APPENDICES

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VIII. FINAL - BIOLOGY ACHIEVEMENT TEST – SCORING KEY

IX. ARTICLES PUBLISHED WITH ISBN/ISSN
RESEARCH TOOL

Programme : Ph.D in Education

Title : “A STUDY ON INTERPERSONAL INTELLIGENCE AND EMOTIONAL MATURITY OF HIGHER SECONDARY +1 BIOLOGY STUDENTS IN RELATION TO THEIR ACHIEVEMENT IN TIRUNELVELI DISTRICT”

Guide : Dr.T. KANAKARAJ, Ph.D

Investigator : V. KASIRAJAN M.Sc (Bot)., M.Sc (Psy)., M.Ed., M.Phil., NET (edn.).

Dear Student,

I would like to conducte a survey for my thesis entitled “A Study on Interpersonal intelligence and Emotional maturity of higher secondary +1 Biology students in relation to their Achievement in Tirunelveli district” as a part of my Ph.D work under the guidance and supervision of Dr.T.Kanakaraj, Assistant Professor and Research Coordinator, Centre For Research in Education, V.O.Chidambaram College of Education, Thoothukudi.

The data collected will be used for the research purpose only. The personal aspects of the subjects will be kept confidential. The following statements have five options for answering in the research tool. Kindly read the statements carefully and select the best option against each statement by putting a tick (✓) mark in the relevant column.

Thanking you,

Yours truly

(V.KASIRAJAN)
PERSONAL DATA FORM (PDF)

Please put a (√) mark in the appropriate places.

1. Gender : Male / Female
2. Community : SC & ST / MBC / BC / OC
3. Religion : Hindu / Christian / Muslim
4. No. Of siblings : One / Two / More than Two
5. Locality of student : Rural / Urban
6. Residence : Day-scholar / Hosteller
7. Type of family : Nuclear / Joint
8. Medium of instruction : Tamil / English
9. Locality of school : Rural / Urban
11. Type of school : Govt. / Unaided / Govt. aided
12. Father’s education : Illiterate / School level / College level / Professional level
13. Mother’s education : Illiterate / School level / College level / Professional level
14. Father’s occupation : Unemployed / Farmer / Govt./ Private
15. Mother’s occupation : House wife/ Farmer / Govt./ Private
16. Parents monthly income : Upto Rs. 10000/ 10000-20000/ 20000-30000/ Above 30000
17. No. of schools transfer : One time/ Two times / Three times / More than three times
18. Social activities : NCC / NSS / RRC / None of these
19. Games you like : Individual games / Group games
**Preliminary Draft - Interpersonal Intelligence Scale (IIS)**

Read each of the following statements and put a tick (✓) mark in the appropriate column.

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Statements</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am concerned about a person when he is really in trouble.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I have a tendency to serve others.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I can pick up quickly if someone says one thing but means another.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Always I consider the opinions of my fellow beings.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I trust my instincts, and I could following them.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>It upsets me to see an animal in pain.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I am sad when I see a person begging</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I react suddenly while somebody teases my friends without any reason.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Always I am trying to appreciate the goodness in others.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10 I can read the emotions of others.

11 I hesitate to guide a stranger when he / she seeks help.

12 I think I am an emotionally balance person.

13 When I talk to people, I tend to talk about their experiences rather than my own.

14 When I was childhood I cut worms and happy to observe what was happening

15 I like learning more about myself and my inner psychology.

16 I am well aware of both my strengths and weaknesses.

17 If I visit a place of an accident of I can and try to help in that situation.

18 I have two or more close friends.

19 I feel comfortable in the midst of a crowd.

20 I would rather like to spend my evening in a lively party that than to stay at home alone.
Friendships and relationships are just too difficult, so I tend not to bother with them.

When I am trouble, I like to seek out another person for help than attempt to solve it out my own.

I prefer to undertake projects alone. I like flying solo.

Always I seem to be active.

My friends sometimes tell me, I have gone too far with teasing.

