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सूचना का
अधिकार

भारत सरकार
मानव संसाधन विकास मंत्रालय
उच्चतर शिक्षा विभाग
शास्त्री भवन
नई दिल्ली – 110 115
GOVERNMENT OF INDIA
MINISTRY OF HUMAN RESOURCE DEVELOPMENT
DEPARTMENT OF HIGHER EDUCATION
SHASTRI BHAVAN
NEW DELHI-110 115

D.O. No. 14-2/2013-EE.5 (MDM-1-2)
March 21, 2016

Dear Sir/Madam,

As you are aware, Mid-day Meal programme exerts a positive influence on enrolment and attendance in schools. Apart from enhancing school attendance and child nutrition, it serves as an important social value and helps in fostering and inculcating a sense of equality among school children to make them better citizens of this country when they grow up.

2.   To make the programme more effective by way of achieving the above objectives, the Mid-day meal should contain adequate nutrients and calorie content and the food served should be hygienic, palatable and attractive to children and therefore the MDM guidelines provide for regular testing of meals. Rule 8 of Mid Day Meal Rules 2015 issued under the National Food Security Act 2013 also provides for testing of cooked meals by Government recognized laboratories on a random sample basis. Therefore, it is essential to have protocol based safety observance for the food served to children under MDMS.

3.   This department with the help of experts has prepared a draft testing Protocol to ensure quality of the meals and appropriate nutrition standards in the Mid-Day Meal Scheme.

4.   A copy of the draft Protocol on Testing of Meal under MDM prepared by the National Institute of Nutrition, Hyderabad is enclosed. The Testing Protocol deals *inter alia* with selection of sampling of the State/district/block level; the sample of testing procedure to be adopted; and, procedures of testing of Meals including the analytical techniques. An annexure containing the sample selection of district/block level has been provided in the Testing Protocol.

5.   I shall be grateful if you furnish your views/comments to us through e-mail on the enclosed draft guidelines before 29th of this month to enable us to finalise the Testing Protocol / Guidelines and circulate the same to all States/UTs for further necessary action.

        With regards,

                                                                                Yours sincerely,

Ecl: as stated

                                                                                (J Alam)

Principal Secretary (Education)
All States and Union Territories

शिक्षा का अधिकार
सर्व शिक्षा अभियान
सब पढ़े सब बढ़े

DRAFT PROTOCOL FOR TESTING THE QUALITY OF MID-DAY MEAL SCHEME

Abbreviations used

AIE	Alternative and Innovative Education
AOAC	Association of Official Analytical Chemist
EGS	Education Guarantee Scheme
MDM	Mid-day Meal
UEE	Universalization of Elementary Education

1. Mid-Day Meal

Mid-day Meal (MDM) in schools has had a long history in India. In 1925, a Mid-day Meal Programme was introduced for disadvantaged children in Madras Municipal Corporation. By the mid 1980s three States viz. Gujarat, Kerala and Tamil Nadu and the UT of Pondicherry had universalized cooked Mid-day Meal Programme with their own resources for children studying at the primary stage By 1990-91 the number of States implementing the Mid-day meal programme with their own resources on a universal or a large scale had increased to twelve States.

It is an incontrovertible fact that school meal programmes exert a positive influence on enrolment and attendance in schools. A hungry child is less likely to attend school regularly. Hunger drains them of their will and ability to learn. Chronic hunger can lead to malnutrition. Chronic hunger also delays or stops the physical and mental growth of children. Poor or insufficient nutrition over time means that children are too small for their age, and susceptible to diseases like measles or dysentery, which can be detrimental to malnourished children. Malnutrition adversely affects Universalization of Elementary Education. Even if a malnourished child does attend school, he/she finds it difficult to concentrate on and participate in the teaching/learning activities in school. Unable to cope, he/she would drop out.

There is also evidence to suggest that apart from enhancing school attendance and child nutrition, Mid-day meals have an important social value and foster equality. As children learn to sit together and share a common meal, one can expect some erosion of caste prejudices and class inequality. Moreover, cultural traditions and social structures often mean that girls are much more affected by hunger than boys. Thus the Mid-day meal programme can also reduce the gender gap in education, since it enhances female school attendance.

1.1 Objective of the Mid-Day Meal scheme:

i. Improving the nutritional status of children in classes I – V in Government, Local Body and Government aided schools, and EGS and AIE centres.

ii. Encouraging poor children, belonging to disadvantaged sections, to attend school more regularly and help them concentrate on classroom activities.

iii. Providing nutritional support to children of primary stage in drought-affected areas during summer vacation

To achieve the objectives of the scheme, the guidelines prescribe the following nutritional content in the mid-day meal:

Components	Calories	Protein
Primary	450 Cal	12 gms
Upper Primary	700 Cal	20 gms
Micro-nutrients Adequate quantities of micro-nutrients like Iron, Folic Acid , Vitamin-A etc, in convergence with Ministry of Health & Family Welfare		

1.2 Rationale of the Scheme

1. **Preventing classroom hunger:** Many children belonging to disadvantaged sections of society reach school with an empty stomach. Even children, who have a meal before they leave for school, get hungry by the afternoon and are not able to concentrate. Mid-day meal can help children from families, which cannot afford a lunch box or are staying a long distance away from schools to overcome "classroom hunger".

2. **Promoting school participation:** Mid-day meals have big effect on school participation, not just in terms of getting more children enrolled in the registers but also in terms of regular pupil attendance on a daily basis.

3. **Facilitating healthy growth of children:** Mid-day meal can also act as a regular source of "supplementary nutrition" for children and facilitate their healthy growth.

4. **Intrinsic educational value:** A well organized mid-day meal can be used as an opportunity to impart various good habits to children (such as washing one's hands before and after eating) and to educate them about the importance of clean water, good hygiene and other related matters.

5. **Fostering social equality:** Mid-day meal can help spread egalitarian values, as children from various social backgrounds learn to sit together and share a common meal. In particular, Mid-day meal can help to break the barriers of caste and class among school children. Appointing cooks from SC/ST communities is another way of teaching children to overcome caste prejudices.

6. **<u>Enhancing gender equity</u>:** The gender gap in school participation tends to narrow, as the Mid-day Meal Scheme helps erode the barriers that prevent girls from going to school. Mid-day Meal Scheme also provides a useful source of employment for women and helps liberate working women from the burden of cooking at home during the day. In these and other ways, women and girl children have a special stake in Mid-day Meal Scheme.

7. **<u>Psychological Benefits</u>:** Physiological deprivation leads to low self-esteem, consequent insecurity, anxiety and stress. The Mid-day Meal Scheme can help address these and facilitate cognitive, emotional and social development.

In view of the recently notified MDM Rules, the States/UTs need to carry out testing of meals under the MDM scheme. Therefore a study design has been framed for sampling of hot cooked meals and its testing for moisture, protein, fat, energy by calculation and carbohydrate by difference.

2. STUDY DESIGN

2.1 Sampling procedure HRD Mid-day meal programme: India is a vast country with 1.21 billion population and spread over 35 States and union territories. Also, all the States are very heterogeneous in terms of their population ranging from a small union territory, Lakshadweep with 64473 population to a very large State of Uttar Pradesh having 199812341 population. To conduct any national sample survey, the number of sample to be considered should be based on population proportion to the size of the State in order to provide proportionate representation wherein bigger States gets more representation than smaller States.

Using statistical technique quartile all States and UT's have been stratified into four different strata (group) based on the size of the population of the each State/UT. The quartile makes the ordered population into four groups starting from small population to large population with equal intervals as given below.

1st quartile: with population <1382611 (States with this population, named as very small States)

2nd quartile: population ranging from 1382611 to 16753235(States with this population, named as small States)

3rd quartile: population range from 16753235 to 61130704(States with this population, named as large States).

4th quartile: population with >61130704(States with this population, named as very large States).

Population in quartile	Sl. No	Name of the State
First quartile (<1382611)	1	Chandigarh
	2	Sikkim
	3	Arunachal Pradesh
	4	Mizoram
	5	Daman & Diu
	6	Dadra & Nagar Haveli
	7	Lakshadweep
	8	Puducherry
	9	Andaman & Nicobar Islands
2nd Quartile(1382611 to 16753235)	1	Jammu & Kashmir
	2	Himachal Pradesh
	3	Uttarakhand
	4	NCT of Delhi
	5	Nagaland
	6	Manipur
	7	Tripura
	8	Meghalaya

	9	Goa
3rd quartile(16753235 to 61130704)	1	Punjab
	2	Haryana
	3	Assam
	4	Jharkhand
	5	Orissa
	6	Chhattisgarh
	7	Gujarat
	8	Karnataka
	9	Kerala
	10	Andhra Pradesh
	11	Telangana
4th quartile (>61130704)	1	Rajasthan
	2	Uttar Pradesh
	3	Bihar
	4	West Bengal
	5	Madhya Pradesh
	6	Maharashtra
	7	Andhra Pradesh
	8	Tamil Nadu
Total	N	35

2.2   Selecting the Blocks: Based on the stratums (population of the States proportion to size) the country is divided   into 1. Very small (1st stratum) 2. Small (2nd stratum) 3. Medium (3rd stratum) 4.Big (4th stratum) States.

