APPENDIX – A

TEST ON MASTERY IN SUBJECT CONTENT
OF HIGH SCHOOL BIOLOGY

Max. Marks: 40

Time: 40 min.

Instructions

1. This test intends to measure mastery in subject content of high school Biology of science teacher trainees.
2. You are requested to read the instructions given in each question carefully.
   Write the answers of each question in the answer sheet at the proper place.
3. Answer all the questions.
4. Information given by you shall remain confidential.

BIOLOGY

1. Which one of the following is a metabolic product?
   a. Carbohydrate and Water
   b. Ammonia and Uric acid
   c. Ammonia and Protein

2. Green house gases are
   a. CO₂ and N₂
   b. Methane and Oxygen
   c. CO₂ and Nitrous Oxide

3. Which part of the body acts as a biological clock controlling rhythmically of several biological processes?
   a. Pineal gland
   b. Pituitary gland
   c. Adrenal glands

4. The hormone present in coconut milk which stimulates growth
   a. Florigens
   b. Gibberellins
   c. Cytokinins

5. Lichens as bio indicators are found in plenty where
   a. The atmosphere is highly polluted
   b. The air is free from poisonous gases
   c. There are plenty of trees

6. The phenotypic ratio obtained by Mendel in his dihybrid cross.
   a. 9:3:2:1
   b. 9:3:3:1
   c. 9:3:3:2

7. The hormones secreted by hypothalamus are stored in
   a. Cerebellum
   b. Spinal cord
   c. Pituitary body

8. The secretions of endocrine glands act as
   a. Biocatalysts
   b. Chemical co-ordinators
   c. Bio regulators

9. The tendency of plants to grow in response to the stimulus of gravity
   a. Hydro tropism
   b. Phototropism
   c. Geotropism
10. Vitamins which are soluble in water

11. Which one of the following is called a growth gland?
   a. Adrenal  b. Thyroid  c. Pituitary

12. National Pollution Control Day is
   a. October 7  b. June 5  c. December 2

13. The sensitiveness of rods to even faint light rays is due to
   a. Chemoreceptors  b. Rhodopsin  c. Pituitary Gland

14. Interaction between two animals where one of the partners is benefited but the other is neither benefited nor harmed is called.
   a. Commensalism  b. Symbiosis  c. Mutualism

15. Botulism is caused by a bacteria called
   a. Staphylococcus botulinum  b. Bacterium closteridium botulinum  c. Salmonella bacterium

16. The hormone which prepares the individuals for meeting emergency activities is
   a. Insulin  b. Hydrocortisones  c. Adrenalin

17. Contributions of Genetic Engineering in the field of Medicine
   a. Production of oil eating bacteria  b. Production of Insulin  c. Production of genes responsible for nitrogen fixation

18. The term parthenogenesis means
   a. Young ones undergoes various developmental stages to become the adult.
   b. Development of foetus to an adult one
   c. Development of an unfertilized egg into an organism

19. The excess intake of Vitamin D may cause
   a. Over absorption of calcium to the body resulting in the formation of calcium stones in the kidney, pancreas etc.
   b. Over intake of fluorine which will cause mottling of dental enamel.
   c. Over intake of nutrients which results in the deposit of fat in the blood vessels.

20. The waxy substance collected from whales which is economically important and used in a fixative for other perfumes.
   a. Musk  b. Ambergris  c. Civets

21. The function of motor nerves
   a. Convey impulses from brain and spinal cord to other parts of the body.
   b. Carry impulses from sense organs to central nervous system.
   c. Carry impulses from receptor organs to central nervous system and from central nervous system to other parts.
22. Storage of glycogen in liver is regulated by
   a. Melatonin  b. Hydrocortisone  c. Adrenalin

23. What first aid will you give to a person who has taken corrosive acid?
   a. Give copious quantities of water and then give chalk, milk of magnesiu
      to neutralize it.
   b. Give plenty of water with the juice of orange or lemon.
   c. Give mouth to mouth artificial respiration.

24. Growth rate in plants is less at day time and is more at night because
   a. Photosynthesis takes place during day time.
   b. Growth hormone auxin is inactivated by light.
   c. Growth of plants vary according to the temperature.