I enjoy socializing with peers.

I have a warm relationship with my parents and teachers.

I like to spend leisure time in club activities / association activities.

I am a leader.

I think most of my activities in a group are acceptable by others.

I am interested in peer learning.

I like to get involved in social activities.

I enjoy the challenge of teaching another person or group of
<table>
<thead>
<tr>
<th>Page</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>I prefer group sports like badminton, volleyball rather than individual sports such as swimming, chess.</td>
</tr>
<tr>
<td>35</td>
<td>Many times I become the leader in class or group.</td>
</tr>
<tr>
<td>36</td>
<td>I seem to be an attractive person in my campus.</td>
</tr>
<tr>
<td>37</td>
<td>I have a good communicative skill.</td>
</tr>
<tr>
<td>38</td>
<td>I communicate well with people and can help resolve disputes.</td>
</tr>
<tr>
<td>39</td>
<td>I am a good companion among poor group members.</td>
</tr>
<tr>
<td>40</td>
<td>I participate in co-curricular activities.</td>
</tr>
<tr>
<td>41</td>
<td>I have the ability to co-ordinate activities in a group work.</td>
</tr>
<tr>
<td>42</td>
<td>I involve myself in social service programmes.</td>
</tr>
<tr>
<td>43</td>
<td>I appreciate others skillful and efficient activities.</td>
</tr>
<tr>
<td>44</td>
<td>I am very independent and self directed. I don't like being told what to do.</td>
</tr>
<tr>
<td>45</td>
<td>I take care of my elders guidance.</td>
</tr>
<tr>
<td>46</td>
<td>I like to collect more information rather than simply giving any guidance.</td>
</tr>
<tr>
<td>Page</td>
<td>Text</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>47</td>
<td>Friends ask my advice because I seem to be a natural leader.</td>
</tr>
<tr>
<td>48</td>
<td>Without getting suggestion of my colleagues, I don’t solve my problem individually.</td>
</tr>
<tr>
<td>49</td>
<td>If I read a book, I share with my friends.</td>
</tr>
<tr>
<td>50</td>
<td>I can guide others in proper manner.</td>
</tr>
<tr>
<td>51</td>
<td>I like to assess the circumstances before I form any judgment.</td>
</tr>
<tr>
<td>52</td>
<td>I am one of the members in counseling programmes of my school.</td>
</tr>
<tr>
<td>53</td>
<td>I like to be a role model to others.</td>
</tr>
<tr>
<td>54</td>
<td>I am quite good at solving other’s problems.</td>
</tr>
<tr>
<td>55</td>
<td>I think that good manners are the most important thing a parent can teach their child.</td>
</tr>
<tr>
<td>56</td>
<td>Sometimes I act as an arbitrative person in my group.</td>
</tr>
<tr>
<td>57</td>
<td>I am interested to listen to people who do not belong to my caste / colour.</td>
</tr>
<tr>
<td>58</td>
<td>I respect traffic rules.</td>
</tr>
<tr>
<td>59</td>
<td>I think it is important to have faith in god.</td>
</tr>
<tr>
<td>No.</td>
<td>Statement</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>60</td>
<td>I must be able to listen and respect others’ opinions.</td>
</tr>
<tr>
<td>61</td>
<td>I always obey elders.</td>
</tr>
<tr>
<td>62</td>
<td>I have an enthusiasm to imibe the great values from various religions.</td>
</tr>
<tr>
<td>63</td>
<td>Always I am trying to give respect to my teachers.</td>
</tr>
<tr>
<td>64</td>
<td>I tend to have very strong opinions about morality.</td>
</tr>
<tr>
<td>65</td>
<td>I think giving priority to the helpless in a good habit.</td>
</tr>
<tr>
<td>66</td>
<td>In a conversation, I tend to focus on my own thoughts rather than on what my listener might be thinking.</td>
</tr>
<tr>
<td>67</td>
<td>I respond to all people enthusiastically, free of bias or prejudice.</td>
</tr>
<tr>
<td>68</td>
<td>I feel like people of all ages like me.</td>
</tr>
</tbody>
</table>
**APPENDIX-III**