1. **Very small States :** From these State 2 districts randomly representing the natural regions of the State and from each district two blocks will be randomly selected and from each block four schools will be randomly chosen for proximate composition analysis of MDM.
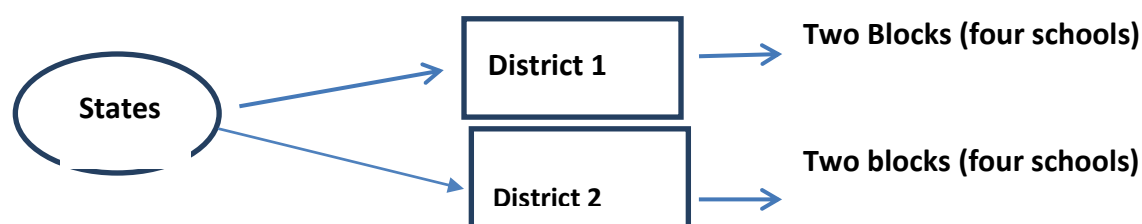
Please see Annexure – 1 for block sampling within States

2. **Small States:** From these States 4 districts randomly representing the natural regions of the State and from each district two blocks will be randomly selected and from each block four schools will be randomly chosen for proximate composition analysis of MDM.
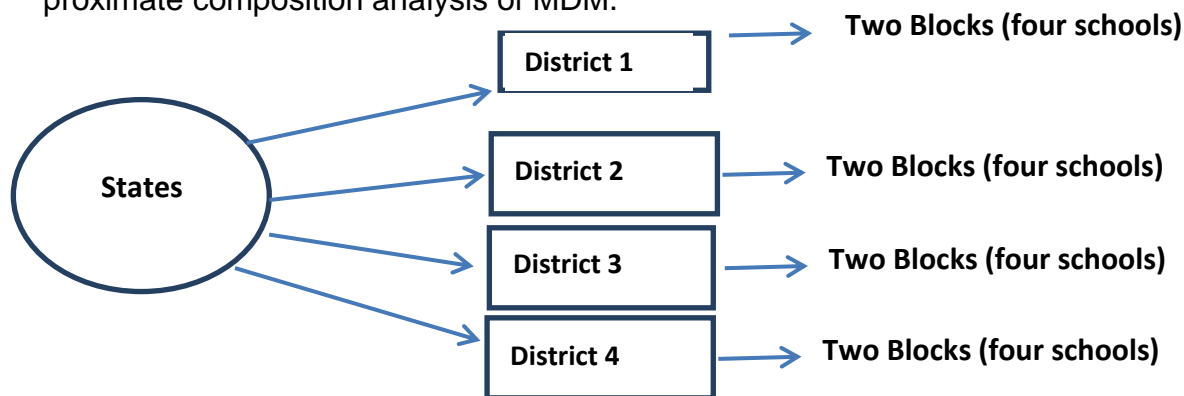
Please see Annexure – 2 for block sampling within States

3. **Medium States:** From these State 6 districts randomly representing the natural regions of the State and from each district two blocks will be randomly selected and from each block, two schools will be randomly chosen for proximate composition analysis of MDM.
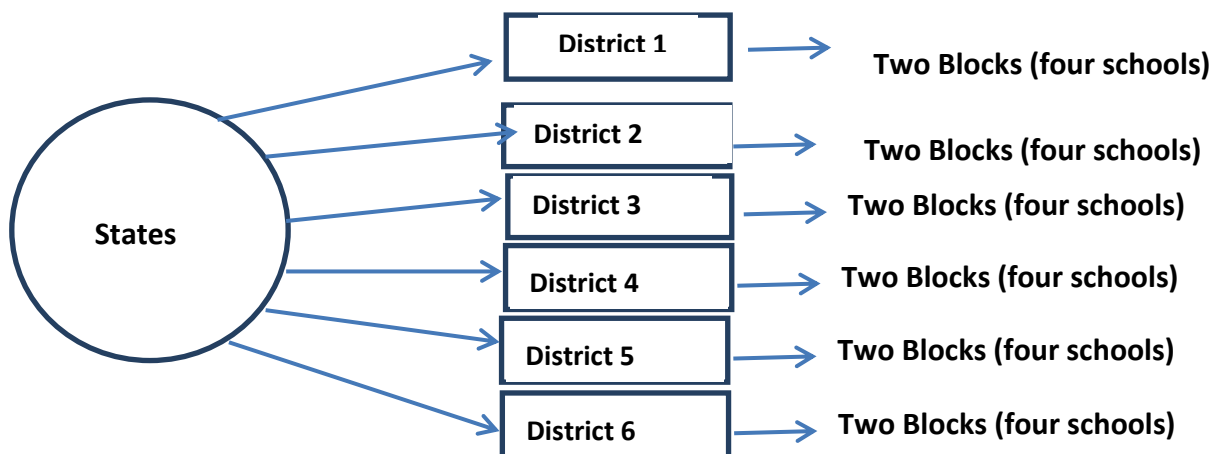
Please see Annexure – 3 for block sampling within States

4. **Large States:** From these State 8 districts randomly representing the natural regions of the State and from each district two blocks will be randomly selected and from each block, two school will be randomly chosen for proximate composition analysis of MDM.

District 1	→ Two Blocks (four schools)
District 2	→ Two Blocks (four schools)
District 3	→ Two Blocks (four schools)
District 4	→ Two Blocks (four schools)
District 5	→ Two Blocks (four schools)
District 6	→ Two Blocks (four schools)
District 7	→ Two Blocks (four schools)
District 8	→ Two Blocks (four schools)
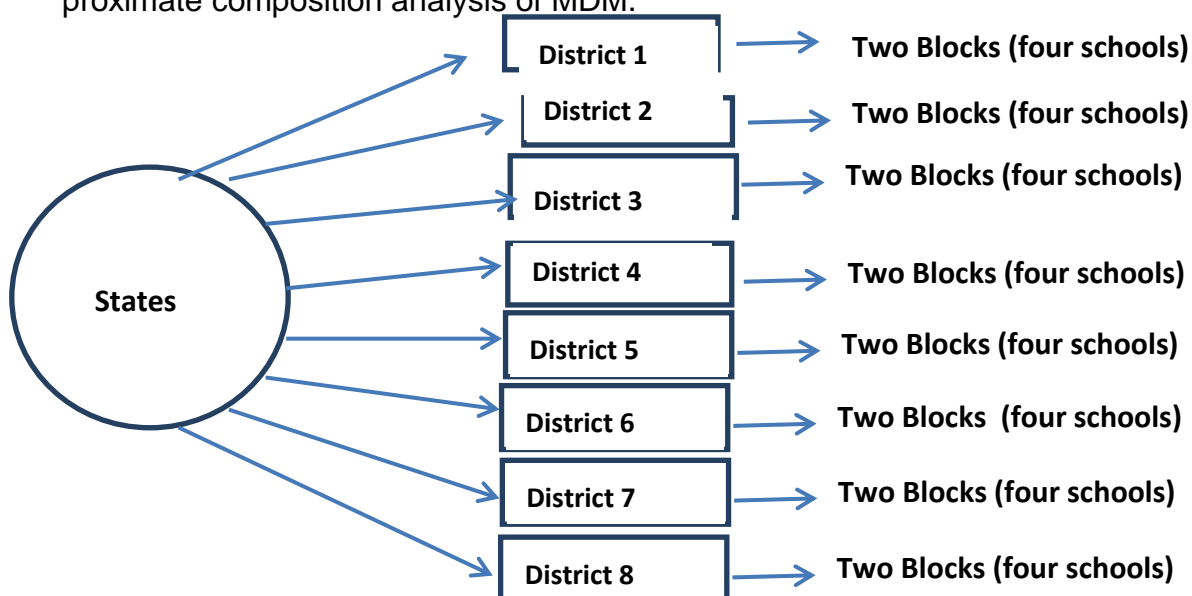
States

Please see Annexure – 4 for block sampling within States

3. Mid-Day Meal (MDM) sampling procedure

Apparatus
- *Polypropylene bags with air lock*
- *Digital weighing scale, Capacity:1 kg*
- *Thermocol box/Ice box*
- *Marker pens*

Protocol

Categorize MDM into rice or wheat based meal

↓

Collect representative samples - four students' MDM servings individually

↓

Record the weight of each MDM

↓

Take the digital image of the representative samples

↓

Contain each serving of MDM individually in polypropylene bag and seal to make it airtight

↓

Label with date and place of collection

↓

Place the food bags immediately in Thermocol box/ice box with layers of ice packs

↓

Transport immediately to the laboratory for analysis maintaining cold chain throughout

↓

Collect details of recipe and ingredients used for preparation of MDM (Vide Proforma Annexure -5)

Sample Collection precautionary measures
- Prevent loss/gain of external/atmospheric moisture by air tight sealing
- Prevent microbial activity and acid hydrolysis by maintaining low temperature (cold chain) until the samples reach laboratory

Sample processing at laboratory
1. Homogenize sample to uniform particulate size using kitchen blender
2. Collect aliquots for determination of moisture
3. Place samples in stainless steel plates and dry samples in a hot air oven
4. Powder dry samples using cyclone mill/food processor
5. Take aliquots for determination of protein, fat and ash
6. Label rest of sample and store for any future reference

4. ANALYTICAL TECHNIQUES

4.1 DETERMINATION OF MOISTURE CONTENT

A. PURPOSE

The method is used for the quantitative determination of moisture in food sample.