25. A patient affected by Human Immuno Virus is susceptible to infectious diseases
   because
   a. The infection of HIV may cause brain damage which may lead to loss of
      memory.
   b. HIV attacks the blood plasma of the patient.
   c. HIV attacks white blood corpuscles particularly lymphocytes.

26. Identify the disease from the symptoms given below.
   Seeing coloured rings around the lights, Poor night vision, blurred vision, pain
   around the eye.
   a. Cataract  b. Glaucoma  c. Astigmatism

27. Parts of the ear which help in balancing the body
   a. External ear and Cochlea
   b. Semicircular canals, the utricle and saccule
   c. Inner ear and endolymph

28. The first antibiotic was discovered by

29. The process of accumulation of non-degradable poisonous substances in the end
   consumer of the food chain is called.

30. Give reasons for Eutrophication
   a. Increased concentration of dissolved salts of nitrogen and phosphate in
      water
   b. Increased amount of CO2 in water.
   c. Increased amount of bacteria and fungi in water.

31. Go through the statements A and B given below and arrive at conclusions.
    Statement A : Liver is the most important organ of the body for purification
    Statement B : The urea formed in the liver cells is sent to the kidney through
                  the blood stream.
   a. Statement A alone is correct
   b. Statement A and B are correct
   c. Statement B alone is correct
32. Vasopressin hormone is otherwise called Antidiuretic Hormone (ADH) because it helps
   a. to send the excess water from blood
   b. in the reabsorption of water from the nephrons to blood
   c. to regulate the water content in the body

33. Artificial colouration to food articles in dangerous because
   a. Food articles are mixed with adulterants
   b. Colour added to food is not good
   c. Food articles are mixed with interior coal tar colours to make it attractive.

34. Go through the statements A and B given below and arrive at the conclusions.
   Statement A : Carbohydrates are the main source of energy for the metabolic activities.
   Statement B : the energy content of fat is less than that of carbohydrate
   a. Both the statement A and B are correct
   b. Statement A alone is correct
   c. Statement B alone is correct

35. A patient does not feel pain in sleep because during sleep
   a. Many of the pain impulses to cerebrum are inhibited by thalamus
   b. Pain impulses are regulated by hypothalamus
   c. Pain impulses reach up to spinal cord and reflex action takes place

36. River Ganga is in the grip of pollutants. About 68 factories are located on the banks of Ganga. What application will be better to protect Ganga water from pollution?
   a. Channelise the water from the factory into different channels
   b. Treatment of waste water from factories before they are discharged into the river.
   c. Entrust the protection of river Ganga from pollution to state Pollution Board.

Go through the diagram below and mark the parts as answers of the Questions 37 and 38.
37. The seat of consciousness, intelligence and memory

38. The organ which regulates the working of heart

39. Given below is a set of organisms which represents the energy ladder. Represent them in the form of pyramid. Small aquatic animals, fish eating birds, small fishes, Cyclops, large fishes, mammals.

40. The diagram given below shows the image formed in the case of people having long sight. Draw the diagram to show the defects of the eye are rectified using eye class.

LONG SIGHT
APPENDIX B

PROBLEM SOLVING ABILITY TEST

Max. Marks: 40

Time: 1 Hr.

Instructions

1. This test measures the problem solving ability of teacher trainees in science.

   Read the problem carefully and understand it before giving the response.

2. For each problem you have to find out an inference which is to be verified in the light of reasonable answers which will support the inference taken. Hence you have to choose an inference which is most appropriate and a best answer which will support the answer you have chosen.

3. Read the instructions carefully and solve problems accordingly. Attempt all questions. Keep in mind that none of these questions should remain unanswered.

4. The answers must be written on the answer sheet provided. **Do not write anything on this Questionnaire.** Calculations if any may be done on the separate page given for Rough Work along with the answer sheet. Be sure to indicate your answer with the correct choice from the alternatives. a, b, c and d for Inference (A) and a, b, c, d and e for Supporting Answer (B) after each question.