**FINAL TOOL - INTERPERSONAL INTELLIGENCE SCALE (IIS)**

Read each of the following statements and put a tick (✓) mark in the appropriate column

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Statements</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am concerned about a person when he is really in trouble.</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I have a tendency to serve others.</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Always I consider the opinions of my fellow beings.</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I am sad when I see a person begging.</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I react suddenly while somebody teases my friends without any reason.</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Always I am trying to appreciate the goodness in others.</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I can read the emotions of others.</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I hesitate to guide a stranger when he / she seeks help.</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>When I talk to people, I tend to talk about their experiences rather than my own.</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>I visit a place of an accident of I can and try to help in that situation.</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>I have two or more close friends.</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12 I feel comfortable in the midst of a crowd.
13 I would rather like to spend my evening in a lively party than to stay at home alone.
14 When I am trouble, I like to seek out another person for help than attempt to solve it out my own.
15 Always I seem to be active.
16 I enjoy socializing with peers.
17 I have a warm relationship with my parents and teachers.
18 I like to spend leisure time in club activities / association activities.
19 I think most of my activities in a group are acceptable by others.
20 I am interested in peer learning.
21 I like to get involved in social activities.
22 I enjoy the challenge of teaching another person or group of people, what I know how to do.
23 I prefer group sports like badminton, volley ball rather than individual sports such as swimming chess.
24 Many times I become the leader in class or group.
25 I seem to be an attractive person in my campus.

26 I have a good communicative skill.

27 I am a good companion among poor group members.

28 I participate in co-curricular activities.

29 I have the ability to co-ordinate activities in a group work.

30 I appreciate others skillful and efficient activities.

31 I take care of my elders guidance.

32 I like to collect more information rather than simply giving any guidance.

33 Without getting suggestion of my colleagues, I don’t solve my problem individually.

34 If I read a book, I share with my friends.

35 I like to assess the circumstances before I form any judgment.

36 I am one of the members in counsilling programmes of my school.

37 I like to be a role model to others

38 I am quite good at solving other’s problems.

39 Sometimes I act as an arbitrative person in my group.

40 I am interested to listen to people who do not belong to my caste.
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>41</strong></td>
<td>I respect traffic rules.</td>
<td>我尊重交通规则。</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>42</strong></td>
<td>I think it is important to have faith in god.</td>
<td>我认为信仰上帝很重要。</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>43</strong></td>
<td>I always obey elders.</td>
<td>我总是尊敬长辈。</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>44</strong></td>
<td>I have an enthusiasm to imbibe the great values from various religions.</td>
<td>我有很大的热情去汲取各种宗教的伟大价值。</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>45</strong></td>
<td>Always I am trying to give respect to my teachers.</td>
<td>我总是努力尊重我的老师。</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>46</strong></td>
<td>I tend to have very strong opinions about morality.</td>
<td>我倾向于对道德有非常强烈的看法。</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>47</strong></td>
<td>I think giving priority to the helpless in a good habit.</td>
<td>我认为优先照顾无助的人是一种好习惯。</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>48</strong></td>
<td>I respond to all people enthusiastically, free of bias or prejudice.</td>
<td>我热情地回应所有人，没有偏见或偏见。</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# APPENDIX-IV

## EMOTIONAL MATURITY SCALE (EMS)

Read each of the following statements and put a tick (✓) mark in the appropriate column.

