# Appendix 1: Pre-Test for Control Group

# ROSARY HIGH SCHOOL BARODA
# (PRE-TEST FOR CONTROL GROUP)

**Instructions**

1) **Answer all the questions.**
2) **All are of are multiple choice type questions. Each carries 1 mark. Read the questions carefully and choose one correct answer out of the given options (A), (B), (C) and (D) and indicate in the given answer sheet.**

1. Mode of nutrition in spider is

   A. Holozoic
   B. Saprophytic
   C. Autotrophic
   D. Parasitic.

2. The amount of energy released from oxidation of 1 gram of food is called

   A. 1 Joule
   B. 1 Calorie
   C. Calorie value of food
   D. Joule value of food

3. The vitamin essential for clotting of blood is

   A. Vitamin E
   B. Vitamin C
   C. Vitamin K
   D. Vitamin D

4. Fluorine helps in

   A. Preventing tooth decay
   B. Preventing muscular atrophy
   C. Preventing unusual bleeding
   D. Promoting growth of muscles

5. Obesity is caused by

   A. Undernutrition
   B. Overnutrition
   C. Vitamin rich diet
   D. Fat-deficient diet

6       Which enzyme is not associated with the digestion of protein in pancreatic juice?

A. Trypsin
B. Corboxypeptidase
C. Protease
D. Amylase

7       The hardest constituent of tooth is

A. Bone
B. Dentine
C. Enamel
D. Pulp.

8       Parotid salivary glands occur

A. Below ears
B. Below tongue
C. At the angle of jaws
D. Below orbits

9       Narrow distal part of the stomach is

A. Cardiac
B. Fundus
C. Oesophagus
D. Pylorus

10      Wisdom teeth are

A. Last premolars
B. Last molars
C. Cannines
D. Incisors

11.     Air is warmed as it passes through

A. Nasal cavities
B. Trachea
C. Bronchial tree
D. Alveoli

12.     Lungs have large number of alveoli for

A. Having spongy texture and proper shape
B. More surface area for diffusion of gases

C. More space for increasing volume  of inspired air

D. More nerve supply

13. The centre which excites both the activities during rapid breathing is

A. Ventral respiratory centre
B. Lateral respiratory centre
C. Pneumotaxic respiratory centre
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14. In cockroach, the blood does not take part in transport of respiratory gases because

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B. Lack of hemoglobin in blood
C. It gets oxygen dissolved in water
D. Blood capillaries are absent

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A. Pulmonary artery
B. Pulmonary vein
C. Bronchial artery
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A. Earthworm
B. Cockroach
C. Leech
D. Frog

17. Kidney shaped nucleus occurs in

A. Neutrophil
B. Eosinophil
C. Monocyte
D. Lymphocyte

18. Pace maker is meant for

A. Initiation of heart beat
B. Regulation of blood flow
C. Transplanting heart valves
D. Transplanting heart

19. The recording of electrical changes induced in cardiac muscles is called

A. Electrocardiograph

B. Electrocardiogram
C. Electro changes gram
D. Electrically computed graph

20. The instrument used for measuring blood pressure is known as

    A. ECG
    B. Stethoscope
    C. Sphygmomanometer
    D. EEG.

21. Lungs expel

    A. $CO_2$
    B. $CO_2$ and water
    C. Water
    D. $CO_2$ and water vapour

22. Blood vessel that carries minimum amount of nitrogenous wastes is

    A. Hepatic vein
    B. Pulmonary vein
    C. Renal artery
    D. Renal vein

23. Which one is not an excretory organ

    A. Skin
    B. Kidneys
    C. Liver
    D. Intestine

24. The hormone that promotes reabsorption of water from glomerular filterate is

    A. Oxytocin
    B. Vasopressin
    C. Relaxin
    D. Calcitonin

25. Green glands are found in

    A. Insects
    B. Prawn
    C. Flat worms
    D. Star fish

26. Atlas and Axis are joined by

    A. Fibrous joint
    B. Hinge joint
    C. Pivotal joint
    D. None of these

27. It can occur due to prolonged cortisone treatment

    A. Osteoarthritis
    B. Osteoporosis
    C. Rheumatoid arthritis
    D. Gouty arthritis

28. How many bones constitute the face ?

    A. 8
    B. 14
    C. 26
    D. 3

29. Name the bone shown below



    A. Malleus
    B. Incus
    C. Stapes
    D. None of the above

30. Longest bone is

    A. Radio-ulna
    B. Humerus
    C. Femur
    D. Tibio-fibula

31. Which part of eye refracts light rays ?

    A. Choroid
    B. Fovea centralis
    C. Cornea
    D. Retina

32. The image of an object formed on the retina of the eye is

    A. Real and erect
    B. Real and inverted
    C. Virtual and inverted
    D. Virtual and erect

33. Which other cells occur as matrix in epithelial layer of nasal chamber ?

    A. Ciliated cells
    B. Cuboidal cells
    C. Columnar cells
    D. Flagellate cells

34. There is tendency to drink water when one gets thirsty; which part of the brain regulates this?

    A. Cerebellum
    B. Pons
    C. Diencephalon
    D. Cerebrum

35. How many pairs of spinal nerves are found in human beings?

    A. 30
    B. 32
    C. 33
    D. 31

36. Umbilical cord is called the lifeline of foetus because:

    A. It is responsible for the development of maternal tissue accompanying blood sinuses
    B. It is responsible for regulation and occurrence of material exchange occurring through it
    C. It is responsible for protecting chorion villi covered by sinuses
    D. It is responsible for maintaining distance between placenta and foetus lying threreby

37. In locomotion of sperms towards the oviduct during copulation act, which of the following help in process

    A. Slimy secretion of oviduct
    B. Contractions of vaginal passage
    C. Contractions of endometrium
    D. All of the above

38. If vas-deferens of man are cut then

    A. Sperms will be non-motile
    B. Sperms will be non-nucleated
    C. Sperms will remain absent in semen
    D. Spermatogenesis will not take place

39. Binary fission is an example of

    A. Vegetative reproduction
    B. Asexual reproduction
    C. Sexual reproduction
    D. Nuclear fragmentation

40. Approximately, how many egg cells are released by female during their life ?

    A. 40
    B. 400
    C. 4000
    D. 300

# Appendix 2: Pre-Test for Experimental Group
## CONVENT OF JESUS AND MARY, BARODA
### (PRE-TEST FOR EXPERIMENTAL GROUP)

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    B. Regulation of blood flow
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    A. Electrocardiograph
    B. Electrocardiogram
    C. Electro changes gram
    D. Electrically computed graph

