts-**

Definition, type and causes of radiation and photographic artifacts, factors affecting the quality control of radiograph.

### **4) Radiographic General Procedures**

**25 Marks**

Introduction- The Radiographic image (image formation, magnification image Distortion, Image, sharpness, Image contrast) Exposure factor and Anatomical Terminology.

### **Skeletal System-**

Upper Limb- Procedure for thumb, fingers, meta carpals, hand carpometacarpel joints, wrist joint, carpo-radio-ulnar joint, forearm, elbow joint, arm, special views for scaphoid bone,

olecranon process , supra condylar projection in various type of injured patients.

b) Lower limb- Procedure for toes, meta tarsals, complete foot, tarsometatarsal, talo calcaneal joint, leg with ankle joint leg with knee joint, knee joint, thigh with hip joint.

c) Shoulder Girdle and Bony thorax- Procedures for scapula clavicle and head of humerus sternoclavicular joint , special views for clavicle. Head of humerus and scapula in various types of injured or dislocation cases.  
d) Vertebral Column- Normal curvature relative levels of vertebrae, procedures for atlanto-occipital joint, odontoid process, cervical spine , cervicodorsal spine , dorsal spine, dorso-lumbar spine, and spondylolysis.

### **Chest-**

Procedures for chest at six feet, lying down and erect positions, inspiration and expiration views , special views like lordotic , decubitus, MMR portable telerradiography, chest in pregnancy. High Kilovoltage technique.

### **Abdominal Pelvis-**

Preparation for procedure, procedure for upper abdomen, lower abdomen, KUB Gallbladder Stomach , small intestine and large intestine in supine and erect position, special views in case of perforation etc.

### **Sinus-**

Procedures for paranasal sinuses, (frontal, ethmoid, sphenoid and maxillary sinuses ).

### **Soft Tissue Radiography-**

Procedures for STM , STN abdomen and other body organs.

invetogram procedures, manipulation of positions, immobilization , exposure, FFD in abnormal conditions of patients.

## **Hospital Practice and Care of patients-**

Set up of radiology department in Hospital, Hospital staffing and organization . Patients registration , record filling , cases put up and dispatch devices, medico legal aspect of profession . Professional relationship of radiographer with patient and organization staff.

### **5)Special Investigation**

**15 Marks**

#### **Urinary Tract-**

Plain Radiographs for UB Intravenous pyelograph, (IVP or IVU)Retrograde pyelography , Micturting –cystourethrogram , Retrograde Urethrogram

#### **Gastro-Intestinal Tract-**

Plain Radiographs, abdomen, Barium Swallow, Bameal UGI Ba meal ET, Ba Enema, double contract Ba enema and instant Ba enema, Miscellaneous Procedures, Gastrograffm study, fluoroscopy,

#### **Biliary Tract-**

Introduction to biliary contrast oral choleystography (OCG) pancreatograpy (ERCP)

HSG

Fistulogram

Sinogram

6) Basic principle and application of computerized tomography, ultrasound Magnetic resonance Imaging, Computer Radiography and Digital Radiography

**15 Marks**

7) Contrast Agents, Contrast Reaction and their management, Emergency Drugs used in Radiology Department

**10 Marks**

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Secretary  
J&K Services Selection Board,  
Jammu