   For Eg. If alternative ‘c’ gives the correct answer to inference (A) and ‘d’ gives best supporting answer (B) to the sample question \( S_1 \) the answer should be written as follows.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Inference</th>
<th>Supporting Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>( S_1 )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   If you mark more than one answer to a question, you will get no credit for that answer.
1. Two sets of Parents Mr X and Mrs X and Mr Y and Mrs Y claimed the same baby. Blood test gives the information that Mr X and Mrs X belong to group A and Mr Y belongs O and Mrs Y of blood group AB. The child belongs to blood group O.

A) Which of the following inferences is correct?
   Parents of the Child is
   a. Mr X and Mrs X
   b. Mr Y and Mrs. Y
   c. Either Mr X and Mrs X or Mr Y and Mrs Y
   d. None of the above couples

B) Choose the best of answer among the listed alternatives which will support the answer you have chosen.
   a. Genotype of Mr X and Mrs X have homozygous chromosomes
   b. Genotype of Mr Y will be ii and that of Mrs Y will be I^A I^B
   c. Genotype of both the couples has ii.
   d. Genotype of Mr X and Mrs X have either I^A or I^A I^A.
   e. Genotype of Mr Y will contribute chromosome for O group blood in the next generation.

2. The effluents from oil refineries cause serious damages to historical monuments in their vicinity. Taj Mahal, one of the seven wonders of the world is fast losing its beauty because of its close proximity of Mathura Oil Refinery. Based on the data given what will happen to Taj Mahal in the near by future?

A) Which of the following inferences is correct?
   a. The smoke from Mathura Oil Refinery will cause ozone depletion that affect Taj Mahal.
   b. Green house gases from the Refinery cause global warming and affect Taj Mahal.
   c. The smoke from Mathura Oil Refinery will gradually damage marbles stones of Taj Mahal.
   d. The poisonous liquid from the Refinery may destroy the basement of Taj Mahal.

B) Which of the following alternatives will support the answer you have chosen
   a. The Chlorofluoro Carbons from the Refinery accelerate the flow of ultra violet rays to the earth.
   b. Increase in heat due to green house gases will cause damage to marble stones.
   c. The surface of Taj Mahal will be badly affected by the smoke.
   d. Sulphuric acid formed from the SO2 in the smoke will eat away marble stones.
   e. The acid rain formed from the SO2 in the smoke and the poisonous waste from the Refinery may destroy the monument.

3. Prior to rice planting in paddy fields, farmers add fertilizers and manures to the soil. Which of the following yield better Crops?

A) Inferences
   a. Chemical fertilizers alone
   b. Organic manures only
   c. Green manures and organic manures
   d. Chemical fertilizers and biofertilizers.
B) Choose the best answer which will support answer you have chosen.
   a. Chemical fertilizers contain all the nutrients needed for the plant growth.
   b. Natural fertilizers like cowdung do not cause any environmental hazard.
   c. Green manures and organic manures are adequate to meet the needs of agriculture.
   d. Biofertilizers enhance the immune system of plants and protect the plants from diseases.
   e. The Biofertilizer fixes atmospheric nitrogen and excretes nitrogen compounds which supplement to green manure.

4. Cloning becomes more potent when allied to the rapid advances being made in the field of Medicine. What would be the hazard in the near by future if Cloning becomes successful in producing progeny in human beings?

A) Which of the following inferences is correct?
   a. There are chances of variation between parents and progeny.
   b. The process of Cloning results in the break down of healthy parental relationship.
   c. More parents will go for cloning.
   d. The surrogate mother will be giving birth to her child which is the true replica of somatic cell.

B) Choose the answer which will support the answer you have chosen
   a. Parents have to depend on the diploid somatic cells for the production of the progeny.
   b. Genetic constitution of a clone will be the exact replica of the donor cell.
   c. The process of fertilization is found not necessary for cloning.
   d. In the process of cloning there is no critical role for male gametes and female gametes in the production of human embryos.
   e. Parents may depend on others for the somatic cell if their genetic constitution is not good.