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>STATEMENTS</th>
<th>RESPONSES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Very Much</td>
</tr>
<tr>
<td>1.</td>
<td>Are you involved in mental botherations?</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Do you get frightened about the coming situations?</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Do you stop in the middle of any work before reaching the goal?</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Do you take the help of other person/s to complete your personal work?</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Is there any difference between your desires and objectives?</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Do you feel within yourself that you are short-tempered?</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Do you feel that you are very stubborn?</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Do you feel jealous of other people?</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Do you get wild due to anger?</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Do you get lost in imagination and day dream?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Question</td>
<td>Tamil Translation</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------------------------------------------------</td>
<td>---------------------------------------------------------</td>
</tr>
<tr>
<td>11.</td>
<td>If we fail to achieve your goal, do you feel inferior?</td>
<td>கண்டால் இராப்போச்சிகள் அருள்புக் கூறும் படி நீங்கள் நேரடி எப்படி முடிவு செய்து கொள்ளும் அருளுக்குரிய உணர்ச்சி?</td>
</tr>
<tr>
<td>12.</td>
<td>Do you experience a sense of discomfort and lack of peace of mind?</td>
<td>ஆண்டவர் லாராய்வது சரஸ்பல்கள் அவர்களின் லாபில்கள் அதிகமாகவே உரியாளா?</td>
</tr>
<tr>
<td>13.</td>
<td>Do you teasing against the others?</td>
<td>பிறர் பக்கத்தில் பார்த்தது பற்றி பற்றி உற்பத்தி படுத்துவது உண்டா?</td>
</tr>
<tr>
<td>14.</td>
<td>Do you try to put the blame on others for your lapses?</td>
<td>குற்றங்களை வெள்ளி என்று நீர்க்கள் பெருவுதல் பெறுவது உண்டா?</td>
</tr>
<tr>
<td>15.</td>
<td>When your try to put the blame on others, do you start quarrelling with them?</td>
<td>குற்றங்களை வெள்ளி என்று நீர்க்கள் பெருவுதல் பெறுவது உண்டா?</td>
</tr>
<tr>
<td>16.</td>
<td>Do you feel yourself as exhausted?</td>
<td>குற்றங்களை வெள்ளி என்று நீர்க்கள் பெருவுதல் பெறுவது உண்டா?</td>
</tr>
<tr>
<td>17.</td>
<td>Is your behavior more aggressive than your friends and others?</td>
<td>பார்த்தது பார்த்தது பார்த்தது பார்த்தது பார்த்தது பார்த்தது குற்றங்களை வெள்ளி என்று நீர்க்கள் பெருவுதல் பெறுவது உண்டா?</td>
</tr>
<tr>
<td>18.</td>
<td>Do you get list in the world of imaginations?</td>
<td>குற்றங்களை வெள்ளி என்று நீர்க்கள் பெருவுதல் பெறுவது உண்டா?</td>
</tr>
<tr>
<td>19.</td>
<td>Do you feel that you are self-centered?</td>
<td>குற்றங்களை வெள்ளி என்று நீர்க்கள் பெருவுதல் பெறுவது உண்டா?</td>
</tr>
<tr>
<td>20.</td>
<td>Do you feel that you are dissatisfied with yourself?</td>
<td>குற்றங்களை வெள்ளி என்று நீர்க்கள் பெருவுதல் பெறுவது உண்டா?</td>
</tr>
<tr>
<td>21.</td>
<td>Do you have a strained companionship with your friends and colleagues?</td>
<td>குற்றங்களை வெள்ளி என்று நீர்க்கள் பெருவுதல் பெறுவது உண்டா?</td>
</tr>
<tr>
<td>22.</td>
<td>Do you hate others?</td>
<td>குற்றங்களை வெள்ளி என்று நீர்க்கள் பெருவுதல் பெறுவது உண்டா?</td>
</tr>
<tr>
<td>23.</td>
<td>Do you praise yourself?</td>
<td>குற்றங்களை வெள்ளி என்று நீர்க்கள் பெருவுதல் பெறுவது உண்டா?</td>
</tr>
<tr>
<td>24.</td>
<td>Do you avoid joining in social gatherings?</td>
<td>குற்றங்களை வெள்ளி என்று நீர்க்கள் பெருவுதல் பெறுவது உண்டா?</td>
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<td>25. Do you spend much of your time for your own sake?</td>
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<td>26. Do you lie?</td>