B. PRINCIPLE

The method is based on the drying of food sample under controlled temperature until constant weight is obtained (**AOAC 934.01**).

C. APPARATUS

- *Cyclone mill/ food processor, kitchen knife*
- *Hot-air oven, Max. 250 °C, Accuracy ±2°C*
- *Analytical balance, 220 g, Precision: 0.1 mg*
- *Moisture boxes with tight-fit lid, Stainless steel, Capacity 50 to 100 g*
- *Spatula, stainless steel*
- *Tongs, stainless steel*
- *Desiccators*
- *Silica, Dehydrated-activated*
- *Wax-marking pencil*

D. PROCEDURE

1. Take clean moisture boxes in duplicate for each sample and label them
2. Place moisture boxes in a hot air oven at 100 ± 5 °C for 1-2 hr
3. Cool empty moisture box in a desiccator and weigh (W_1)
4. Weigh ca. 5 - 6 g ± 0.2 g of test sample in duplicate into a pre-weighed moisture box, weigh and record as W_2
5. Place moisture box with sample on the shelf of a pre-heated hot air oven using stainless steel tongs with lid open. Allow to dry at 60 ± 2 °C up to 24 hr.
6. After drying cover moisture box with lid, remove from the hot air oven and place them in the desiccator for ca.30 min to cool
7. Weigh moisture box with dried sample

8. Replace moisture box containing sample into the hot air oven, open the lid and dry for an additional 2 hr.

9. Repeat steps 7 & 8 until a constant weight of dry sample is attained which is confirmed when the mass difference is ≤ 0.01 g between the interval or when decrease in mass between successive weighing does not exceed 0.001g

10. Record final weight of moisture box with dry residual as **W₃**

11. Calculate average moisture value of two duplicates and report as g/100g sample.

    Note: Duplicate values should not vary by more than 2%.

E. CALCULATION

$$Loss\,on\,drying, \% \,(w/w) = \ Moisture\ \% \,(w/w) = \ \frac{W_2 - W_3}{W_2 - W_1} \times 100$$

Where: W_1 = weight of container or empty dish (g)

W_2 = weight of container + sample before drying (g)

W_2 - W_1 = weight of sample (g)

W_3 = weight of container + sample after drying (g)

$W_2 - W_3$ = loss of weight (g)

Report test results (in g per 100 g sample) to one decimal place.

F. REFERENCE
1. AOAC Official method 934.01 Loss on Drying (Moisture) at 95–100°C for Feeds/Dry Matter on Oven Drying at 95–100°C for Feeds

4.2 DETERMINATION OF TOTAL FAT

A. PURPOSE

The method is used for the quantitative determination of total fat in the food sample

B. PRINCIPLE

The test portion is subjected to repeated cycle of organic solvent extraction (**AOAC 963.15**). Such a process of refluxing with solvent enables efficient extraction of even those lipids that have limited solubility in a given solvent.

C. APPARATUS

- *Cyclone mill/ food processor, kitchen knife*
- *Analytical balance, 220 g, Precision: 0.1 mg*
- *Commercial filter paper, grade No.1*
- *Soxhlet tube, extractor size: 30 to 250 mL*
- *Condenser*
- *Heating Mantle*
- *Glass beakers, 50 mL, 100 mL*
- *Stainless steel spatulas*
- *Stainless steel tongs*
- *Desiccator, with activated silica*
- *Round Bottomed flask, 250 mL*

D. CHEMICALS

- Diethyl ether, Anhydrous, bp 60°C

E. PROCEDURE

1. Weigh 5.0 g of dry sample (W_1), pack in a Whatman filter paper and prepare athimble
2. Place the thimble inside the Soxhlet extractor
3. Heat round bottom flask of the soxhlet extractor at 100 ° C for 2 hours, cool in a desiccator and record weight (W_2)
4. Add 200 ml. of Diethyl ether to the distillation flask and fit the extractor and condenser
5. Reflux the solvent over a heating mantle
6. The cycle of solvent warming, evaporation, condensation, dissolution of fat, collection of dissolved fat in distillation flask is allowed to repeat for 18 to 24 hr.

7. Remove the solvent flask from the apparatus, cool and evaporate until the volume is reduced to 5-10 ml. Transfer the flask with sample over water bath and continue evaporation until all solvent have evaporated.

8. Place the round bottom flask in a hot air oven set at 60 °C overnight to dry the residue

9. Cool the beaker to room temperature and record the weight final W_3

10. Dry the beaker again in the oven for another half an hour and repeat step 9 until a   constant weight with precision of ± 0.1mg is achieved.

11. Subtract W_2 from W_3 to get the fat content of the sample.

12. The mean value of the two recorded observations for each sample is reported in terms of gram percent.

F. CALCULATION

$$\text{Total Fat, g \% (w/w)} = \frac{W_3 - W_2}{W_1} \times 100$$

where: W_1 = Weight of sample (g)

W_2 = Weight of dried flask before fat extraction (g)

W_3 = Weight of dried flask after fat extraction (g)

G. REFERENCES

1. AOAC (2012). Official Methods of Analysis of AOAC International (OMA), 19th edition. AOAC International, Gaithersburg, MD 20877 USA.

2. AOAC Official Method 963.15 Fat in Cacao Products. Soxhlet Extraction Method. Gravimetry.

4.3 DETERMINATION OF TOTAL ASH CONTENT

A. PURPOSE

To determine the total ash content in food samples.

B. PRINCIPLE

Dried test sample portion is carbonized, incinerated in a muffle furnace at high temperature (550°C) to completely decompose the organic matter leaving the inorganic mineral residual ash. The residue left after incineration is the ash content of the sample (**AOAC 942.05**).

C. APPARATUS

- *Cyclone mill/food processor, Kitchen knife*
- *Silica or Platinum or Porcelain crucibles, 50 mL*
- *Wax marking pencil*
- *Analytical Balance, 220 g, Precision: 0.1 mg*
- *Clay pipe triangle*
- *Bunsen burner*
- *Spatulas, Stainless steel*
- *Tongs, Stainless steel*
- *Wire gauge*
- *Muffle furnace, 600 °C*
- *Desiccator with activated silica*

D. PROCEDURE

1. For each sample take two clean silica crucibles, label using wax pencils and pre-heat to Ca. 550 ± 25 °C for 2 to 3 hr

2. Lower the furnace temperature to 180 °C, transfer the crucibles to a desiccator, cool for 30 min. and record weight as W_1.

3. Weigh dry powdered sample (Ca. 1 to 2 g) in duplicate into silica crucibles and record weight of sample as **Ws.**

4. Place the crucibles on a clay pipe triangle and initially heat over low flame (100 ± 5°C) until sample is completely charred

5. Place the crucibles with charred samples in a muffle furnace and incinerate overnight for Ca. 12 to 14 hr at 550 ± 25°C.

6. Switch off the furnace and partly open the door to reduce the internal temperature of muffle furnace temperature to Ca. 200 °C

7. Take out the hot crucibles and check whether the entire contents appear as white or grey powder.

8. If sample is not completely white, moist ash with a few drops of water or diluted acid. Evaporate on water bath and repeat heating in the muffle furnace for 30 – 60 min until constant weight is obtained and record as **W$_2$**

E. **CALCULATION**

$$Ash, \text{g} \% (w/w) = \frac{[W_2 - W_1]}{W_S} \times 100$$

$Where,$

$W_2 = Weight of crucible with ash\ (g)$

$W_1 = Weight of empty crucible\ (g)$

$W_s = Initial weight of the sample\ (g)$

F. **REFERENCES**

1. AOAC (2012). Official Methods of Analysis of AOAC International (OMA), 19th edition. AOAC International, Gaithersburg, MD 20877 USA.
2. AOAC Official Method 942.05. Ash of Animal Feed.

4.4 DETERMINATION OF CRUDE PROTEIN BY KJELDAHL METHOD

A. **PURPOSE**

To determine the quantitative content of crude protein in food samples

B. **PRINCIPLE**

The principle is based on the digestion of sample with sulphuric acid in the presence of catalyst such as potassium or copper sulphate to transform amine nitrogen into ammonium salt. Addition of excess alkali (concentrated sodium hydroxide) liberates ammonia gas which is distilled into a boric acid solution to form ammonium-borate complex which is then titrated with standardised hydrochloric acid. The amount of nitrogen in the sample is then determined from the milligram equivalent of the acid used in the titration

(**AOAC 2001.11**). Crude protein content is derived by multiplying the estimated nitrogen content with a conversion factor of 6.25.