40. The instrument used for measuring blood pressure is known as

    A. ECG
    B. Stethoscope
    C. Sphygmomanometer
    D. EEG.

# Appendix 3: Answer Key to Pre-Test (Control Group)

| QUESTION NO | ANSWER | QUESTION NO | ANSWER |
|---|---|---|---|
| 1. | B | 21. | D |
| 2. | C | 22. | D |
| 3. | C | 23. | D |
| 4. | A | 24. | B |
| 5. | B | 25. | B |
| 6. | D | 26. | C |
| 7. | C | 27. | B |
| 8. | A | 28. | A |
| 9. | D | 29. | B |
| 10. | B | 30. | C |
| 11. | A | 31. | C |
| 12. | B | 32. | B |
| 13. | A | 33. | C |
| 14. | A | 34. | C |
| 15. | A | 35. | D |
| 16. | B | 36. | B |
| 17. | C | 37. | D |
| 18. | A | 38. | C |
| 19. | B | 39. | B |
| 20. | C | 40. | B |

# Appendix 4: Answer Key to Pre-Test (Experimental Group)

| QUESTION NO | ANSWER | QUESTION NO | ANSWER |
|---|---|---|---|
| 1. | D | 21. | B |
| 2. | D | 22. | C |
| 3. | D | 23. | C |
| 4. | B | 24. | A |
| 5. | B | 25. | B |
| 6. | C | 26. | D |
| 7. | B | 27. | C |
| 8. | A | 28. | A |
| 9. | B | 29. | D |
| 10. | C | 30. | B |
| 11. | C | 31. | A |
| 12. | B | 32. | B |
| 13. | C | 33. | A |
| 14. | C | 34. | A |
| 15. | D | 35. | A |
| 16. | B | 36. | B |
| 17. | D | 37. | C |
| 18. | C | 38. | A |
| 19. | B | 39. | B |
| 20. | B | 40. | C |

# Appendix 5: Post-Test (Control Group)
## ROSARY HIGH SCHOOL BARODA
### (POST-TEST FOR CONTROL GROUP)

<u>Instructions</u>
1) **Answer all the questions.**
2) **All are of are multiple choice type questions.  Each carries 1 mark.  Read the questions carefully and choose one correct answer out of the given options (A), (B), (C) and (D) and indicate in the given answer sheet.**

1. Hb is

   A. Vitamin
   B. Skin pigment
   C. Blood carrier
   D. Respiratory pigment

2. Maximum amount of carbon dioxide transport occurs as

   A. Dissolved in plasma
   B. Carbaminohemoglobin complex
   C. Bicarbonates
   D. None of the above

3. Chloride shift is required for the transport of

   A. Nitrogen
   B. Oxygen
   C. Carbon dioxide
   D. Carbon dioxide and oxygen

4. The function of pneumotaxic centre is to

   A. To regulate inhalation
   B. To maintain rhythmicity of respiration
   C. To increase rate of exhalation
   D. Does not play any significant role.

5. The disease in which masses of undifferentiated cells formed in tracheal walls

   A. Acute bronchitis
   B. Emphysema
   C. Lung cancer
   D. Pneumonia

6. In ECG, P-wave refers to

    A. End of atrial contraction
    B. Beginning of atrial contraction
    C. Beginning of ventricular contraction
    D. None of the above

7. Open vascular system occurs in

    A. Fish
    B. Prawn
    C. Snake
    D. Man

8. Thrombocytes have a life of

    A. 3-4 weeks
    B. 4-5 weeks
    C. 3-4 days
    D. None of the above

9. Pulse beat is measured from

    A. Capillaries
    B. Veins
    C. Arteries
    D. Nerves

10. Blood vessels taking blood from lungs to heart are

    A. Cardiac veins
    B. Pulmonary arteries
    C. Pulmonary veins
    D. Cardiac arteries

11. Urea is transported through

    A. RBCs
    B. WBCs
    C. Blood plasma
    D. All the above

12. Amount of glomerular filterate formed per day is

    A. 50 lt
    B. 180 lt
    C. 250 lt
    D. 1000 lt

13. Urinary bladder is absent in

    A. Aves
    B. Reptiles
    C. Amphibians
    D. Mammals

14. ADH takes part in

    A. Water retention in urine
    B. $Na^+$ reabsorption
    C. Reducing urea formation
    D. Absorption of water from urine

15. Humans are

    A. Ammonotelic
    B. Ureotelic
    C. Uricotelic
    D. Guanotelic

16. Identify the bone shown below
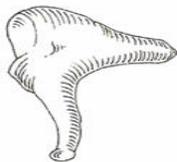


    A. Malleus
    B. Incus
    C. Stapes
    D. None of the above

17. In the picture shown below the person is affected by



    A. Osteoporosis
    B. Osteoarthritis
    **C. Gouty arthritis**
    D. Rheumatoid arthritis

18. Identify the part 'c'.
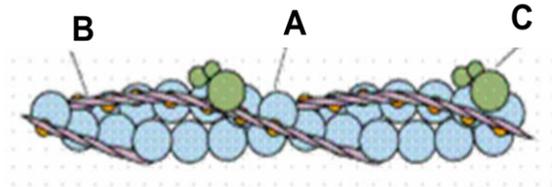


    A. Actin
    B. Myosin
    C. Troponin
    D. Tropomyosin

19. What is present in cavity in which longest bone is present ?

    A. Ligament
    B. Synovial fluid
    C. Cartilage
    D. Tendon

20. Human vertebral formula is

    A. $C_4T_8L_4S_8C_6$
    B. $C_7T_8L_5S_6C_7$
    C. $C_7T_{12}L_5S_4C_5$
    D. $C_7T_{12}L_5S_5C_4$

21. Blood is colourless in

    A. Earthworm
    B. Cockroach
    C. Leech
    D. Frog

22. Kidney shaped nucleus occurs in

    A. Neutrophil
    B. Eosinophil
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    A. ECG
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26. Uppermost part of the brain is