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<td>27. Do you bluff?</td>
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<td>28. Do you liked very much to be alone?</td>
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<td>29. Are you proud by nature?</td>
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<td>30. Do you shirk from work?</td>
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<td>31. Even though you know some work, do you pretend as if you do not know it?</td>
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<td>32. Even if you do not know about some work, do you pose as if you know it?</td>
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<td>33. Having known that you are at fault, instead of accepting it, do you try to establish that you are right?</td>
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<td>34. Do you suffer from any kind of fear?</td>
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<td>35. Do you lose your mental balance (poise)?</td>
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<td>36. Are you in the habit of stealing of anything?</td>
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<td>37. Do you indulge freely without bothering about moral codes of conduct?</td>
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<td>38.</td>
<td><strong>Are you pessimistic towards life?</strong>&lt;br&gt; Usuarios <strong>pessimistic towards life:</strong>&lt;br&gt; <strong>Is this pessimistic towards the future?</strong>&lt;br&gt;</td>
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<td>39.</td>
<td><strong>Do you have a weak will? (self-will or determination)</strong>&lt;br&gt; <strong>Usuarios weak will? (self-will or determination)</strong>&lt;br&gt;</td>
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<td>40.</td>
<td><strong>Are you intolerant about the views of others?</strong>&lt;br&gt; <strong>Usuarios intolerant about the views of others?</strong>&lt;br&gt;</td>
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<td>41.</td>
<td><strong>Do people consider you as undependable?</strong>&lt;br&gt; <strong>Usuarios consider you as undependable?</strong>&lt;br&gt;</td>
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<td>42.</td>
<td><strong>Do people disagree with your views?</strong>&lt;br&gt; <strong>Usuarios disagree with your views?</strong>&lt;br&gt;</td>
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<td>43.</td>
<td><strong>Would you like to be a follower?</strong>&lt;br&gt; <strong>Usuarios like to be a follower?</strong>&lt;br&gt;</td>
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<td>44.</td>
<td><strong>Do you disagree with the opinions of your group?</strong>&lt;br&gt; <strong>Usuarios disagree with the opinions of your group?</strong>&lt;br&gt;</td>
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<td>45.</td>
<td><strong>Do people think of you as an irresponsible person?</strong>&lt;br&gt; <strong>Usuarios think of you as an irresponsible person?</strong>&lt;br&gt;</td>
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<td>46.</td>
<td><strong>Don’t you evince interest in other’s work?</strong>&lt;br&gt; <strong>Usuarios evince interest in other’s work?</strong>&lt;br&gt;</td>
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<td>47.</td>
<td><strong>Do people hesitate to take our help in any work?</strong>&lt;br&gt; <strong>Usuarios hesitate to take our help in any work?</strong>&lt;br&gt;</td>
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<td>48.</td>
<td><strong>Do you give more importance to your work than other’s work?</strong>&lt;br&gt; <strong>Usuarios give more importance to your work than other’s work?</strong>&lt;br&gt;</td>
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</table>
Circle the correct answer