C. APPARATUS

- *Cyclone mill/ food processor, kitchen knife*
- *Analytical balance, 220 g, Precision: 0.1 mg*
- *Spatulas, stainless steel*
- *Kjeldahl digestion and Distillation unit*
- *Kjeldahl digestion flask, 500 or 800 mL*
- *Digestion tubes, 250 mL, with stand*
- *Erlenmeyer flasks, 250 mL*
- *Titration flask, 500 mL*
- *Assorted measuring pipettes, 20 mL, 30mL, 50 mL, 100 mL*

D. CHEMICALS

- *Conc. Sulfuric acid, H_2SO_4 , 95–98% reagent grade*
- *NaOH flakes*
- *K_2SO_4 and $CuSO_4. 5H_2O$,Catalyst*
- *Boric acid solution, H_3BO_3*
- *Phenolphthalein*
- *Methyl Red*
- *Bromo Cresol Green*
- *Hydrochloric acid*
- *Ethyl Alcohol*

E. REAGENTS

- **Hydrochloric acid solution, HCl, 0.1N:** Pipette 8.3 mL of concentrated hydrochloric acid to approximately 500 mL distilled water in 1L volumetric flask placed in ice water. Allow to cool and make up to volume with distilled water. Pour the solution in 1 L brown bottle.

- **Sodium hydroxide, NaOH, 0.1N:** Take standard volumetric flask (Capacity 1000 mL) and add Ca. 50 mL of distilled H2O. Weigh 4 gm of NaOH pellets and dissolve the pellets. Make up the volume to 1000 mL with distilled H2O.

- **Sodium hydroxide, NaOH, 40 % (w/v):** Weigh 400 gm of NaOH and transfer into a heat resistant glass beaker. Place the beaker in ice and slowly add 500 mL of distilled H_2O. Mix using glass rod and then top up to a final volume of 1000 mL with distilled H_2O.

- **Boric Acid solution, H_3BO_3, 1% (w/v):** Add 10 gm of Boric Acid appropriate amount of distilled water and make up to final volume of 1000 mL.

- **Methyl Red Indicator:** Dissolve 0.1 gm of methyl red indicator in 100 mL of ethyl alcohol.
  Note: Methylene blue, 0.2 % in 95% ethanol and methyl red, 0.2% in ethanol (1:2) indicator can also be used.

- **Bromoscresol green (BCG), 0.1% (w/v):** Dissolve 0.1 gm of Bromoscresol green in 100 mL of ethyl alcohol.

F. PROCEDURE

1. Weigh 0.5 to 2.0 g of powdered sample in duplicates, bring to room temperature
2. Add the samples to the digestion flask containing Potassium sulphate and Copper sulphate in the ratio of 10:1
3. Gently add 20 mL of Conc. Sulphuric acid along the wall of the digestion tube
4. Digest mixture initially at low temperature to prevent frothing
5. Boil at 420 ± 5 °C for ca. 30 min or until the solution turns into clear pale green color.
   Note: The digestion time and volume of sulphuric acid required depends on the nature of sample to be digested. If the digest is yellowish, cool the digest,

add an additional 5-10 mL sulphuric acid and continue digestion until a clear digeState is obtained.

6. Cool the digestion flask to room temperature for ca.20-30 min.

7. Slowly add 50 mL of NaOH and 50 mL of H_2O

8. Distill until all ammonia has been released or until ca. ≥ 150 mL distillate is obtained.

   Note: Use condenser with ice water to effectively capture distilled ammonia.

9. The condensed steam is mixed with 30 mL Boric acid in the titration flask to form pale green colored ammonium borate complex

10. Titrate against 0.1 N HCl until the first appearance of the pink colour.

11. Record the amount of HCl consumed to achieve the endpoint, at least to the nearest of 0.05 mL.

12. Corresponding titrate value of 0.1N HCL is used for the calculation of total nitrogen.

13. Carry out the procedure using all reagents in same quantities except sample to be tested.

G. SAFETY AND PRECAUTIONS

1. The amount of test sample portion to be analysed depends upon its protein content. Sample with 3-25% protein: weigh 1.0 g. Sample with 25-50% protein: weigh 0.5g. Sample with >50% protein: weigh 0.3 g

2. Take two reagent blanks containing all reagents used in nitrogen analysis except the sample in every batch of analysis to enable subtraction of reagent nitrogen from the sample nitrogen. The volume of HCl titrant required for the blank is subtracted from each determination.

3. Apply the appropriate nitrogen factor in the calculation, as listed in the Appendix when following this method.

4. Add higher amount of sulphuric acid during digestion for test samples with >10 % fat.

5. Avoid pyrolytic loss of nitrogen and excessive digestion of organic material.

6. Always use a fume hood when handling highly concentrated acids and bases during digestion.

7. Always wear protective devices e.g face mask, goggles and gloves when handling toxic and corrosive chemicals.

8. Understand the toxicity and safety of the reagents used before starting the analysis.
9. Use pipette aides in handling acids.
10. Analysis should be done in an ammonia-free environment.

H. CALCULATION

$$Nitrogen(g\%) = \frac{[V_{Sample}(mL) - V_{Blank}(mL)] \times N \times 14.1}{W_{Sample}(g) \times 10}$$

$Where,$

$V_{Sample} = Titrevolumeofstandardizedacid\ againsttest$

$V_{Blank} = Titrevolumeofstandardizedacidagainstreagentblank$

$N = NormalityofstandardHCl$

$14.1 = AtomicweightofNitrogen$

$W_{Sample} = Weight\ of\ test\ portion\ or\ standard$

$10 = Factor\ to\ convert\ \dfrac{mg}{g} to\ percent(\%)$

Protein (g per 100 g) = % Total Nitrogen x Appropriate Nitrogen conversion Factor (usually 6.25)

I. REFERENCES

1. AOAC (2012). Official Methods of Analysis of AOAC International (OMA), 19th edition. AOAC International, Gaithersburg, MD 20877 USA.
2. AOAC Official Method 2001.11 Protein (Crude) in Animal Feed, Forage (Plant Tissue), Grain, and Oilseeds.

4.5 DETERMINATION OF CARBOHYDRATE BY DIFFERENCE

A. PURPOSE

To calculate total carbohydrate content of the test portion by difference.

B. CALCULATION

Total Carbohydrate (g/100gfood sample) =

[100- Moisture(g)+ Total Fat(g)+ Protein(g)+ Ash(g) in 100g food]

C. REFERENCE

1. FAO FOOD AND NUTRITION PAPER 77. Food energy - methods of analysis and conversion factors. Report of a Technical Workshop, Rome, 3-6 December 2002. Food and Agriculture Organization of The United Nations Rome, 2003

4.6 DETERMINATION OF ENERGY BY CALCULATION

A. PURPOSE

To determine the energy content of the foods by calculation taking into account the content of various energy providing food components such as protein, fat, carbohydrate, alcohol, polyols and organic acids.

B. DEFINITION

The unit of energy in the International System of Units is the Joule (J). A Joule is the energy expended when 1 kg is moved 1m by a force of 1 Newton. Large amounts of energy can be expressed as Kilo Joule (kJ = 103 J) and Mega Joule (mJ= 106 J). The conversion factors for joules and calories are : 1 kJ = 0.239 kCal and 1 kCal = 4.184 kJ.

ATWATER CONVERSION FACTORS

The use of Atwater conversion factors has been emphasized (Merill and Watt, 1955), due to wide range in the heat of combustion and digestability of different proteins, fat and carbohydrates. For example proteins differ in amino acid composition and therefore differ in their heat of combustion as well. Hence, it is recommended to use the 'measurable energy' for energy calculation.

Table 1. Atwater Energy Conversion Factors in kJ (kCal) per g

Components in kJ (kCal)/g	General Atwater factors
Protein	17 (4.0)
Carbohydrates	17 (4.0)
Fat	37 (9.0)

Source: FAO / INFOODS Guidelines Guidelines for Checking Food Composition Data prior to the Publication of a User Table/Database - Version 1.0, 2012

C. REFERENCE

1. Merrill A.L. and Watt B.K. (1973) Energy value of foods, basis and deviation. Human Nutrition Research Branch. Agriculture Research Service. United States Department of Agriculture. Agriculture handbook No.74.