    A. Pons
    B. Mid brain
    C. Thalamus
    D. Medulla oblongata

27. Ratio of $Na^+$ ions exchanged in place of $K^+$ ions is

    A. 3:1
    B. 3:2
    C. 2:3
    D. 4:6

28. In the eyes cone cells are connected with the reception of

    A. Light and colour both

B. Light
C. Colour
D. None of these

29. Corpus callosum structure is related with which part of brain ?

    A. Cerebrum
    B. Cerebellum
    C. Mid brain
    D. Diencephalon

30. It gives buoyancy to the brain

    A. CSF
    B. Vitreous humor
    C. Cytoplasm
    D. Blood plasma

31. Which vitamin is also known as riboflavin?

    A. Vitamin $B_1$
    B. Vitamin $B_2$
    C. Vitamin $B_{12}$
    D. Vitamin $B_6$

32. Fat in animal body is stored in

    A. Adipose tissue
    B. Areolar tissue
    C. Muscular tissue
    D. Epithelial tissue

33. Table salt gives us which mineral?

    A. Iron
    B. Chlorine
    C. Phosphorous
    D. calcium

34. Through which organ the process of egestion occurs

    A. Mouth
    B. Anus
    C. Stomach
    D. intestine

35. Pernicious anaemia occurs due to the deficiency of

    A. Vitamin $B_1$
    B. Vitamin $B_5$
    C. Vitamin $B_{12}$
    D. Vitamin C

36. Which is not the function of HCl

    A. Killing bacteria
    B. Conversion of pepsinogen into pepsin
    C. Conversion of protein into peptones
    D. Sterilization of food.

37. The action of bile can be called

    A. Oxidation
    B. Emulsification
    C. Etherification
    D. Dehydrogenation

38. The number of salivary glands present human beings is

    A. 5 pairs
    B. 4 pairs
    C. 3 pairs
    D. 2 pairs

39. The dental formula of adult human is

    A. 2/2 ,1/1, 2/2, 2/2
    B. 2/2, 1/1, 1/1, 4/4
    C. 2/2, 1/1, 2/2, 3/4
    D. 2/2, 1/1, 2/2, 3/3

40. Pancreatic juice helps in digestion of

    A. Proteins and fats
    B. Proteins and carbohydrates
    C. Fats and carbohydrate
    D. Proteins, fats and carbohydrates

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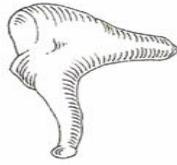


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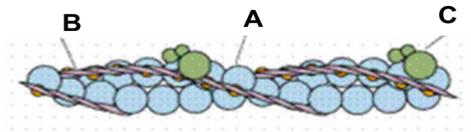


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D. calcium

24. Through which organ the process of egestion occurs

    A. Mouth
    B. Anus
    C. Stomach
    D. intestine

25. Pernicious anaemia occurs due to the deficiency of

    A. Vitamin $B_1$
    B. Vitamin $B_5$
    C. Vitamin $B_{12}$
    D. Vitamin C

26. Which is not the function of HCl

    A. Killing bacteria
    B. Conversion of pepsinogen into pepsin
    C. Conversion of protein into peptones
    D. Sterilization of food.

27. The action of bile can be called

    A. Oxidation
    B. Emulsification
    C. Etherification
    D. Dehydrogenation

28. The number of salivary glands present human beings is

    A. 5 pairs
    B. 4 pairs
    C. 3 pairs
    D. 2 pairs

29. The dental formula of adult human is

    A. 2/2 ,1/1, 2/2, 2/2
    B. 2/2, 1/1, 1/1, 4/4
    C. 2/2, 1/1, 2/2, 3/4
    D. 2/2, 1/1, 2/2, 3/3

30. Pancreatic juice helps in digestion of

      A. Proteins and fats
      B. Proteins and carbohydrates
      C. Fats and carbohydrate
      D. Proteins, fats and carbohydrates

31. Hb is

      A. Vitamin
      B. Skin pigment
      C. Blood carrier
      D. Respiratory pigment

32. Maximum amount of carbon dioxide transport occurs as

      A. Dissolved in plasma
      B. Carbaminohemoglobin complex
      C. Bicarbonates
      D. None of the above

33. Chloride shift is required for the transport of

      A. Nitrogen
      B. Oxygen
      C. Carbon dioxide
      D. Carbon dioxide and oxygen

34. The function of pneumotaxic centre is to

      A. To regulate inhalation
      B. To maintain rhythmicity of respiration
      C. To increase rate of exhalation
      D. Does not play any significant role.

35. The disease in which masses of undifferentiated cells formed in tracheal walls

      A. Acute bronchitis
      B. Emphysema
      C. Lung cancer
      D. Pneumonia

36. In ECG, P-wave refers to
      A. End of atrial contraction
      B. Beginning of atrial contraction

C. Beginning of ventricular contraction
D. None of the above

37. Open vascular system occurs in

A. Fish
B. Prawn
C. Snake
D. Man

38. Thrombocytes have  a life of

A. 3-4 weeks
B. 4-5 weeks
C. 3-4 days
D. None of the above

39. Pulse beat is measured from

A. Capillaries
B. Veins
C. Arteries
D. Nerves

40. Blood vessels taking blood from lungs to heart are

A. Cardiac veins
B. Pulmonary arteries
C. Pulmonary veins
D. Cardiac arteries

# Appendix 7: Answer Key to Post-Test

# (Control Group)

| QUESTION NO | ANSWER | QUESTION NO | ANSWER |
|---|---|---|---|
| 1. | D | 21. | B |
| 2. | C | 22. | C |
| 3. | C | 23. | A |
| 4. | C | 24. | B |
| 5. | D | 25. | C |
| 6. | B | 26. | B |
| 7. | B | 27. | B |
| 8. | C | 28. | A |
| 9. | C | 29. | A |
| 10. | C | 30. | A |
| 11. | C | 31. | B |
| 12. | B | 32. | A |
| 13. | A | 33. | B |
| 14. | D | 34. | B |
| 15. | B | 35. | C |
| 16. | B | 36. | C |
| 17. | C | 37. | B |
| 18. | C | 38. | C |
| 19. | B | 39. | D |
| 20. | D | 40. | D |

# Appendix 8: Answer Key to Post-Test (Experimental Group)

| QUESTION NO | ANSWER | QUESTION  NO | ANSWER |
|---|---|---|---|
| 1. | C | 21. | B |
| 2. | B | 22. | A |
| 3. | A | 23. | B |
| 4. | D | 24. | B |
| 5. | B | 25. | C |
| 6. | B | 26. | C |
| 7. | C | 27. | B |
| 8. | C | 28. | C |
| 9. | B | 29. | D |
| 10. | D | 30. | D |
| 11. | B | 31. | D |
| 12. | C | 32. | C |
| 13. | A | 33. | C |
| 14. | B | 34. | C |
| 15. | C | 35. | D |
| 16. | B | 36. | R |
| 17. | B | 37. | B |
| 18. | A | 38. | C |
| 19. | A | 39. | C |
| 20. | A | 40. | C |