1. *System naturae* is written by -----------------------------
   a) Theophrastus   b) Carolus Linnaeus   c) John Ray   d) R.H Whittaker

2. The viruses were first crystallized by -----------------------------
   a) W.SM Stanley   b) Iwanowsky   c) Anton Von Leeuwenhouk   d) Beijerinck

3. Adenovirus exhibits ……
   a) Asymmetry   b) Helical symmetry   c) cubic symmetry   d) Complex symmetry

4. Germ theory of diseases was proposed by …………

5. In green sulphur bacteria, the hydrogen donor is …………

6. The alga that is used in space travel to get rid of CO₂ is …………
7. The Pteridophyta, the Megaspore develop into……….
   a) Ovule  b) Male gametes  c) Female gametes  d) Sporophyte

8. Chloroplasts are ribbon like in………….
   a) Chlamydomonas  b) Spirogyra  c) Zygnema  d) Macrocystis

9. Among the plants, the largest plant is ………..  

10. The process of evolution of the seed habit is associated with the origin of ……….
   a) Homospory  b) Heterospory  c) flower  d) fruit

11. Ephedrine is an alkaloid used in curing………
    a) Blood cancer  b) Cardiac Problems  c) Asthma and respiratory problem  
    d) Skin disease

12. Cell theory was again rewritten in 1858…………
    a) Robert Hooke  b) Schleiden  c) Purkinje  d) Rudolf Virchow

13. The addition of wall materials within the existing one is called………..

   a) accretion  b) intussusception  c) apposition  d) deposition

14. Three dimensional aspect of the object is achieved through ………….

   a) Light microscope   b. Transmission electron microscope
c. Scanning electron microscope   d. Compound microscope

15. The process in which DNA is constantly read out into a particular set of mRNA is called ……..

   a) Translation   b) Protein synthesis  c) DNA duplication  d) Transcription

16. An expectation to cell theory is………..

   a) Fungi   b) bryophyte   c) Seed plant   d) Pteridophytes

17. The site of protein synthesis is…………..

   a) Cytoplasm   b) Nucleoplasm   c) Cytoplasm   d) Golgi apparatus

18. The complete aerobic degradation of glucose of CO₂ H₂O is coupled with the synthesis of …….

   a) 36 ATP molecules  b) 38 ATP molecules  c) 40 ATP molecules  d) 34 ATP molecules
19. The green pigments, chlorophyll is located in the .......... 
   a. Matrix of mitochondria   b. Matrix of Chloroplasts 
   c. Thylakoid membrane of chloroplasts   d. F1 particle

20. The type of phyllotaxy found in calotropis is ........
   a) alternate              b) opposite decussate          c) opposite superposed        d) ternate

21. Respiratory roots are present in....... 
   a) Vanda              b) avicennia     c) Pandanus  d) Maize 

22. The type of inflorescence seen in carrot is.....
   a) Compound umbel       b) Mixed Umbel       c) Special inflorescence d) Recemose 

23. Dorstenia an example for.......... 
   a) Raceme b) panicle  c) Spadix  d) coenanthium

24. Musa is an example for....... 
   a) Spadix b) Mixed spadix  c) Compound spadix  d) None of above

25. The ratio of recessive monocot is......... 
   a) 1:2:1    b) 3 : 1    c) 1:1    d) 1:1:1:1
26. Chemical basis of inheritance is ………
   a. DNA   b. RNA   c. Nucleic acids   d. Gametes
   சேர்த்தும் ஆரோங்கத்தில் கிளர்ச்சியும் இணைத்து
   (a) 1:2:1   (b) 3:1   (c) 1:1   (d) 1:1:1

27. The ph of pure water is …………
   a) +1     B) -1     c) 0     d) +2
   மக்கள் உரியைச் 2 காலாக்கம் கிளர்ச்சியும் இணைத்து
   (a) +1     (b) -1     (c) 0     (d) +2

28. The principal used in pickling is …………
   a. Imbibitions  b. Endosmosis  c. Plasmolysis  d. None of the above
   இந்து நீரில் பாடும் பாரி நீரில் இணைத்து
   (a) இந்து நீரில்  ெ) காலாக்கம்
   (b) Plasmolysis   (c) None of the above

29. Nitrifying bacteria like nitromonas convert ammonia to …..
   a) Nitrite   b) Urea   c) Nitrogen gas   d) Methane
   சேர்த்துணையில் பாடும் ஆரோங்கத்தில் பாடும் ஆரோங்கத்தில் இணைத்து
   (a) Nitrite  ெ) Urea
   (b) Nitrogen gas   (c) Methane

30. This Experiment is used to demonstrate the translocation of solute is ……
   a) Bell jar experiment   b) Ringing experiment   c) Girdling experiment
   சேர்த்தும் பனையில் பாடும் கிளர்ச்சியும் இணைத்து
   (a) Bell jar experiment  ெ) Ringing experiment
   (b) Girdling experiment