5. The table given below represents the amount of DDT in water and other living organisms in water as well as water birds which take fish as their food (quantity in ppm-part per million)

<table>
<thead>
<tr>
<th>Organisms / Water</th>
<th>Quantity of D.D.T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>0.02 ppm</td>
</tr>
<tr>
<td>Plankton</td>
<td>5 ppm</td>
</tr>
<tr>
<td>Fish</td>
<td>250 ppm</td>
</tr>
<tr>
<td>Water birds</td>
<td>1600 ppm</td>
</tr>
</tbody>
</table>

A) Based on the above data, which of the following inferences is correct?
   a. Bio accumulation of D.D.T. is greater in water animals
   b. Pesticides like D.D.T. do not undergo bio accumulation
   c. In a food chain D.D.T. content increases from primary to end consumers
   d. We should not take water organisms like fish in our daily food.

B) Which of the following alternatives will support the answer you have chosen?
   a. Water organisms like fish from polluted water bodies is dangerous to man.
   b. The pesticides like D.D.T. which is non-degradable gets accumulated in the body of organisms.
   c. The bio-magnification of D.D.T increases as the food chain is lengthened from producer to end consumer.
   d. The regular use of fish by water birds or man add the amount of non degradable substances like D.D.T. in their body.
   e. The use of D.D.T. as a pesticide should be controlled.
6. Recent experiments showed that when the DNA fragments of the donor is allowed to enter into a suitable bacterial host, though the DNA fragments of host and donor are joined together, the host bacterium failed to multiply reproducing the new foreign DNA.

A) Based on the data given, which of the following inferences is correct?
   a. Restriction enzymes are absent in the host as well as donor.
   b. The foreign genes are to be attached to a suitable vector plasmid found in the bacteria.
   c. The enzyme DNA Ligase will be absent in the host.
   d. The process of splicing is not done.

B) Which of the following alternatives will support the answer you have chosen?
   a. Restriction enzymes cut DNA into fragments
   b. DNA ligase acts like a paste molecule of join DNA fragments.
   c. As a result of splicing recombinant DNA is formed.
   d. Plasmids found in the cytoplasm of bacteria are most suitable vectors
   e. The host bacteria did not get the instructions of r DNA.

7. The fuel combustion accelerate the rate of emission of CO₂ into the atmosphere, Deforestation and forest fire contribute to increase in the deposit of CO₂. Due to the industrial activities the amount of gases like methane, nitrous oxide, sulphur dioxide, carbon monoxide, etc. also increase in the atmosphere. All these will lead to increased atmospheric heat.

A) Inferences
   a. Increased quantity of atmospheric heat may cause global warming
   b. Increase in the atmospheric heat will change the climatic conditions.
   c. Threat of low lying areas being submerged by the melting of ice bergs.
   d. The process of photosynthesis will be activated.

B) Choose the best answer which will support, the answer you have chosen among the listed alternatives.
   a. Increase of CO₂ may lead to transparent covering in the atmosphere.
   b. The increased amount of CO₂ in the atmosphere prevents the escape of heat into the space.
   c. Green house effect will have positive effect on certain areas of the world.
   d. The green house gases reemit heat which provides additional warming.

8. Genetically dwarf sweet pea plant treated with gibberellic acid, was made to grow as tall as genetically tall variety. This gibberellic acid treated tall plant was then crossed with a genetically dwarf plant. What will be the probability for next generation?

A) Inferences
   a. 75% tall and 25% dwarf.
   b. 50% tall and 50% dwarf.
   c. All true breeding for dwarfishness
   d. All true breeding for tallness

B) Choose the best answer which will support the answer you have chosen among the listed alternatives.
   a. When tall plant is crossed with genetically dwarf plant, we get a progeny in the ratio 3:1
   b. When one plant is tall and the other one is dwarf, half of the next generation will be tall plants.
c. Both the plants may have gene for tallness hidden in them and hence all progeny will breed for tallness.
d. Since giberellic acid changes the phenotype (only for one generation) and not the genotype and hence the progeny will breed only for dwarffness.

9. Excessive use of nitrogen fertilizers pollute the soil. Ultimately they get eroded to the near by water bodies along with other biological waste. What will happen if excessive use of nitrogen fertilizer and accumulation of biological wastes into water bodies is continued for long?