# Appendix 9: Scores of Students at the Pre-Test and Post Test (Control Group)

## *Table 1:  Scores of Students at the Pre-Test and Post Test (Control Group)*

| ROLL NO | PRE-TEST (OUT OF 40) | POST-TEST (OUT OF 40) | GAIN SCORES | x | $x^2$ |
|---------|----------------------|-----------------------|-------------|------|----------|
| 1  | 11 | 24 | 13 | 10.63 | 112.9969 |
| 2  | 17 | 28 | 11 | 14.63 | 214.0369 |
| 3  | 14 | 31 | 17 | 17.63 | 310.8169 |
| 4  | 15 | 30 | 15 | 16.63 | 276.5569 |
| 5  | 17 | 32 | 15 | 18.63 | 347.0769 |
| 6  | 11 | 28 | 17 | 14.63 | 214.0369 |
| 7  | 15 | 29 | 14 | 15.63 | 244.2969 |
| 8  | 13 | 27 | 14 | 13.63 | 185.7769 |
| 9  | 17 | 30 | 13 | 16.63 | 276.5569 |
| 10 | 15 | 28 | 13 | 14.63 | 214.0369 |
| 11 | 15 | 31 | 16 | 17.63 | 310.8169 |
| 13 | 18 | 24 | 06 | 10.63 | 112.9969 |
| 14 | 17 | 30 | 13 | 16.63 | 276.5569 |
| 15 | 20 | 31 | 11 | 17.63 | 310.8169 |
| 16 | 14 | 23 | 09 | 9.63  | 92.7369  |
| 17 | 13 | 29 | 16 | 15.63 | 244.2969 |
| 18 | 19 | 26 | 07 | 12.63 | 159.5169 |
| 19 | 15 | 24 | 09 | 10.63 | 112.9969 |
| 20 | 17 | 30 | 13 | 16.63 | 276.5569 |
| 21 | 18 | 31 | 13 | 17.63 | 310.8169 |
| 22 | 13 | 30 | 17 | 16.63 | 276.5569 |

| ROLL NO | PRE-TEST (OUT OF 40) | POST-TEST (OUT OF 40) | GAIN SCORES | x | $x^2$ |
|---|---|---|---|---|---|
| 23 | 16 | 31 | 15 | 17.63 | 310.8169 |
| 24 | 18 | 29 | 11 | 15.63 | 244.2969 |
| 25 | 11 | 32 | 21 | 18.63 | 347.0769 |
| 26 | 14 | 29 | 15 | 15.63 | 244.2969 |
| 27 | 17 | 31 | 14 | 17.63 | 310.8169 |
| 28 | 20 | 29 | 09 | 15.63 | 244.2969 |
| 30 | 11 | 27 | 16 | 13.63 | 185.7769 |
| 31 | 15 | 30 | 15 | 16.63 | 276.5569 |
| TOTAL | 446<br>$n_1=29$<br>MEAN(M1)= 5.37 | 834<br>$n_1=29$<br>MEAN(M1)= 28.75 | 388/29<br><br>$m_1=13.37$ | 446.27 | 7044.79<br>7044.79/n-1<br>7044.79/28<br>$V_1=251.59$ |

$m_1=13.37$

# Appendix 10: Scores of Students at the Pre-Test and Post Test (Experimental Group)

## Table 2: Scores of Students at the Pre-Test and Post Test (Experimental Group)

| ROLL NO | PRE-TEST (OUT OF 40) | POST-TEST (OUT OF 40) | GAIN SCORES | y | $y^2$ |
|---|---|---|---|---|---|
| 1 | 14 | 37 | 23 | 14.03 | 196.8409 |
| 2 | 12 | 38 | 26 | 15.03 | 225.9009 |
| 3 | 17 | 40 | 23 | 17.03 | 290.0209 |
| 4 | 18 | 36 | 18 | 13.03 | 169.7809 |
| 5 | 13 | 39 | 26 | 16.03 | 256.9609 |
| 6 | 12 | 37 | 25 | 14.03 | 196.8409 |
| 7 | 16 | 38 | 22 | 15.03 | 225.9009 |
| 8 | 12 | 36 | 24 | 13.03 | 169.7809 |
| 9 | 18 | 39 | 21 | 16.03 | 256.9609 |
| 10 | 14 | 40 | 26 | 17.03 | 290.0209 |
| 11 | 13 | 37 | 24 | 14.03 | 196.8409 |
| 12 | 12 | 36 | 24 | 13.03 | 169.7809 |
| 13 | 10 | 34 | 24 | 11.03 | 121.6609 |
| 14 | 18 | 38 | 20 | 15.03 | 225.9009 |
| 15 | 14 | 37 | 23 | 14.03 | 196.8409 |
| 16 | 16 | 40 | 24 | 17.03 | 290.0209 |
| 17 | 13 | 38 | 25 | 15.03 | 225.9009 |
| 18 | 10 | 37 | 27 | 14.03 | 196.8409 |
| 19 | 11 | 34 | 23 | 11.03 | 121.6609 |
| 20 | 14 | 33 | 19 | 10.03 | 100.6009 |
| 21 | 18 | 31 | 13 | 8.03 | 64.4809 |

| ROLL NO | PRE-TEST (OUT OF 40) | POST-TEST (OUT OF 40) | GAIN SCORES | $y$ | $y^2$ |
|---|---|---|---|---|---|
| 22 | 13 | 38 | 25 | 15.03 | 225.9009 |
| 23 | 10 | 37 | 27 | 14.03 | 196.8409 |
| 24 | 16 | 35 | 19 | 12.03 | 144.7209 |
| 25 | 12 | 34 | 22 | 11.03 | 121.6609 |
| 26 | 10 | 36 | 26 | 13.03 | 169.7809 |
| 27 | 15 | 38 | 23 | 15.03 | 225.9009 |
| 28 | 12 | 35 | 23 | 12.03 | 144.7209 |
| 29 | 18 | 38 | 20 | 15.03 | 225.9009 |
| 30 | 16 | 40 | 24 | 17.03 | 290.0209 |
| TOTAL | **417** $n_1=30$ MEAN($M_1$)=13.9 | **1106** $n_1=30$ MEAN($M_1$)=36.86 | **689/30** $m_2=22.97$ | **416.9** | **5934.987/n** **5934.987/30** $V_2=197.83$ |