31. The plant which propagates with the help of its place by………
   a) onion   b) cactus   c) potato   d) bryophyllum
   சேர்த்தும் பனையில் கிளர்ச்சியும் இணைத்து
   (a) onion  ெ) cactus
   (b) potato   (c) bryophyllum

32. The introduction of phylogeny in taxonomy was made by ………
   சேர்த்தும் பாடும் கிளர்ச்சியும் இணைத்து
   (a) Cuvier  ெ) Lamarck
   (b) Charles Darwin   (c) Linnaeus
33. Which of the following is considered as a connecting like between Annelida and arthropod?
   a) Cantipede  b) Cockroach  c) Peripatus  d) Spiders

34. The introduction of phylogeny in taxonomy was made by…….
   a)Lamark    b) Charles Darwin   c) Mayer  d) Linnaeus

35. The insect that do not have the wings are included under the order…….
   a) Coleoptera   b)Diptera  c) Aptera  d)Hymanoptera

36. Acrania refers to………

37. The amniotes are characterised by the presence of …………
   a) four legs  b) amphibious life  c) egg membranes  d)metamorphosis

38. Which of the following animal has four chambered heart?
   a) Salmander  b) Caecilian   c)crocodile      d)Toad

39. The relationship between plasmodium and female Anopheles mosquito was Scientifically proved by...

40. The substance that causes malarial fever is …….
41. Earthworm commonly employed in Indian vermiculture is

a) Lampito mauritii b) Apis indica c) Penaeus indicus d) Pinctada fucata

42. The hollow bones of birds are called ............... 

a. Pneumatic bones b. fused bones c. Skull bones d. Limb bones

43. The excretory organs of earth are ............

a) Nephridia b) Skin c) Flame cells d) Kidneys

44. The segmented body muscles in fishes are called ………

a) myotomes b) smooth muscles c) skeletal muscles d) misceral muscles

45. In a microscope, the light is focused on the object through .............

a) Condenser lens b. Object lens c. Occular lens d. Oil immersion lens

46. Among the following cancer, which is inherited?

a) Brain tumour b) Sarcoma c) Leukemia d) Retinoblastoma

47. Which of the following is not the characteristic of cancer?
a) Uncontrolled growth of cell  
b) Cancer cells are less adhesive 
c) Distinct nucleus  
d) Small sized nucleus

48. In plant cells, the chromosomes were first discovered by………….. 
  a. A.Schneider  
  b. Karl Nagli  
  c. Benden  
  d. Robert Brown

49. The cervical vertebra supporting the head is …….
  a) Axis  
  b) atlas  
  c) sacral  
  d) lumbar

50. The functioning of the heart and movement of the blood in animals was first described by …….. 
  a) Adreas Vasalius  
  b) Henry Gray  
  c) William Harvey  
  d) Aristotle

51. Blood cells are produced from the ………. 
  a. Shaft  
  b. Adipose tissue  
  c. Yellow marrow  
  d. Red marrow

52. The only moveable bone in the skull is called ….. 
  a) maxilla  
  b) Mandible  
  c) Ethmoid  
  d) Sphenoid

53. The largest salivary glands are…………. 
  a) Parotid  
  b) Submandibular glands  
  c) Sublingual glands  
  d) Labial glands

54. The organ that functions both as exocrine and as endocrine is ……………..
55. The inner layer of membrane lining uterus is ….
   a) Perimetrium   b) myometrium   c) endometrium   d) serous layer

56. Among the following the adenoid structure ….
   a) Uvula   b) Tonsil   c) Carina   d) Cartilage

57. The cell that can recognize and selectively kill the virus infected cell is …….
   a) T' lymphocyte   b) B lymphocyte   c) Red blood cells   d) Blood platelets

58. Breathing process can be interfered with due to ………
   a) Closure of the ileo colic   b) enlargement of the tonsil   c) Closure of pyloric sphinctes   d) vibration of the vocal cord