A) Inferences
a. Water gets polluted due to excessive nitrogen compounds.
b. Algae and water plants do not grow well in polluted water.
c. Dissolved salts of Nitrogen and Phosphates favours only few organisms to grow (less Diversity)
d. Bacteria which decompose algae and aquatic plants grow well.

B. Choose the best answer among the listed alternatives which will support the answer you have chosen.
a. Polluted water cause disease in water organisms
b. The amount of oxygen required by aquatic organisms decreases abnormally.
c. The dissolved salts of nitrogen favours some aquatic organisms.
d. The bacteria which decomposes algae and aquatic plants utilize the oxygen dissolved in water.
e. Higher concentration of Phosphates and Nitrates in water inhibit the growth of few organisms.

10. Human blood is also grouped according to the presence or absence of Rh factor. Like A, B, O System Rh factor is also under the genetic control. Rh$^+$ is dominant over Rh$^-$. What happens to the foetus if father is Rh$^+$ and mother is Rh$^-$?

A) Inferences
a. The first child will die and the second child will not be affected.
b. The first child will not be affected and second child will die.
c. Both of them will not be affected.
d. Both the children will die.

B) Choose the best answer among the listed alternatives which will support the answer you have chosen.
a. The antibodies produced in the blood of mother reacts against Rh$^+$ factor of the first born child.
b. The antigens in the blood of mother protect both the first born and second born child.
c. The anti-Rh antibodies formed in mother’s blood react against second child.
d. The antigens in the mother’s blood react against Rh$^+$ factor of the second child.
e. The antigens in the mother’s blood react against Rh$^+$ factor of the foetus.

11. When light falls on one side of a growing stem, the auxins from its illuminated side migrate to the other side. Auxins if any, remaining at the illuminated side are also inactivated by light.

Based on the above data, what will happen if a stem of a plant happens to be horizontal to the ground?
A) Which of the following inferences is correct?
   a. The stem grows parallel to the ground.
   b. The stem bends upward and grow.
   c. The stem grows against the force of gravity
   d. Growth will not take place.

B) Choose the best answer which supports the answer you have chosen among the listed alternatives.
   a. The elongation of cells take place which results in the growth of the stem parallel to the ground.
   b. More elongation of cells take place at the illuminated side and the stem grows towards light.
   c. More elongation of cells take place at the illuminated side which allows the stem to grow against gravity.
   d. Since growth hormone Auxin is in activated elongation of cells and growth is impossible.
   e. The cells at the lower side elongate more rapidly resulting the upward bending of the stem.

12. The daughter of a colour blind father (X^cY) and normal mother (XX) marries a colour blind person (X^cY). What inference will you take regarding the chances of colour blind children.

A) Which of the following inferences is correct?
   a. 100%  b. 50%  c. 75%  d. 25%

B) Choose the best answer which will support the answer you have chosen among the listed alternatives.
   a. Colour blindness is acquired by all the next generation from the colour blind parents.
   b. The genotype of carrier daughter and colour blind person will be X^cX and X^cY.
   c. The genotype for colour blindness will be dominant in boys, since father is a colour blind person.
   d. The genotype for colour blindess will be dominant only in girls.
   e. The daughter of a colour blind father may possess a genotype dominant for normal children.

13. AIDS is caused by HIV which belongs to a group of virus called retrovirus. It infects the T4 Lymphocytes known as helper T cells which play a central role in regulating the immune system.

   From the data given above, AIDS by itself is not a killer disease. What makes it the greatest challenge to Public Health of modern times?

A) Which of the following inferences is correct?
   a. Patients affected by HIV happen to die.
   b. Opportunistic pathogens attack the patient to death.
   c. Medicine has failed to find out anti-vaccines
   d. It is a sexually transmitted disease.
B) Choose the best answer which will support the answer you have chosen among the listed alternatives.
   a. Since AIDS is a sexually transmitted disease, mode of infection is quick.
   b. Drugs like Azidothymidine helps to increase the life span of patients by few months.
   c. Mode of transmission is possible during blood transmission
   d. Since the deficiency in the immune system is acquired, any number of disease germs may attack the patient.
   e. Infection of HIV may cause brain damage leading to loss of memory and impaired ability to speak and think.