Annexure – 1 : Very small States

State name	Round no.	Dist name	Block-1	Block-2
Sikkim	**Ist round**	1. North sikkim	Changthang	Mangan
		2. South sikkim	Namchi	Ravos
Arunachal Pradesh	**Ist round**	1. East kamera	Dissing-passo	Khenewada
		2. Upper siang	Missing	Jessing
1. Alirajpur	Jobat	Bhavra	Siyum	Gite-ripa
		1. East siang	Kora	Ruksin
	3rd round	1. West siang	Yomcha	Sibe
		2. Changlang		
	4th round	1. Tawang	Tawang circle	Lhou
		2. Papum pang	banderdawa	Toru
	5th round	1. Lower subasri	Old ziro	Kamporijo
		2. Diabang valley	Mipi	Anelih
	6th round	1. West kamerz	Bomidila	Singchung

		2. Kurungkumy	Phassang	Damin
	7th round	1. Tirap	Dadam	Wakka
		2. Lohit	Wakro	Piyong
	8th round	1. Lower dibang valley	Desali	Tinali (paglam)
		2. Anjaw	Goiliang	Walong
Mizoram	**1st round**	1. Aizwal	Dailawn	Aibawk
		2. Lawnstlai	Lungsen	Hanahthial
	2nd round	1. Mamit	Zawlnuam	Reiek
		2. Champhai	Ngopa	Khawbung
	3rd round	1. Kolasib	'n' thingdawl	Tlangnuam (part)
		2. Serchhip	Serchhip	East lungdar (part)
	4th round	1. Lunglei	Lungsen	Hnahthial
		2. Saiha	Tuipang	Saiha
Diu& Daman	**Ist round**	1. Diu	Diu(two schools)	
		2. Diamn	Diu (two schools)	
Dadra& Nagarhaveli	**1st round**	1. Dadra& Nagarhaveli	Dadra&nagarhaveli	
Puducherry	**1st round**	1. Yanam	Yanam (two schools	
		2. Mahe	Mahe(two schools)	
Andaman& Nicobar	**1st round**	1. North Noida andaman	Digilpor	Rangat
		2. South Noida andaman	Firrasunj	Portblair

Annexure -2 : Small States

State	Round no.	District	Block 1	Block 2
Jammu &Kashmir	**1st round**	1. Purich	Mandi	Surankot
		2. Srinagar	Srinagar north	Srinagar south
		3. Annatnagar	Pahalgan	Shangus
		4. Jammu	Aknoor	Ranbir singh pora
	2nd round	1. Kupwara	Handwara	Karnah

		2. Rajouri	Rajouri	Darhal
		3. Ganderbal	Kangan	Ganderbal
		4. Pulwama	Pampore	Pulwama
	3rd round	1. Leh(ladakh)	Nubra	Khalsi
		2. Shupiyan	Shopian	(only one block)
		3. Doda	Thathri	Gandoh
		4. Ramban	Banihal	Ramban
	4th round	1. Badgam	Khansahib	Chadoora
		2. Kargil	Sanku	Zanskar
		3. Udhampur	Udhampur	Majalta
		4. Reasi	Gool-gulabgarh	Reasi
	5th round	1. Baramula	Rafiabad	Boniyar
		2. Bandipore	Bandipora	Sonawari
		3. Kulgam	Kulgam	Damhal hanjipora
		4. Kishtwar	Kishtwar	Atholi (paddar)
		5. Samba	Samba	(only one block)
Himachal Pradesh	**1st round**	1. Chamba	Chaurah	Shunta
		2. Kangra	Indora	Dera gopipor
		3. Kulu	Sainj	Nermand
		4. Solan	Arki	Krishnagarh
	2nd round	1. Lahul & spiti	Lahul	Spiti
		2. Hamirpur	Nadaun	Dhatwal
		3. Bilaspur	Ghumarwin	Bharari
		4. Sirmaur	Renuka	Nahan
	3rd round	1. Mandi	Lad bharol	Bali chowki
		2. Una	Bharwain	Amb
		3. Shimla	Nankhari	Seoni
		4. Kinnaur	Poo	Nichar
Uttarkhand	**1st round**	1. Chamoli	Joshimath	Pokhri
		2. Dehradun	Tyuni	Kalsi
		3. Bageswar	Kanda	Garud
		4. Nainatal	Nainatal	Kaladhungi

	2nd round	1. Rudraprayag	Ukhimath	Rudraprayag
		2. Garhwal	Srinagar	Chaubattakhal
		3. Pithoragarh	Munsiari	"pithoragarh
		4. Champawat	Champawat	Lohaghat
	3rd round	1. Uttarkashi	Rajgarhi	Chiniyalis
		2. Almora	Ranikhet	Dwarahat
		2. Alirajpur	Jobat	Bhavra
		3. Hardwar	Hardwar	Laksar
Nagaland	**1st round**	1. Mokocwng	Dhari	Lalkaun
		2. Dimapur	Aquqhnaqua	Kuhoboto
		3. Longling	Tamlu	Longleng
		4. Peren	Jalwkie	Tennig
	2nd round	1. Mon	Shangnyu	Mopong
		2. Zunheboto	Akuhaito	Ghathashi
		3. Wokha	Lotsu	Ralan
		4. Phek	Sakraba	Zuketsa
	3rd round	1. Tuensang	Longkhim	Noklak
		2. Kiphire	Sitimi	Khongsa
		3. Kohima	Chiephobozou	Kohima sadar
Manipur	**1st round**	1. Tamenglong	Tamenglong north	Nungba
		2. Bishupur	Nambol	Moirang
		3. Imphal west	Lamshang	Lamphelpat
		4. Ukhral	Ukhral center	Phaisat
	2nd round	1. Senapati	Sadar hills west	Saitu-gamphazot
		2. Churachandpur	Thanlon	Singngat
		3. Thoubal	Lilong	Kakching
		4. Impal east	Patsoi	Wangoi
		5. Chandel	Machi	Chakpikarong
Tripura	**1st round**	1. West tripura	Tulashikhar	Mandai

State Name	Round	District _Name	Block 1	Block 2
		2. South tripura	Amanpur	Metabari
		3. Dhalai	Maru	Dumburnsar
		4. North tripura	Panisagar	Dasda
Megalaya	1st round	1. West garo hills	Dadensgiri	Zikzak
		2. South garo hills	Chockpot	Baghmara
		3. Ribhoi	Umling	Umsing
		4. Jaintaltilly	Laskein	Khliehriat
	2nd round	1. East garo hills	Resubelpara	Songsak
		2. West khasi hills	Nongstoin	Ranikor
		3. East khasi hills	Mylliem	Pynursla
Goa	1st round	3. Alirajpur	Pernem, Satari	Tiswadi, Ponda
		4. Alirajpur	Salculi, Sangvem	Quepem, Cancona

ANNEXURE – 3 : MEDIUM STATES

State Name	Round	District _Name	Block 1	Block 2
Punjab	1st Round	1. Gurdaspur	Dera Baba	Phathankot
		2. Hoshiarpur	Dausa	Mukeian
		3. Ludhiana	Samoala	Raikot
		4. Mukstar	Gidderbha	Mukstar
		5. Mansa	Sardulgarh	Mansa
		6. Tarntaran	Patti	Khader Sahib
	2nd Round	1. Amritsar	Ajnala	Amritsar -I
		2. Barnala	Barnala	Tapa
		3. Firozpur	Zira	Fazilka
		4. Kapurthala	Bhulath	Phagwara
		5. Patiala	Samana	Patiala
		6. Sangrur	Sunam	Moonak
	3rd Round	1. Faridkot	Faridkot	Jaitu
		2. Jalandhar	Phillaur	Jalandhar - II
		3. Moga	BaghaPurana	Moga

				Chamkaur Sahib
		4. Rupnagar	Anandpur Sahib	
		5. SahibzadaAjit	SAS Nagar (Mohali)	DeraBassi
		6. Singh Nagar		
		7. ShahidBhagat S		
		8. ingh Nagar	Nawanshahr	Balachaur
	4th Round	Bathinda	RampuraPhul	Talwandi Sabo
		Fatehgarh Sahib	Fatehgarh Sahib	Amloh
Haryana	**1st Round**	1. Ambala	Naraingarh	Barara
		2. Kaithal	Guhla	Fatepurpundri
		3. Sonipat	Ganapur	Kharkhoda
		4. Sirsa	Dabwali	Ellenabad
		5. Rohtak	Sampala	Maham
		6. Rowari	Rewari	Kosli
	2nd Round	1. Bhiwani	Bhiwani	Dadri
		2. Faridabad	Faridabad	Ballabgarh
		3. Gurgaon	Pataudi	Sohna
		4. Hisar	Hisar	Hansi
		5. Karnal	Indri	Karnal
		6. Mewat	Taoru	Punahana
	3rd Round	1. Fatehabad	Tohana	Fatehabad
		2. Kurukshetra	Shahbad	Thanesar
		3. Panipat	Panipat	Israna
		4. Palwal	Hathin	Hodal
		5. Panchkula	Kalka	Panchkula
		6. Yamunanagar	Bilaspur	Chhachhrauli
	4th Round	1. Jhajjar	Bahadurgarh	Jhajjar
		2. Jind	Narwana	Julana
		3. Mahendragarh	Mahendragarh	Narnaul
Assam	**1st Round**	1. Goalpara	Rangiuli	Matia
		2. Sonitpur	Chariduar	Helem
		3. Dibrugarh	Dibrugarh West	Moran
		4. KarbiAnglong	Diphu	Silonijan