59. The synapses are formed between……
   a) Nerves and muscles   b) Nerve tissue   c) capillaries   d) organs

60. The intraocular pressure in the eye is controlled by ……..
   a. Sclera   b. Eye layers   c. Aqueous humour   d. Meibomain glands

61. The hormone of the adrenal cortex among the following is…..
a) Cortisol  b) non-epinephrine  c) Gulcagon  d) Thyroxin

62. We should be the minimum number of nephrones in each kidney that should remain functional for survival?

a) 13  b) 750,000  c) 600,000  d) 450,000

63. The honey bee used commonly in bee-keeping industry is………..

a) Apis dorsata  b) Apis florae  c) Apis indica  d) All the above

64. The structure that may control genitor – unitary disease is ……..

a) Prostate gland  b) Bulbo-urethral gland  c) preputial gland  d) corpus albicans

65. X/A ratio in super females is ----

a) 1.5  b) 1.0  c) 0.6  d) 0.5

66. The function layer of the uterine wall that takes part in menstrual changes is…………

a. Follicular cells  b. corpus luteum  c. Fallopian tube  d. Edometrium

67. Rh factor in blood was discovered by…..

a) Galton  b) Devenport  c) Landsteiner and Wiener  d) Clarence Mc clung
68. Reef forming corals normally grow in ……
   a) Cold water   b) deep water   c) shallow, tropical seas   d) polluted and muddy waters.

69. The major breathing movement is due to …………
   a) Scalene   b) thoracis   c) diaphragm   d) intercostals

70. The Kala-azar disease is transmitted through………..
   a. Housefly   b. Sandfly   c. Rat flea   d. Human louse
### PRELIMINARY DRAFT - BIOLOGY ACHIEVEMENT TEST (BAT)– SCORING KEY

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**APPENDIX - VII**

**FINAL - BIOLOGY ACHIEVEMENT TEST (BAT)**

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   b. Anton Van Leeuwenhoek   b. Louis Pasteur   c. Whittakar   d. Robert Koch

5. In green sulphur bacteria, the hydrogen donor is ………
   

6. The alga that is used in space travel to get rid of CO₂ is …………
   
   b. Diatomite   b. Cholrella pyrenoidosa   c. Spirullina   d. Gracillaria
7. Chloroplasts are ribbon like in……………
   a) Chlamydomonas  b) Spirogyra  c) Zygnema  d) Macrocystis
   8. Among the plants, the largest plant is …………..
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      a) accretion  b) intussusception  c) apposition  d) deposition
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21. Which of the following animal has four chambered heart?
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22. The relationship between plasmodium and female Anopheles mosquito was Scientifically proved by...
   a) Charles Laveran  b) Sir Ronald Ross  c) Grassi  d) Charles Darwin

23. The substance that causes malarial fever is …….
   a) Haemolymph   b) Haemozoin  c) Sporogony  d) Schizogony

24. The hollow bones of birds are called …………….
   a. Pneumatic bones  b. fused bones  c. Skull bones  d. Limb bones

25. The segmented body muscles in fishes are called …….
   a) myotomes   b) smooth muscles    c) skeletal muscles    d) misceral muscles

26. In a microscope, the light is focused on the object through ……….
   a) Condenser lens  b. Object lens   c. Occular lens  d. Oil immersion lens
27. The functioning of the heart and movement of the blood in animals was first described by ……..
   a) Adreas Vasalius  b) Henry Gray  c) William Harvey  d) Aristotle

28. The organ that functions both as exocrine and as endocrine is …………..

29. The synapses are formed between…….
   b) Nerves and muscles  b) Nerve tissue  c) capillaries  d) organs

30. The function layer of the uterine wall that takes part in menstrual changes is………..
   a. Follicular cells  b. corpus luteum  c. Fallopian tubule  d. Edometrium

31. The Kala-azar disease is transmitted through………..
   a. Housefly  b. Sandfly  c. Rat flea  d. Human louse
### Appendix - VIII

**FINAL - BIOLOGY ACHIEVEMENT TEST (BAT) – SCORING KEY**

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