14. A person was badly affected by tumour on the right hemisphere of the brain. Though doctors could save his life after an operation, he was paralysed.

A) Which of the following inferences is correct?
   a. Right side of the body was paralysed.
   b. Left side of the body was paralysed
   c. Both right and left side of the body was paralysed.
   d. Right side of the body was totally paralysed and left side of the body is partially paralysed.

B) Choose the best answer which will support the answer you have chosen.
   a. The right hemisphere of the brain controls the right side of the body.
   b. The cranial nerves and spinal nerves of the right side controls the right side of the body.
   c. The right hemisphere of the brain controls both sides of the body.
   d. The right hemisphere of the brain controls the left side of the body
   e. High blood pressure causes paralysis of right side and left side of the body.

15. What happens if owls travel against the bright sunlight during day time?

A) Which of the following inferences is correct?
   a. Owls can fly smoothly against bright sunlight.
   b. Owls are nocturnal animals and hence they cannot travel in bright sunlight.
   c. Owls are not sensitive to bright light.
   d. Owls can fly in bright light as well as dim light.

B) Choose the best answer which will support the answer you have chosen.
   a. Rhodopsin which is formed from Vitamin A helps them to see in the day time.
   b. Owls travel during day time with the vibrations of sound in the atmosphere.
   c. Nocturnal animals like owls have rods as photo receptors in their retina which help them to travel against bright light.
   d. Cones which are sensitive to bright light and for the reception of colour is absent in owls.
   e. Owls travel during daytime with the help of rods and cones.

16. In man brown eyes (B) are dominant to blue (b) and dark (R) dominant to red hair (r). A man with brown eyes and red hair whose father was blue eyed marries a woman with blue eyes and dark hair whose mother was red haired. They have four children. What will be the expected number of children with brown eyes and red hair?
A) Which of the following inferences if correct?
   a. 1  b. 2  c. 4  d. 3

B) Choose the best answer which will support the answer you have chosen.
   a. The genotype of the man will be Bbrr and the genotype of woman will be Bbrr.
   b. The genotype of the man will be Bbrr and genotype of woman will be bbRr.
   c. The genotype of the man will be Bb Rr and that of woman will be Bbrr.
   d. The genotype of the man will be Bb Rr and genotype of woman will be bbRr.
   e. The genotype of the man will be Bbrr and of woman will be Bb Rr.

17. What changes do you expect to a man who had an injury in his midbrain due to an accident with regard to his daily activities?
A) Which of the following inferences is correct?
   a. The body fails in the reabsorption of water from the nephrons to the blood
   b. The regulation in the storage of glycogen is deviated.
   c. There will be a change in the biological rhythm or rest (sleep) and activity in responses to darkness and light situation.
   d. The body fails to produce antibodies against antigens.

B) Choose the best answer which will support the answer you have chosen.
   a. The hydrocortisone produced by adrenal glands fail to regulate the storage of glycogen in the liver.
   b. The pituitary gland responsible for reabsorption of water is damaged in the accident.
   c. The pineal gland which play an important role in controlling the rhythmicity of several biological process become functionless in the accident.
   d. The thymic hormone fail to produce specific antibodies against antigens.
   e. The hormones produced by endocrine glands in the midbrain become funcionless.

18. Retro viruses are special group of viruses that store their genetic information in a single stranded RNA. What happens when retrovirus is injected into a host cell or human body?
A) Which of the inferences is correct?
   a. The retrovirus develops an outer envelop the capsid
   b. The retrovirus transform the animal cells by getting integrated with the host DNA.
   c. The retrovirus injects its single stranded RNA into the host cell.
   d. The transcription of provirus may lead to the expression of viral oncogenes that cause uncontrolled growth of animal cells.

B) Choose the best answer which will support the answer you have chosen.
   a. Few viruses use its RNA as a template to synthesize new genomic RNA
   b. The DNA formed by reverse transcriptase when integrated into host chromosome forms provirus.
   c. The reverse transcriptase enzyme can convert the single stranded RNA into a double stranded DNA which finally leads to the expression of viral oncogenes.
   d. In transformed cells expression of several genes becomes controlled.
   e. The HIV virus is retrovirus which store their genetic information in a single stranded RNA genome.
19. A woman whose father is colour blind (X<sup>c</sup>Y) but mother is normal (XX) marries a haemophilic man with hypertrichosis (X<sup>y</sup> Y<sup>h</sup>). What percentage of progeny will show genotypically any two of the traits out of the three mentioned above at a given time?