$$m_2 = 22.97$$

# Appendix 11: Reaction Scale for Students

**REACTION OF STUDENTS ON BIOLOGICAL SCIENCES THROUGH MULTIMEDIA PACKAGE IN TERMS OF FREQUENCIES AND CHI- SQUARE ANALYSIS.**

| Sr. No. | STATEMENTS | SA | A | UD | DA | SD | CHI. SQ.V | LEVEL OF SIGNIFIC ANCE (with degree of freedom 4) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | At 0.01 13.277 |
| 1. | Content covered in each unit of multimedia software package is sufficient. | 25 83.34% | 3 10.00% | 1 3.34% | 1 3.34% | 0 0.00% | 73.00 | ✳ |
| 2. | Concepts are not sufficiently clarified properly through multimedia software teaching. | 0 0.00% | 1 3.34% | 1 3.34% | 4 13.34% | 24 80.00% | 67.83 | ✳ |
| 3. | For understanding the concepts clearly time required is less when they are taught through multimedia software package. | 26 86.67% | 2 6.67% | 1 3.34% | 1 3.34% | 0 0.00% | 80.50 | ✳ |
| 4. | Illustrations/exampl es provided in the multimedia software package are not adequate for the purpose. | 1 3.34% | 1 3.34% | 0 0.00% | 4 13.34% | 24 80.00% | 78.83 | ✳ |
| 5. | Examples given in the multimedia software package helps in the concept clarity. | 25 83.34% | 4 13.34% | 1 3.34% | 0 0.00% | 0 0.00% | 74.00 | ✳ |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 6. | Illustrations/examples in the multimedia software package are not easy to understand. | 0 0.00% | 0 0.00% | 2 6.67% | 25 83.34% | 3 10.00% | 73.34 | ∗ |
| 7. | The language used in the multimedia software package is simple and easy to understand. | 27 90.00% | 3 10.00% | 0 0.00% | 0 0.00% | 0 0.00% | 89.67 | ∗ |
| 8. | Teaching points given under each chapter are logically sequenced in the prepared multimedia software package. | 20 66.67% | 6 20.00% | 3 10.00% | 1 3.34% | 0 0.00% | 42.12 | ∗ |
| 9. | Diagrams/Figures in the multimedia software package do not help in the clarity of concepts. | 0 0.00% | 1 3.34% | 2 6.67% | 8 26.67% | 19 63.34% | 39.00 | ∗ |
| 10. | Concepts presented through multimedia software package are more interesting. | 20 66.67% | 7 23.34% | 1 3.34% | 1 3.34% | 1 3.34% | 83.79 | ∗ |
| 11. | For further studies reference links provided in the multimedia software package are not much useful. | 0 0.00% | 1 3.34% | 3 10.00% | 5 16.67% | 21 70.00% | 47.00 | ∗ |
| 12. | Diagrams/Figures shown in the multimedia software package are very appropriate. | 18 60.00% | 8 26.67% | 3 10.00% | 1 3.34% | 0 0.00% | 34.12 | ∗ |
| 13. | The teaching/learning material provided in the multimedia software package has been prepared from different sources. | 25 83.34% | 4 13.34% | 1 3.34% | 0 0.00% | 0 0.00% | 74.00 | ∗ |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 14. | The information provided in the multimedia packaged is not up to date. | 0<br>0.00% | 1<br>3.34% | 4<br>13.34% | 14<br>46.67% | 11<br>36.67% | 23.62 | * |
| 15. | The multimedia software package prepared takes into consideration student's previous level of knowledge in the subject. | 20<br>66.67% | 6<br>20.00% | 3<br>10.00% | 1<br>3.33% | 0<br>0.00% | 42.12 | * |
| 16. | Evaluation pattern in multimedia software package is not proper. | 0<br>0.00% | 1<br>3.34% | 2<br>6.67% | 11<br>36.67% | 16<br>53.34% | 31.29 | * |
| 17. | Evaluation items are very clear and to the point in multimedia software package. | 23<br>76.67% | 5<br>16.67% | 1<br>3.34% | 0<br>0.00% | 1<br>3.34% | 60.00 | * |
| 18. | Answer keys given for each evaluation items help in self learning process. | 20<br>66.67% | 7<br>23.34% | 1<br>3.34% | 1<br>3.34% | 1<br>3.34% | 42.95 | * |
| 19. | Evaluation items do not cover the entire subject matter. | 0<br>0.00% | 0<br>0.00% | 3<br>10.00% | 12<br>40.00% | 15<br>50.00% | 31.58 | * |
| 20. | The multimedia package helps students to concretize the concepts easily. | 19<br>63.34% | 9<br>30.00% | 1<br>3.34% | 1<br>3.34% | 0<br>0.00% | 45.95 | * |
| 21. | The numbers of evaluation items are not adequate for providing feedback. | 0<br>0.00% | 1<br>3.34% | 2<br>6.67% | 11<br>36.67% | 16<br>53.34% | 31.29 | * |
| 22. | The evaluation items are objective in nature, so the evaluation done is very clear. | 25<br>83.34% | 4<br>13.34% | 1<br>3.34% | 0<br>0.00% | 0<br>0.00% | 74.00 | * |
| 23. | Instructional manual does not contain all information about the usage of multimedia package. | 0<br>0.00% | 1<br>3.34% | 2<br>6.67% | 10<br>33.34% | 17<br>56.67% | 33.29 | * |

| 24. | Learning through multimedia is very interesting as it is totally a new experience. | 25 83.34% | 5 13.34% | 0 0.00% | 0 0.00% | 0 0.00% | 73.34 | * |
|---|---|---|---|---|---|---|---|---|
| 25. | Instructional manual contains all the necessary information about the usage multimedia package. | 18 60.00% | 8 26.67% | 1 3.34% | 2 6.67% | 1 3.34% | 33.45 | * |
| 26. | Learning through Multimedia is certainly more enjoyable than lectures or traditional methods. | 26 86.66% | 4 13.34% | 0 0.00% | 0 0.00% | 0 0.00% | 82.16 | * |
| 27. | I like illustrations given in the slides, which actually gave me additional information about the lesson. | 25 83.34% | 4 13.34% | 1 3.34% | 0 0.00% | 0 0.00% | 74.00 | * |
| 28. | Illustrations do not help the students to relate what they learn in biology to real life situations. | 0 0.00% | 1 3.34% | 2 6.67% | 10 33.34% | 17 56.67% | 33.29 | * |
| 29. | Multimedia instruction is an effective way of presentation because there is little stress on the students in the learning process. | 25 83.34% | 4 13.34% | 1 3.34% | 0 0.00% | 0 0.00% | 74.00 | * |
| 30. | I can learn at my own pace with the help of Multimedia instructional package. | 26 86.66% | 2 6.67% | 1 3.33% | 0 0.00% | 0 0.00% | 82.17 | * |
| 31. | Multimedia instruction does not provide more freedom in the learning situation. | 0 0.00% | 1 3.34% | 3 10.00% | 12 40.00% | 14 46.67% | 26.12 | * |