		5. Hailakandi	Algapur	Katlichara
		6. KamrupMetropoliton	Azara	Chandrapur
	2nd Round	1. Cachar	Silchar	Lakhipur
		2. Morigaon	Mayong	Marigaon
		3. Tinsukia	Sadiya	Margherita
		4. Jorhat	Teok	Mariani
		5. Bongaigaon	Srijangram	Bijni
		6. Darrang	Khoirabari	Dalgaon
	3rd Round	1. Kokrajhar	Dotoma	Dhubri
		2. Dhubri	Gossaigaon	Chapar
		3. Sivasagar	Sibsagar	Nazira
		4. DimaHasao	Umrangso	Mahur
		5. Baksa	Bajali	Tihu
		6. Udalguri	Mangaldoi	Mazbat
	4thRound	1. Nagaon	Raha	Doboka
		2. Barpeta	Matia	Dudhnai
		3. Dhemaji	Sissibargaon	Subansiri
		4. Dibrugarh	Moran	Naharkatiya
		5. Karimganj	Badarpur	Ramkrishna Nagar
		6. Nalbari	PachimNalbari	Banekuchi
Jharkhand	**1st Round**	1. Gindih	Sariya	Deori
		2. Pakur	Hiranpur	Pakuria
		3. Purbisinghbhum	Gurbandha	Potka
		4. Ramgarh	Mandu	Chitrapur
		5. Khunti	Erki	Rania
		6. Saraikela	Kuchai	Adityapur
	2nd Round	1. Garhwa	Majhiaon	Dhurki
		2. Hazaribagh	Barkagaon	Dadi
		3. Pashchimi 4. Singhbhum	Chaibasa	Majhgaon
		5. Simdega	PakarTanr	Bolba
		6. Chatra	Pratappur	Chatra
		7. Sahibganj	Barhait	Udhwa

	3rd Round	1. Kodarma	Chandwara	Markacho
		2. Bokaro	Gumia	Kasmar
		3. Gumla	Albert Ekka(Jari)	Raidih
		4. Dumka	Saraiyahat	Ranishwar
		5. Palamu	Mohammad Ganj	Nawadiha Bazar /Nawadiha
		6. Godda	Mahagama	Sundarpahari
	4th Round	1. Latehar	Balumath	Herhanj
		2. Dhanbad	Topchanchi	Gobindpur
		3. Jamtara	Nala	Kundhit
		4. Ranchi	Nagri	Lapung
		5. Lohardaga	Senha	Bhandra
		6. Deoghar	Devipur	Margo Munda
ODISHA	**Ist Round**	1. Debagarh	Barkot	Reamal
		2. Bhadrak	Dhusuri	Dhamanagar
		3. Dhenkanal	Gandia	Dhenkanal Sadar
		4. Ganjam	Brahmapur	Hinjili
		5. Balangir	Sindhekela	Turekela
		6. Koraput	Pottangi	Boriguma
	2nd Round	1. Kendujhar	KendujharSadar	Soso
		2. Baleshwar	Kamarda	Nilagiri
		3. Kandhamal	Gochhapada	Sarangagarh
		4. Baudh	Baunsuni	Harbhanga
		5. Nuapada	JONK	BODEN
		6. Kalahandi	Lanjigarh	Junagarh
	3rd Round	1. Bargarh	BurdenP.S.	Bheden
		2. Anugul	Palalahada	Bantala
		3. Nayagarh	Banigochha	Odagaon
		4. Puri	Ramachandi	Krushna Prasad
		5. Gajapati	Mohana	Gurandi
		6. Malkangiri	Paparmetla	Podia
	4th	1. Sambalpur	Kochinda	Ainthapali

	Round			
		2. Sundargarh	Bhasma	Raiboga
		3. Jagatsinghapur	Paradip	Ersama
		4. Jajapur	Jakhapura	Binjharpur
		5. Khordha	Airfield (Kapila Prasad)	Bhubaneswar (M.Corp.)
		6. Subarnapur	Rampur	Subalaya
	6th Round	1. Jharsuguda	Badmal	Banaharapali
		2. Mayurbhanj	Bisoi	Betanati
		3. Kendrapara	KendraparaSadar	Marsaghai
		4. Cuttack	Narasinghpur	Cuttack (M.Corp.) P.S
		5. Rayagada	Kashipur	Puttasing
		6. Nabarangapur	Paparahandi	Khatiguda
CHHATTISGARH	1st Round)	1. Surguja	Ramanujnagar	Pratappur
		2. Korba	Poundi-Uproda	Korba
		3. Kabeerdham	Bodla	Pandariya
		4. Raipur	Bilaigarh	Chhura
		5. Uttar BastarKanker	Durgkondal	Antagarh
		6. DakshinBastarDantewada	Kaukonda	Sukona
	2nd Round	1. Koriya	Sonhat	Manendragarh
		2. Raigarh	Lailunga	Tamnar
		3. Janjgir - Champa	Nawagarh	Jaijaipur
		4. Rajnandgaon	Khairagarh	Manpur
		5. Bastar	Farasgaon	Darbha
		6. Narayanpur	Narayanpur	Orchha
	3rd Round	1. Jashpur	Manora	Pathalgaon
		2. Bilaspur	Mungeli	Bilaspur
		3. Durg	Berla	Dondi
		4. Mahasamund	Basna	Pithora
		5. Dhamtari	Magarlod	Nagri
		6. Bijapur	Usur	Bijapur
GUJARAT	1st Round	1. Kachchh	Bhachau	Mundra
		2. SabarKantha	Megharj	Modasa
		3. Rajkot	Rajkot	Gondal

		4. Amreli	Bagasara	Jafrabad
		5. PanchMahals	Morwa	Halol
		6. Bharuch	Vagra	Valia
	2nd Round	1. Patan	Sidhpur	Harij
		2. Mahesana	Kheralu	Vadnagar
		3. Surendranagar	Dhrangadhra	Wadhwan
		4. Anand	Sojitra	Khambhat
		5. Vadodara	Vadodara	Padra
		6. Narmada	Tilakwada	Sagbara
	3rd Round	1. BanasKantha	Danta	Kankrej
		2. Ahmadabad	Sanand	Dholka
		3. Porbandar	Porbandar	Kutiyana
		4. Junagadh	Vanthali	Patan-Veraval
		5. Navsari	Jalalpore	Chikhli
		6. Surat	Umarpada	Surat City
	4th Round	1. Gandhinagar	Mansa	Gandhinagar
		2. Jamnagar	Okhamandal	Kalyanpur
		3. Bhavnagar	Gadhada	Sihor
		4. Dohad	Fatepura	Dohad
		5. Valsad	Dharampur	Kaprada
		6. Tapi	Uchchhal	Vyara
	5th Round	1. Kheda	Kathlal	Nadiad
		2. The Dangs	The Dangs	Nill
KARNATAKA	**1st Round**	1. Bidar	Aurad	Homnabad
		2. Uttara Kannada	Sirsi	Bhaktal
		3. Shimoga	Shikanpur	Badravati
		4. Mandya	Nagamangala	Malvalli
		5. Chamarajanagar	Chamarajnagar	Yalandur
		6. Bangalore Rural	Nelamangala	Hosakote
	2nd Round	1. Koppal	Yelbarga	Gangawati
		2. Dharwad	Dharwad	Kundgol
		3. Chitradurga	Molakalmuru	Holalkere

		4. Tumkur	Sira	Tiptur
		5. Bangalore	Bangalore North	Bangalore South
		6. Dakshina Kannada	Mangalore	Sulya
	3rd Round	1. Belgaum	Chikodi	Hukeri
		2. Raichur	Lingsugur	Raichur
		3. Gadag	Ron	Shirhatti
		4. Haveri	Haveri	Hirekerur
		5. Hassan	Sakleshpur	Arkalgud
		6. Kolar	Kolar	Malur
	4th Round	1. Chikmagalur	Sringeri	Tarikere
		2. Kodagu	Madikeri	Virajpet
		3. Gulbarga	Gulbarga	Jevargi
		4. Yadgir	Shorapur	Shahpur
		5. Chikkaballapura	Gauribidanur	Bagepalli
		6. Ramanagara	Magadi	Kanakapura
	5th Round	1. Bagalkot	Mudhol	Hungund
		2. Bijapur	Indi	BasavanaBagevadi
		3. Bellary	Hadagalli	Sandur
		4. Davanagere	Harapanahalli	Channagiri
		5. Udupi	Udupi	Karkal
		6. Mysore	Piriyapatna	Heggadadevankote
Kerala	**1st Round**	1. Kasaragod	Kasaragod	Hosdurg
		2. Wayanad	Manathrady	Vythni
		3. Malappuram	Perinthalmanna	Tirur
		4. Thrissur	Kodungallur	Charakkad
		5. Idukki	Devikulam	Perumade
		6. Alappuzha	Chengannur	Mavelikkara
	2nd Round	1. Kannur	Kannur	Thalassery
		2. Kozhikode	Vadakara	Quilandy
		3. Ernakulam	Aluva	Muvattupuzha
		4. Kottayam	Meenachil	Changanassery