A) Which of the inferences is correct?
   a. 25%  b. 0%  c. 75%  d. 50%

B) Choose the best answer which will support the answer you have chosen?
   a. The genotype of boys will have both the traits.
   b. The mother is a carrier for colour blindness and father is haemophilic man with hypertrichosis, 50% of the progeny will have two traits.
   c. Since father is a haemophilic man with hypertrichosis, both the sons will have those two traits.
   d. No female shows the expression of recessive colour blindness.
   e. One son will show hyper trichosis and second son will show both colour blindness and hypertrichosis.

20. The total number of RBC/mm<sup>3</sup> is about 4.5 to 5.5 million in males while 4 to 5 million in females. The total Leucocyte count is about 5000-9000/ of blood. The abnormal increase or decrease mm<sup>3</sup> of R.B.C or Leucocytes is dangerous to human body.
   The Total Leucocyte Count (TLC) of blood in a person was found to be 1500/ mm<sup>3</sup>

A) Which of the inferences is correct?
   The person is suffering from
   a. Leukemia  b. Leucopoiesis  c. Leucopenia  d. Anemia

B) Choose the best answer which will support the answer you have chosen.
   a. Abnormal increase in blood count cause polycythemia due to the addition of iron and proteins.
   b. Abnormal decrease in W.B.C causes Leucopenia due to folic acid deficiency.
   c. Abnormal increase in W.B.C. causes Leukemia due to acute infections.
   d. Abnormal decrease in the blood count causes Anemia due to deficiency of Vitamin B<sub>12</sub>.
   e. Production of Leucocytes take place in bone marrow and lymph glands.
### APPENDIX C

#### PERSONAL DATA

| **Name of the Teacher Trainee** | : |
| **Name of the College** | : |
| **District in which the College is Situated** | : |
| **University to which the college is affiliated** | : |
| **Date of Birth** | : **Sex**: M/F |
| **Qualification** | : B.Sc./M.Sc., |
| **Main Subject** | : |
| **Marks obtained for B.Sc. (Excluding first lang. and second language)** | : **Main Sub Total Max University Marks** |
| **Marks obtained for M.Sc.** | : |
| **Region** | : Rural/Urban |
| **Qualification of Father** | : Less than S.S.L.C./S.S.L.C/PDC/ Graduate/Post-Graduate or Professional |
| **Qualification of Mother** | : Less than S.S.L.C./S.S.L.C/PDC/ Graduate/Post-Graduate or Professional |
| **Occupation of Father** | : Unemployed / Daily wage earners/ Semiskilled workers / Regular Employee in the Office / Businessman/ Executive or Professional |
| **Occupation of Mother** | : House wife / Daily wage earners / Semiskilled workers / Regular Employee in the Office / Executive or Professional |
| **Monthly Income** | : Less than Rs.1000 / Rs.1001 – Rs.5000/ Rs.5001 – Rs.10,000 / above Rs.10,000 |
APPENDIX D

GENERAL TEACHING COMPETENCY SCALE (GTCS)

Name of the Teacher Trainee ............................................................................

Name of the College................................................................................................

.........................................................................................................................

Class to be taught................................................................................................

Topic.....................................................................................................................

Date......................................................................................................................