| 32. | A student can immediately test his/her knowledge through practicing exercises given in the multimedia software package. | 21 70.00% | 6 20.00% | 1 3.34% | 0 0.00% | 1 3.34% | 78.45 | ∗ |
|---|---|---|---|---|---|---|---|---|
| 33. | This method certainly does not give more freedom to the students to learn. | 1 3.34% | 1 3.34% | 2 6.67% | 10 33.34% | 16 53.34% | 28.12 | ∗ |
| 34. | Learning Biology is actually more fun when it is taught through Multimedia instructional method. | 20 66.67% | 8 26.67% | 1 3.34% | 1 3.34% | 0 0.00% | 46.08 | ∗ |
| 35. | This method is not good in learning biology because students' doubts may not be cleared immediately. | 1 3.34% | 1 3.34% | 4 13.34% | 6 20.00% | 17 56.67% | 27.27 | ∗ |
| 36. | Self learning can be promoted through such multimedia software package. | 18 60.00% | 10 33.34% | 1 3.34% | 1 3.34% | 0 0.00% | 38.45 | ∗ |
| 37. | Concepts presented through Multimedia instruction are not very clear at all. | 0 0.00% | 2 6.67% | 4 13.34% | 9 30.00% | 15 50.00% | 41.41 | ∗ |
| 38. | Multimedia instruction makes the difficult concepts very easy to understand. | 19 63.34% | 8 26.67% | 2 6.67% | 1 3.34% | 0 0.00% | 47.75 | ∗ |
| 39. | Animations given in Multimedia instructional package are actually distracting in understanding the concepts. | 0 0.00% | 1 3.34% | 3 10.00% | 13 43.34% | 13 43.34% | 51.25 | ∗ |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 40. | Illustrations given in the multimedia software package are enough to understand the concept clearly. | 17 56.67% | 11 36.67% | 1 3.34% | 1 3.34% | 0 0.00% | 37.79 | * |
| 41. | Multimedia instruction took more time to understand the concepts than usual classroom teaching. | 0 0.00% | 0 0.00% | 4 13.34% | 12 40.00% | 14 46.67% | 70.45 | * |
| 42. | Concepts presented in Multimedia instruction were logically arranged. | 20 66.67% | 8 26.67% | 1 3.34% | 1 3.34% | 0 0.00% | 45.12 | * |
| 43. | Learning through Multimedia instruction was not much of a use to the students. | 0 0.00% | 1 3.34% | 2 6.67% | 11 36.67% | 16 53.34% | 31.29 | * |
| 44. | Illustrations given in Multimedia software instruction are related to day today life experiences. | 13 43.34% | 13 43.34% | 3 10.00% | 1 3.34% | 0 0.00% | 25.79 | * |
| 45. | Classroom learning is more enjoyable and informative when taught through multimedia software package. | 19 63.34% | 8 26.67% | 2 6.67% | 1 3.34% | 0 0.00% | 39.29 | * |
| 46. | The language used in Multimedia instruction is easy and simple to understand. | 17 56.67% | 10 33.34% | 1 3.34% | 1 3.34% | 1 3.34% | 32.95 | * |
| 47. | The exercises given in each chapter is adequate. | 18 60.00% | 9 30.00% | 2 6.67% | 1 3.34% | 0 0.00% | 35.95 | * |
| 48. | Multimedia instruction takes care of previous knowledge of the subject. | 21 70.00% | 7 23.34% | 1 3.34% | 1 3.34% | 0 0.00% | 49.45 | * |

| 49. | Learning Biological concepts through multimedia instructional software package has not increased the enthusiasm for the study of Biology. | 1 3.34% | 1 3.34% | 1 3.34% | 14 46.67% | 13 43.34% | 28.95 | * |
|---|---|---|---|---|---|---|---|---|
| 50. | Video-clippings helped in understanding the chapter in depth. | 17 56.67% | 9 30.00% | 2 6.67% | 1 3.34% | 1 3.34% | 30.45 | * |

**Note: ✱ indicates level of significance at 0.01 level**

# Appendix 12: Reaction Scale for Teachers

**REACTION OF BIOLOGY TEACHERS ON MULTIMEDIA INSTRUCTIONAL SOFTWARE PACKAGE TO TEACH BIOLOGICAL SCIENCES IN TERMS OF FREQUENCIES AND CHI- SQUARE ANALYSIS.**