		5. Pathanamthitta	Mallappally	Adoor
		6. Kollam	Karunagappally	Kottarakkara
	3rd Round	1. Palakkad	Mannarkad	Chittur
		2. Thiruvananthapuram	Chirayinkeezhu	Neyyattinkara

ANNEXURE – 4 : VERY LARGE STATES

State Name	Round	District Name	Block1	Block2
Rajasthan	1st Round	1. Bikaner	Lunkaransar	Nokha
		2. Bharatpur	Kumber	Nagar
		3. Dausa	Lalsot	Mahwa
		4. Jodhpur	Bhopalgarh	Shergarh
		5. Sirohi	Reodar	Pindwara
		6. Bundi	Hindoli	Nainwa
		7. Banswara	Ghatol	Bagidora
		8. Jhalawar	Jhalrapatan	Manoharthana
	2nd Round	1. Churu	Taranagar	Ratangarh
		2. Dhaulapur	Sepau	Baseri
		3. Jaipur	Chomu	Bassi
		4. Jaisalmer	Pokaram	Fatehgarh
		5. Pali	Sojat	Samerpur
		6. Bhilwara	Banera	Mandalgarh
		7. Chittaurgah	Begun	Nimbahera
		8. Udaipur	Jhadol	Rishabhdeo
	3rd Round	1. Hanumangarh	Nohar	Bhatra
		2. Jhunjhunun	Khetri	Chirawa
		3. Karuli	Nadoti	Sapotra
		4. Sikar	Fatehpur	Srimadhopur
		5. Barmer	Sheo	Ramsar
		6. Ajmer	Masuda	Sarwar
		7. Rajsamand	Amet	Bhim
		8. Kota	Digod	Sangod
	4th Round	1. Ganganagar	Vijainagar	Suratgarh
		2. Alwar	Beharor	Tijara

		3. Sawai Madhopur	Bonli	Khandar
		4. Nagaur	Jayal	Nawa
		5. Jalor	Bagora	Raniwara
		6. Tonk	Deoli	Uniara
		7. Dungaupur	Asapur	Saswara
		8. Baran	Atru	Chhabra
		9. Pratapgarh	Arnod	Dhariawad
Uttarpradesh	**1st Round**	1. Firozabad	Jansrana	Tundla
		2. Meerut	Sardhana	Meerut
		3. Unnao	Safiapur	Bighapur
		4. Jalaun	Orai	Konch
		5. Kushamlri	Manjhanpur	Chali
		6. Gonda	Tarabganj	Mankapur
		7. Mau	Ghoshi	Maunath bhanjan
		8. Etah	Aliganj	Jalesar
	2nd Round	1. Jyotiba Phule Nagar	Dhanaura	Hasanpur
		2. Agra	Etmadpur	Bah
		3. Hardoi	Shahabad	Bilgram
		4. Kanpurnagar	Kampur	Ghatampur
		5. Pratapgarh	Kunda	Patti
		6. Balrampur	Tulsipur	Utraula
		7. Azamgarh	Nizamalad	Mehnagar
		8. Sonbhadra	Ghorawal	Dudhi
	3rd Round	1. Rampur	Tanda	Shahabad
		2. Mathura	Mat	Mahavan
		3. Sitapur	Laharpur	Sidhuali
		4. Kanpur Dehat	Derapur	Sikandra
		5. Fatehpur	Bindki	Khaga
		6. Shrawasti	Shrawasti	Ikauna
		7. Deoria	Bharaj	Salempur
		8. Kanshiram Nagar	Sahawar	Patiyali
	4th Round	1. Moradabad	Bilari	Sambhal
		2. Mhamayanagar	Sasni	Hathuras
		3. Kheri	Palia	Lakhimpur
		4. Auraiya	Bidhuna	Auraiya
		5. Chitrakoot	Mau	Karwi

		6. Bharaich	Mahasi	Kaiserganj
		7. Kushinagar	Hata	Kasya
		8. Sant Ravidas Nagar	Bahadohi	aurai
	5th round	1. Bijnor	Nagina	Dhampur
		2. Aligarh	Koil	Iglas
		3. Shahjahanpur	Tilhar	Powayan
		4. Etawah	Saifai	Bharthana
		5. Banda	Atarra	Naraini
		6. Sultanpur	Amethi	Lambhua
		7. Gorakhpur	Shjanwa	Gola
		8. Varansi	Pindra	Varanasi
	6th round	1. Muzaffarnagar	Budhana	Jansath
		2. Bulandshahr	Siana	Debai
		3. Pilibhit	Bisalpur	Puranpur
		4. Kannayi	Tirwa	Chhibram
		5. Mahoba	Kulpahar	Charkhari
		6. Allahabad	Bara	Meja
		7. Basti	Harraiya	Bhanpur
		8. Jaunpur	Badlapur	Mariahu
	7th round	1. Saharampur	Nakur	Deoband
		2. Baghpat	Baraut	Khekada
		3. Gautam Buddhanagar	Dadri	Jewar
		4. Mainpuri	Karhal	Bhogaon
		5. Rae Barelli	Tiloi	Salon
		6. Lalitpur	Talbehat	Mahroni
		7. Barabanki	Ramnagar	Fatehpur
		8. Santkabirnagar	Mehdawal	Khalibad
	8th round	1. Gaziabad	Hapur	Madinagar
		2. Baudaun	Bilsi	Dataganj
		3. Harrkhabad	Amritpur	Kaimganj
		4. Hamirpur	Rath	Sarila
		5. Faizabad	Sohawal	Bikapur
		6. Mahrajganj	Nautanwa	Pharenda
		7. Gaziapur	Saidpur	Zamania
		8. Mirzapur	Lalganj	Chunar
	9th	1. Bareilly	Baheri	Aonla

	round			
		2. Lucknow	Malihabad	Mohanlalganj
		3. Jhansi	Moth	Tahrauli
		4. Ambedkarnagar	Tanda	Bhiti
		5. Ballia	Rasra	Bairia
		6. Siddharthnagar	Itwa	Naugarh
		7. Chomdauli	Chakia	Sakaldiha
Bihar	**1st Round**	1. Sheohar	Tariyani	Sheohar
		2. Kishangani	Thakurgani	Ahadurgani
		3. Darbhanga	Keoti runway	Darbhanga
		4. Vaishali	Vaishali	Garaul
		5. Banka	Chandan	Rajoun
		6. Patna	Belchhi	Naubatpur
		7. Aurangabad	Rafiganj	Kutumba
		8. Arwal	Karpi	Sonbhadra
	2nd Round	1. Purba Champaran	Dhaka	Tefaria
		2. Araria	Sikti	Bhagama
		3. Saharsa	Kahara	Salkhua
		4. Saran	Ekma	Garkha
		5. Bhagalpur	Gopalpur	Gorkha
		6. Nalanda	Bind	Giriak
		7. Rohtas	Nokha	Tilouthu
		8. Jehanabad	Kako	Hulasganj
	3rd Round	1. Supaul	Pipra	Nirmali
		2. Madhepura	Gwalpura	Puraini
		3. Siwan	Mairwa	Andar
		4. Khagaria	Mansi	Gogri
		5. Sheikhpura	Ariari	Barbigha
		6. Kaimur(Bhabua)	Kudra	Bhabua
		7. Jamui	Jahajha	Sono
		8. Nawada	Roh	Rajualli
	4th Round	1. Ganganagar	Padampur	Gharsana
		2. Alwar	Behror	Rajgarh
		3. Sawai Madhopur	Bonli	Khandar
		4. Nagaur	Jayal	Nawa
		5. Jalor	Sayla	Raniwara
		6. Tonk	Peeplu	Uniara

		7. Dungapur	Aspur	Sagwara
Westbengal	**Ist Round**	1. Dakshin dinajpur	Kumarganj	Tapan
		2. Murshidabad	Bhagawangola	Farakka
		3. Bardhaman	Kalna	Jamuria
		4. North twenty four parganas	Amdanga	Gaighata
		5. Bankura	Jaypur	Raipur
		6. Hauora	Domjur	Uluberia
		7. South twenty four parganas	Canning-I	Mandirbazar
		8. Purba medinipur	Mahisadal	Khejuri-I
	2nd Round	1. Uttar Dinajpur	Goalpokhar	Itahar
		2. Maldah	Gazole	Manikchak
		3. Birbhum	Suri	Khoyrasol
		4. Nadia	Santipur	Chapra
		5. Hugli	Singur	Khanakul
		6. Puruliya	Para	Arsha
		7. Darjiling	Mirk	Kharibari
		8. Paschin Medinipur	Salbani	Pingla
	3rd Round	1. Jalpaiguri	Mal	Falakata
		2. Koch Bihar	Sitai	Haldibari
Madyapradesh	**1st Round**	1. Gwaliour	Dabra	Chinour
		2. Sagar	Deori	Rahargarh
		3. Mandsaur	Mlahargrah	Sitamau
		4. Indore	Sawer	Mhow
		5. Sehore	Budni	Sehore
		6. Jabalpur	Shahpura	Kundam
		7. Balaghat	Paraswada	Birasa
		8. Gauna	Bamori	Raghogarh
	2nd Round	1. Datia	Seondha	Bhander
		2. Damoh	Patharia	Jabera
		3. Ratlam	Tal	Rawti
		4. Khargane	Seagaon	Gogaon
		5. Raisen	Begamganj	Badi
		6. Narsimhapur	Kameli	Gotegaon
		7. Singrauli	Chitrangi	Deosar
		8. Jhabua	Thandla	Ranapur