INSTRUCTION

There are 21 items related to teaching skills which encompass the entire teaching learning process in the class room. They are related to five major aspects of class room teaching namely, Planning, Presentation, Closing, Evaluation and Managerial. The items are such that they are centred around teacher classroom behaviour. It is a five point scale measuring the use of the skill by the Teacher Trainee in the classroom, ranging from Not at all, Poor, Average, Good and Very much. Please give your rating according to your judgment after observing the class of the Teacher Trainee by giving a tick mark (✔) in the space provided for each question.
Planning (Pre-Instructional)

1. Objectives of the lesson were
   a. Clearly stated
   b. Relevant to the content
   c. Adequate and attainable

2. The content selected was
   a. Relevant
   b. Accurate
   c. Adequate with respect to the objectives of the lesson

3. The content selected was properly organized:
   (Logical continuity and psychological organization)

4. Audio visual materials chosen were
   a. Suited to the Pupils
   b. Suited to make the presentation of the content more vivid
   c. Relevant and adequate for attaining the objectives

Presentation (Instructional)

5. Lesson was introduced effectively
   a. The pupils were made ready emotionally indicated by their non-verbal participation like posture, attentive looks towards what the teacher does.
   b. The students were ready from the knowledge point of view in the use of previous knowledge

6. The questions were
   a. Relevant, specific and concise
   b. Properly put with suitable speed and pause
   c. With suitable voice audible to all

7. The Teacher Trainee used
   a. Probing questions seeking further information
   b. Redirected questions to direct more than one pupil for response
   c. Re-focusing questions which seeks pupil to compare the idea with other ideas

8. The Teacher Trainee
   a. Showed the mastery of the content
   b. Used appropriate vocabulary
9. The concepts and principles were illustrated with
   a. Simple example – one that involves previous
      knowledge of pupils
   b. Relevant example – one that exemplifies
      concept or principle being illustrated.
   c. Interesting example – one that can arouse
      curiosity and interest in pupils

10. Pupils attention was maintained by varying stimuli
    a. Movements
    b. Gestures
    c. Change in speech pattern
    d. Pausing deliberate silence inorder to draw
       pupil’s attention

11. Use of non-verbal cues
    a. Facial cues: A smile, looking thoughtfully
       at the pupils
    b. Head movement: Nodding, shaking, tilting
       and head etc.
    c. Body movement: movement from one
       place to another

12. Use of verbal and non-verbal reinforcers:
    a. Verbal reinforcers like good, excellent etc.
    b. Nonverbal reinforcers like nodding, smiling, moving towards responding
       pupils, writing pupils’ response on the
       blackboard etc.

13. Speed of presentation of ideas was appropriate:
    (matched with the rate of pupil’s understanding
    and there were proper budgeting of time.

14. Participation in the classroom interaction
    a. Responded to the teacher’s interaction
    b. Initiated interaction by giving their own
       ideas.
    c. Reacted to other’s ideas

15. The black board work was
    a. Legible
    b. Neat
    c. Appropriate
Closing

16. Closure of the lesson was achieved appropriately
   a. The main points of the lesson were consolidated
      Not at all  Poor  Avg.  Good  Very good
   b. Present knowledge was linked with past knowledge
      Not at all  Poor  Avg.  Good  Very good
   c. Assignments were given applying present knowledge which helped the students to think logically and solve the problems
      Not at all  Poor  Avg.  Good  Very good

17. The assignment given to the pupils were
   a. Suited to the individual differences
      Not at all  Poor  Avg.  Good  Very good
   b. Relevant to the topic covered
      Not at all  Poor  Avg.  Good  Very good
   c. Related to the topic which could develop their skills
      Not at all  Poor  Avg.  Good  Very good

Evaluation

18. Evaluation procedures were
   a. Appropriate
      Not at all  Poor  Avg.  Good  Very good
   b. Relevant to the objectives
      Not at all  Poor  Avg.  Good  Very good
   c. Valid and objective
      Not at all  Poor  Avg.  Good  Very good

19. Pupils' difficulties in understanding a concept or principle were diagnosed by step by step questioning and suitable remedial measures were undertaken
      Not at all  Poor  Avg.  Good  Very good

Managerial

20. Both attending and non-attending behaviours of the pupils were recognized.
   a. Attending behaviour was awarded
      Not at all  Poor  Avg.  Good  Very good
   b. Questions were asked to check the pupils non attending behaviour
      Not at all  Poor  Avg.  Good  Very good
   c. Directions were given to eliminate the non-attending behaviour
      Not at all  Poor  Avg.  Good  Very good

21. Class room discipline was maintained. Pupils followed the teacher's instructions
      Not at all  Poor  Avg.  Good  Very good