| Sr. NO. | STATEMENTS | SA | A | UD | DA | SD | CHI SQ. V | At 0.01 level 13.27 |
|---|---|---|---|---|---|---|---|---|
| 1. | Teaching through Multimedia compared to normal classroom teaching is enjoyable because this method is more interesting for students to understand than lectures or other traditional methods. | 18 60.00% | 7 23.34% | 3 10.00% | 1 3.34% | 1 3.34% | 31.95 | * |
| 2. | As a biology teacher, I like the illustrations given in the slides, which actually gives me additional information about the lesson. | 20 66.67% | 7 23.34% | 2 6.67% | 1 3.34% | 0 0.00% | 43.29 | * |
| 3. | Illustrations in the multimedia instructional package may not help the students to relate what they learn in biology to real life situations. | 1 3.34% | 2 6.67% | 5 16.67% | 13 43.34% | 9 30.00% | 15.12 | * |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4. | Multimedia instruction is an effective way of presentation because there is little stress on the students in learning environment. | 17 56.67% | 9 30.00% | 2 6.67% | 1 3.34% | 1 3.34% | 30.45 | * |
| 5. | Students can learn at their own pace with such Multimedia instructional package. | 19 63.34% | 8 26.67% | 2 6.67% | 0 0.00% | 1 3.34% | 39.29 | * |
| 6. | A teacher can immediately test students' knowledge because there is lot of practice exercises in this multimedia software package. | 21 70.00% | 6 20.00% | 1 3.34% | 2 6.67% | 0 0.00% | 46.62 | * |
| 7. | This multimedia instructional approach does not give more freedom to the students to learn. | 0 0.00% | 0 0.00% | 4 13.34% | 9 30.00% | 17 56.67% | 32.12 | * |
| 8. | Multimedia instructional approach is very good for the teachers as well as for the students as they can interact with each other very effectively. | 0 0.00% | 1 3.34% | 3 10.00% | 10 33.34% | 16 53.34% | 28.16 | * |
| 9. | Learning Biological concepts can be really a fun through this Multimedia instructional method. | 24 80.00% | 6 20.00% | 0 0.00% | 0 0.00% | 0 0.00% | 79.41 | * |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10. | Multimedia instructional method is not good in learning biological concepts because students' doubts may not be cleared. | 0<br>0.00% | 0<br>0.00% | 5<br>16.67% | 12<br>40.0% | 13<br>43.34% | 24.29 | * |
| 11. | Through Multimedia instructional approach a student can learn himself/herself (self-study) without the help of others. | 23<br>76.67% | 7<br>23.34% | 0<br>0.00% | 0<br>0.00% | 0<br>0.00% | 63.45 | * |
| 12. | Biological concepts presented in Multimedia instructional package are not very clear. | 0<br>0.00% | 2<br>6.67% | 2<br>6.67% | 8<br>26.6% | 18<br>60.00% | 33.79 | * |
| 13. | Multimedia instructional approach makes it much more easier to understand the biological concepts. | 26<br>86.67% | 3<br>10.00% | 1<br>3.34% | 0<br>0.00% | 0<br>0.00% | 81.16 | * |
| 14. | Animations in the Multimedia instruction may distract the students in understanding the concepts. | 1<br>3.34% | 1<br>3.34% | 6<br>20.00% | 10<br>33.3% | 12<br>40.00% | 20.45 | * |
| 15. | Illustrations given in Multimedia instruction are more than enough to understand the biological concepts clearly. | 20<br>66.67% | 6<br>20.00% | 3<br>10.00% | 1<br>3.34% | 0<br>0.00% | 42.12 | * |
| 16. | Multimedia instruction actually took more time to understand the concepts than usual classroom teaching. | 1<br>3.34% | 2<br>6.67% | 5<br>16.67% | 12<br>40.0% | 10<br>33.34% | 14.12 | * |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 17. | Learning materials presented in Multimedia instruction are logically arranged in the multimedia software package. | 16<br>53.34% | 13<br>43.34% | 1<br>3.34% | 0<br>0.00% | 0<br>0.00% | 38.28 | * |
| 18. | Teaching through Multimedia instructional method is additional burden for the teachers as it requires extra work. | 1<br>3.34% | 3<br>10.00% | 4<br>13.34% | 10<br>33.3% | 12<br>40.00% | 13.45 | * |
| 19. | Illustrations given in Multimedia instructional package are very much related to day today life experiences. | 16<br>53.34% | 11<br>36.67% | 1<br>3.34% | 1<br>3.34% | 1<br>3.34% | 30.95 | * |
| 20. | Classroom teaching is more enjoyable through multimedia teaching approach. | 20<br>66.67% | 9<br>30.00% | 1<br>3.34% | 0<br>0.00% | 0<br>0.00% | 31.62 | * |
| 21. | The language used in Multimedia instructional package is easy and simple to understand. | 26<br>86.67% | 3<br>10.00% | 1<br>3.34% | 0<br>0.00% | 0<br>0.00% | 81.16 | * |
| 22. | Multimedia instruction does not take care of previous knowledge (percentage) needed to understand the present concept. | 1<br>3.34% | 1<br>3.34% | 2<br>6.67% | 14<br>46.6% | 12<br>40.00% | 25.45 | * |
| 23. | The exercises given in each chapter is adequate to understand the chapter well. | 19<br>63.34% | 8<br>26.67% | 2<br>6.67% | 0<br>0.00% | 1<br>3.34% | 40.95 | * |

| 24. | Multimedia instructional package takes care of the previous knowledge of the subject. | 17 56.67% | 9 30.00% | 3 10.00% | 1 3.34% | 0 0.00% | 31.62 | * |
|-----|----|----|----|----|----|----|----|----|
| 25. | The animations in the multimedia package are not easy to understand the biological concepts. | 1 3.34% | 3 10.00% | 2 6.67% | 12 40.0% | 12 40.00% | 18.45 | * |
| 26. | The video-clippings in the multimedia instructional package helped very much in understanding the concepts in depth. | 13 43.34% | 13 43.34% | 2 6.67% | 1 3.34% | 1 3.34% | 25.12 | * |
| 27. | Break given in Multimedia package will help the students to refresh their minds. | 18 60.00% | 8 26.67% | 3 10.00% | 0 0.00% | 1 3.34% | 34.12 | * |
| 28. | I am feeling tired and bored while going through the slides of multimedia software package. | 1 3.34% | 1 3.34% | 2 6.67% | 16 53.3% | 10 33.34% | 28.12 | * |
| 29. | Animations shown in Multimedia instruction are appropriate to help the students in understanding the concepts. | 16 53.34% | 12 40.00% | 1 3.34% | 1 3.34% | 0 0.00% | 34.45 | * |
| 30. | Topic is not introduced in the Multimedia instructional package properly. | 0 0.00% | 1 3.34% | 3 10.00% | 11 36.6% | 15 50.00% | 82.16 | * |
| 31. | Extra figures and clippings did help me to understand well the biology concepts. | 26 86.67% | 3 10.00% | 1 3.34% | 0 0.00% | 0 0.00% | 81.16 | * |

| 32. | Enough revision is not done in this Multimedia instructional package to help the students to understand the concepts in depth. | 0 0.00% | 0 0.00% | 2 6.67% | 17 56.6% | 11 36.67% | 36.45 | * |
|---|---|---|---|---|---|---|---|---|
| 33. | Instruction given in each slide of Multimedia instruction is easy and clear to follow. | 18 60.00% | 8 26.67% | 3 10.00% | 1 3.34% | 0 0.00% | 34.12 | * |
| 34. | I had to read the slide many times to understand what is being said as there was no clarity. | 0 0.00% | 1 3.34% | 2 6.67% | 14 46.6% | 13 43.34% | 27.21 | * |
| 35. | Multimedia instructional approach alone is not enough in understanding the concepts very clearly. | 11 36.67% | 12 40.00% | 4 13.34% | 1 3.34% | 2 6.67% | 15.95 | * |
| 36. | Independent learning without the help of biology teacher is not possible through Multimedia instruction. | 0 0.00% | 1 3.34% | 3 10.00% | 12 40.0% | 14 46.67% | 26.12 | * |
| 37. | Evaluation is done objectively (objective questions) so no partiality involved in scoring. | 21 70.00 | 7 23.34% | 1 3.34% | 1 3.34% | 0 0.00% | 49.45 | * |
| 38. | Remedial (re-teaching the difficult concepts which is not understood by the students) teaching is not done in this multimedia instructional package. | 0 0.00% | 1 3.34% | 5 16.67% | 9 30.0% | 15 50.00% | 23.45 | * |