	3rd Round	5. Bohind	Ater	Ron
		6. Panna	Gunnor	Pawai
		7. Neemuch	Jiran	Jawad
		8. Dhar	Dahi	Manawar
		9. Bhopal	Huzur	Berasia
		10. Katni	Rithi	Katni
		11. Seoni	Kurai	Lakhnadon
		12. Sidhi	Churhat	Kusmi
	4th Round	1. Morena	Joura	Porsa
		2. Chhatarpur	Chandla	Bjawar
		3. Umaria	Palia	Chandia
		4. Dewas	Bagli	Kategaon
		5. Vidisha	Sironj	Tuonda
		6. Hoshangabad	Itarsi	Pipariya
		7. Chhindwara	Jamai	Sausar
		8. Anuppur	Kotma	Jaithari
	5th round	1. Sheopur	Badoda	Vijaypur
		2. Rtikamgarh	Orchha	Palera
		3. Rewa	Jawa	Semaria
		4. Shajapur	Agar	Kalapipal
		5. Rajgarh	Biaora	Rachore
		6. Harda	Sirali	Rehatgaon
		7. Mandla	Niwas	Nainpur
		8. Shahdol	Sohagpur	Jaitpur
	6th round	1. Shivpuri	Karera	Pichhore
		2. Satna	Nagod	Kotar
		3. Ujjain	Nagda	Badnagar
		4. Barwani	Thikri	Anjad
		5. Betal	Chicholi	Multai
		6. Dindori	Dindori	Shahpura
		7. Ashoknagar	Chanderi	Mungaoli
		8. Khandwa(East nimar)	Khalwa	Punasa
	7th round	1. Burhanpur	Khaknar	Nepanagar
		2. Alirajpur	Jobat	Bhavra
Maharashtra	**1st**	1. Jalgaon	Bhadgaon	Erndol

	Round			
		2. Amravati	Teosa	Bhakkuli
		3. Gondiya	Salekasa	Tirora
		4. Nanded	Nanded	Ardhapur
		5. Aurangabad	Pulambri	Aurangabad
		6. Pune	Indapur	Daund
		7. Osmanabad	Bhum	Paramda
		8. Sindhudurg	Kudal	Dodamarg
	2nd Round	1. Buldana	Motala	Lonar
		2. Wardha	Arvi	Deoli
		3. Gadchiroli	Korchi	Aheri
		4. Hingoli	Basmath	Sengaon
		5. Nashik	Peint	Yevala
		6. Raigarh	Roha	Tala
		7. Latur	Ausa	Deoni
		8. Ratnagiri	Khed	Chiplun
	3rd Round	1. Dhule	Shirpur	Sakri
		2. Washim	Manora	Ricod
		3. Bhandara	Sakoli	Pauni
		4. Yavatmal	Ner	Arni
		5. Jalna	Ambad	Partur
		6. Thane	Vasai	Kalyan
		7. Ahmadnagar	Akola	Parner
		8. Solapur	Madha	Mohol
	4th Round	1. Nandurbar	Talode	Nawapur
		2. Akola	Washin	Risod
		3. Nagpur	Katol	Kuhi
		4. Chandrapur	Mul	Rajura
		5. Parbhani	Sailu	Palam
		6. Bid	Ashti	Parli
		7. Satara	Wai	Jaoli
		8. Ratnagiri	Khed	Guhagar
		9. Sangli	Palus	Jat
Andhrapradesh	**1st Round**	1. Medak	Regode	Andole
		2. Rangareddy	Mominpet	Shamirpet
		3. Nalgonda	Penpahad	Bibinagar

		4. Khammam	Cherla	Penuball
		5. Vizianagaram	Gantyada	Parvathipuram
		6. East godavari	Pedapudi	Ramavaram
		7. Krishna	Vatsavai	Pamidimukkhdla
		8. Prakasam	Kanigiri	Tripuramhakam
	2nd Round	1. Nizambad	Bhiknur	Velpur
		2. Karimnagar	Elgaid	Jagtial
		3. Mahubnagar	Midjil	Tadoor
		4. Warangal	Parkal	Mulug
		5. Srikakulam	Kaviti	Burja
		6. Visakhapatnam	Panasa	Bhimidi
		7. Westgodavari	Kovvur	Undi
		8. Guntur	Thullur	Kollur
	3rd Round	1. Adilabad	Bela	Tiryani
		2. Sripotti Sriramulu Nellore	Bogole	Sangam
		3. YSR	Kodur	Vemula
		4. Kurnool	Gudur	Alur
		5. Anantapur	Gooty	Putular
		6. Chittoor	Kalakada	Pileru
Tamilnadu	**1st Round**	1. Kancheepuram	Cheyyur	Uthiramerur
		2. Saleem	Mettur	Gangavalli
		3. Dindigal	Natham	Palani
		4. Ariyalur	Ariyalur	Sendurai
		5. Thanjavur	Orthanadu	Thanjavur
		6. Theini	Theini	Periyakulam
		7. Tirunelveli	Sivagiri	Ambasamudram
		8. Coimbatore	Sulur	Pollachi
	2nd Round	1. Theruvallur	Ambaltur	Tiruttani
		2. Viluppuram	Vanur	Kallakkurichi
		3. The Nilgiris	Coonoor	Gudalur
		4. Perambalur	Kunnam	Veppanthattai
		5. Thiruvarur	Nannilam	Mannargudi
		6. Madurai	Peraiyur	Melur
		7. Thoothukkudi	Srivaikuntam	Kovilpatti
		8. Krishnagini	Hosur	Pochampalli
	3rd Round			

		1. Tiruvannamalai	Arani	Polur
		2. Erode	Bhavani	Erode
		3. Tiruchirapalli	Musiri	Lalgudi
		4. Nagapattinam	Sirkali	Kilvelur
		5. Sivaganga	Tirpathur	Ilayangudi
		6. Ramanathapuram	Kamuthi	Tiruvadanai
		7. Dharmapuri	Harur	Pennagaram
		8. Tiruppu	Palladam	Madhukulam
	4th Round			
		1. Vellore	Arcot	Ambur
		2. Namakkal	Paramathi-Velur	Rasipuram
		3. Karur	Kadavur	Karur
		4. Cuddlore	Panruti	Tittakudi
		5. Pudukkottai	Plappur	Alangudi
		6. Virudhunagar	Sivakasi	Sattur
		7. Kanniyakumari	Thovala	Kalkulam

ANNEXURE - 5
PROFORMA FOR MEAL SAMPLING AND DATA COLLECTION

I.   GENERAL INFORMATION

SCHOOL NAME	
SCHOOL REGISTRATION NUMBER	
CONTACT DETAILS(PHONE/E-MAIL)	
LOCATION/ADDRESS	
DATE	
TYPE OF SCHOOL	ELEMENTARY/MIDDLE/HIGH SCHOOL
SCHOOL LOCALITY	URBAN/RURAL
SCHOOL CAPACITY	
STUDENT AGE GROUP	
NUMBER OF ENROLLED STUDENTS	
ATTENDANCE ON THE DAY OF COLLECTION	
REMARKS	

II.   MEAL SPECIFICATIONS

DAY OF THE WEEK	MON/TUE/WED/THU/FRI
PLANNED MENU	
MENU ITEMS	
RECIPE INGREDIENTS	
PLANNED SERVING SIZE	
ACTUAL SERVED PORTION	
	WEIGHT/SERVING/STUDENT AGE GROUP
FOOD 1	
FOOD 2	
FOOD 3	
FOOD 4	

III.   ON-SITE DIETARY ASSESSMENT

	YES	NO
a. *Satisfactory attendance and consumption by enrolled students*		
b. *MDM register maintained*		
c. *Satisfactory resource availability to practice and inculcation of good habits*		
d. *Drinking water purification facility*		
e. *Meal component served in required quantity*		
f. *Tasted food before serving*		

IV.   SAMPLE LABELLING

SCHOOL CODE	
FOOD ITEM CODE	
SERVING SIZE/WEIGHT	
DATE	

PLACE OF COLLECTION	
STORAGE AND TRANSPORT INSTRUCTION	

Certified satisfactory compliance to prescribed standards regarding (a) hygienic conditions of students, kitchen and dining areas (b) supervision of cooking (c) quality of food and (d) quantity of served portion.

PRINCIPAL   **SAMPLE COLLECTOR**

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