| 39. | Evaluation done at the end of each chapter is a suitable measure to know the learner's understanding about that topic. | 20 66.67% | 8 26.67% | 0 0.00% | 1 3.34% | 1 3.34% | 45.12 | ∗ |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 40. | Recapitulation done at the end of the topics is useful to the teachers as well as the learners. | 16 53.34% | 12 40.00% | 1 3.34% | 1 3.34% | 0 0.00% | 34.45 | ∗ |
| 41. | Interaction with Biology teacher to clarify doubts is not possible while using this Multimedia instruction (no face to face interaction). | 0 0.00% | 0 0.00% | 3 10.00% | 11 36.6% | 16 53.34% | 31.16 | ∗ |
| 42. | Scores obtained by the students at the end of each chapter gives feedback about student's learning in each chapter through Multimedia instruction. | 17 56.67% | 10 33.34% | 2 6.67% | 1 3.34% | 0 0.00% | 33.29 | ∗ |
| 43. | Discussion with biology teacher is very much needed along with Multimedia instruction to clarify doubts. | 15 50.00% | 12 40.00% | 0 0.00% | 1 3.34% | 2 6.67% | 29.95 | ∗ |
| 44. | Illustrations/exampl es given the multimedia package are not easy to understand. | 1 3.34% | 0 0.00% | 4 13.34% | 15 50.0% | 10 33.34% | 24.95 | ∗ |
| 45. | Content covered in each unit of the multimedia instructional software is quite sufficient. | 13 43.34% | 15 50.00% | 1 3.34% | 1 3.34% | 0 0.00% | 33.45 | ∗ |

| 46. | Concepts are not clarified properly through this multimedia instructional approach. | 0<br>0.00% | 0<br>0.00% | 3<br>10.00% | 9<br>30.0% | 18<br>60.00% | 36.62 | * |
|---|---|---|---|---|---|---|---|---|
| 47. | For teaching the biological concepts clearly time required is much less when they are taught through multimedia instruction. | 17<br>56.67% | 11<br>36.67% | 1<br>3.34% | 1<br>3.34% | 0<br>0.00% | 36.12 | * |
| 48. | Examples given in the multimedia software package very much help in the concept clarity. | 19<br>63.34% | 9<br>30.00% | 1<br>3.34% | 1<br>3.34% | 0<br>0.00% | 40.62 | * |
| 49. | The language used in the software is easy and lucid to understand the biological concepts. | 25<br>83.34% | 3<br>10.00% | 2<br>6.67% | 0<br>0.00% | 0<br>0.00% | 24.95 | * |
| 50. | Illustrations/exampl es provided in the multimedia software package are not adequate for the purpose. | 0<br>0.00% | 0<br>0.00% | 3<br>10.00% | 13<br>43.3% | 14<br>46.67% | 29.95 | * |

**Note: ∗ indicates level of significance at 0.01 level**

# Appendix 13: Scoring Pattern

**Scoring Pattern Reaction Scale for Students and Teachers**

*Procedure of Scoring*

The data were scored manually by the students and teachers separately for the reaction scales. For scoring the statements on reaction scale, the five alternatives to each statement on "Multimedia Instructional Software Package" were scored in the following manner.

| ALTERNATIVES | SCORE GIVEN ITEM EXPRESSING | |
|---|---|---|
| | POSITIVE ATTITUDE | NEGATIVE ATTITUDE |
| STRONGLY AGREE (SA) | 5 | 1 |
| AGREE (A) | 4 | 2 |
| UNDECIDED (UD) | 3 | 3 |
| DISAGREE (DA) | 2 | 4 |
| STRONGLY DISAGREE (SA) | 1 | 5 |

The scores on each item of the reaction scale were then added up to give total reaction score.

# Appendix 14: Request Letter to the Principal, Convent of Jesus and Mary High School, Fatehgunj, Baroda.

Saturday, 12<sup>th</sup> June, 2010

TO

The Principal,
Convent of Jesus and Mary High School,
Fathegunj,
Baroda-2

## Sub: Request for permission to collect data for Ph.D Studies

Respected Principal,

This is to introduce Fr. Rayappan Irudayam.S.J, who is a student of Ph.D studies (2010-11). He has designed and developed a Computer based Multimedia Software Package to Teach Biology for the students of English Medium Schools following Gujarat Board. For this he needs to implement the prepared multimedia package in 12<sup>th</sup> standard and therefore he will need to take required number of classes for collecting data for his study.

We will be greatly obliged if you would kindly help him in granting the required number of classes in your esteemed school, so that he may be able to complete his data collection. We assure you that the data collected will be kept fully confidential and only used for his study purpose alone.

Thanking you in anticipation for your kind co-operation.

Yours truly,

Principal

(Dr. D.R.Goel)
    Guide
Centre of Advanced Study in Education
Faculty of Education and Psychology
The Maharaja Sayajirao University of Baroda,
Vadodara.

Convent of Jesus and Mary
High School, Baroda
Principal
Convent of Jesus and Mary
Girls' High School, Vadodara.

# Appendix 15: Request Letter to the Principal, Rosary High School, Pratapgunj, Baroda.

Saturday, 12th June, 2010

TO

The Principal,
Rosary High School,
pratapgunj,
Baroda.

## Sub: Request for permission to collect data for Ph.D Studies

Respected Principal,

This is to introduce Fr. Rayappan Irudayam.S.J, who is a student of Ph.D studies (2010-11). He has designed and developed a Computer based Multimedia Software Package to Teach Biology for the students of English Medium Schools following Gujarat Board. For this he needs to take required number of classes for collecting data.

We will be greatly obliged if you would kindly help him in granting the required number of classes in your esteemed school, so that he may be able to complete his data collection. We assure you that the data collected will be kept fully confidential and only used for his study purpose only.

Thanking you in anticipation for your kind co-operation.

Yours truly,

Principal

(Dr. D.R.Goel)
    Guide
Centre of Advanced Study in Education
Faculty of Education and Psychology
The Maharaja Sayajirao University of Baroda,
Vadodara.

Rosary High School,
Baroda.
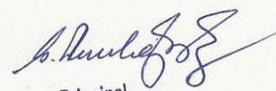
Principal
Rosary High School
Baroda-390002.