The Rajasthan Weights and Measures (Enforcement) Rules, 1959

RAJASTHAN
India

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Rule
THE-RAJASTHAN-WEIGHTS-AND-MEASURES-ENFORCEMENT-RULE of 1959

- Published on 17 September 1959
- Commenced on 17 September 1959
- [This is the version of this document from 17 September 1959.]
- [Note: The original publication document is not available and this content could not be verified.]

The Rajasthan Weights and Measures (Enforcement) Rules, 1959Published vide Notification No. D. 8842/59/F. 23(11)1/A/58, dated 17.9.1959-Published in Rajasthan Gazette, Part 4-C, dated 17.9.1959In exercise of the powers conferred by Section 42 of the Rajasthan Weights and Measures (Enforcement) Act, 1958, (Rajasthan Act No. 32 of 1958), the State Government hereby makes the following Rules, the same having previously published in Rajasthan Gazette, Part III(B) dated 30.4.1959.These Rules shall be come into force with immediate effect.

1. Short title.

- These rules may be called the Rajasthan Weights and Measures (Enforcement) Rules, 1959.

2. Definitions.

- In these rules, unless the context otherwise requires-(a)"Act" means the Rajasthan Weights and Measures (Enforcement) Act, 1958;(b)"Inspector" includes an Assistant Inspector;(c)"Schedule" means a Schedule appended to these rules;(d)"Secondary standards" means the set of standards weights and measures referred to in Section 4 of the Act;(e)"Working standards" means the set of standards weights and measures referred to in Section 3 of the Act;(f)All words and expressions used but not defined in these rules and defined in the Act shall have the meanings respectively assigned to them in the Act.

3. Reference standards.

- The reference standards shall be kept in the custody of the Superintendent.

4. Secondary standards.

(1)The secondary standards shall conform as regards denominations, material used in constructions and design, to the specifications laid down in Schedule-I.(2)The secondary standards shall be kept at such places, in such manner and in such custody as the Superintendent may direct.(3)A secondary standards shall be verified with the reference standard at least once in every period of five years, adjusted, if necessary, and marked with the date of verification, by the Superintendent.(4)Subject to any rules that may be made under the standards of Weights and Measures Act, 1956, the limits of error which may be tolerated in the Secondary standards on verification or re-verification after adjustment shall be as specified in Schedule I.

5. Working standards.

(1)The working standards shall conform as regards denominations, material used in construction and design, to the specifications laid down in Schedule II.(2)The working standards shall be prepared by such agent or as may be authorised by the Superintendent and shall be stamped and authenticated by the Superintendent.(3)The working standards shall be kept in the custody of the Inspectors.(4)A working standard shall be verified with the secondary standard at least, once in every twelve months, adjusted, if necessary, and stamped with the date of verification by the Superintendent or such other person as may be authorised by him in this behalf:Provided that in the case of bullion and precious stones a working standard shall be so verified with the reference standard.(5)Subject to any rules that may be made under the Standards of Weights and Measures Act, 1956, the limits of error which may be tolerated in the working standards on verification or re-verification after adjustment shall be as specified in Schedule II.

6. Precision balances.

(1)The Superintendent shall maintain a set of precision balances at the place where the reference standard are kept.(2)The number, types and specifications of precision balances shall be as laid down in Schedule III.(3)The Superintendent shall verily precision balances at least once in every twelve months, adjust them, if necessary, to make them correct within the limits of sensitiveness, certify and stamp them, if practicable, with the date of verification.

7. Secondary standard balances.

(1)A set of secondary standard balances shall be maintained at every place where the secondary standards are kept.(2)The number types and specifications of such balances shall be as laid down in Schedule III.(3)The Superintendent shall cause to be verified such balances at least once in every twelve months and shall cause them to be adjusted, if necessary, to make them correct within the

limits of sensitiveness and to be stamped with the date of verification.

8. Working standard balances.

(1)The Superintendent shall supply to every Inspector a set of working standard balances with each set of working standards.(2)The types and specifications of such balances shall be as laid down in Schedule IV.(3)The Superintendent shall cause to be verified such balances at least once in every twelve months and shall cause the same to be adjusted, if necessary, to make them correct within the limits of sensitiveness and to be stamped with the date of verification.

9. Commercial weights and measures.

(1)Commercial weights and measures of length and capacity shall conform as regards denominations, material used in construction and design to the specifications laid down in Schedule V.(2)Subject to any rules that may be made under the Standards of Weights and Measures Act, 1956 the limits of error which may be tolerated in such weights and measures during verification and inspection, shall be as specified in Schedule V.

10. Weighing and measuring instruments.

(1)All weighing and measuring instruments used, or intended to be used in transactions for trade or commerce shall conform as regards capacities, material and design, to the specifications laid down in [Schedules VI, VI-A, VI-B and VI-C] [Substituted by Amended Notification No. 3, dated 30.12.1983.](2)Subject to any rules that may be made under the standards of Weights and Measures Act, 1956, the limits of error which may be tolerated in such weighing and measuring instruments during verification and inspection, shall be as specified in [Schedules VI, VI-A, VI-B and VI-C] [Substituted by Amended Notification No. 3, dated 30.12.1983.].(3)Notwithstanding anything contained in sub-rules (1) and (2), where any weighing or measuring instrument in use at the commencement of these rules is converted to the metric system and its capacity after conversion cannot be made to conform to any of the specifications laid down in [Schedule VI, VI-A, VI-B and VI-C] [Substituted by Amended Notification No. 3, dated 30.12.1983.], such instruments may continue to be used but the limits of error which may be tolerated in such instrument during verification and inspection shall be as for the same type of instrument of the next higher capacity specified in the [said schedules.] [Substituted by Amended Notification No. 3, dated 30.12.1983.]

11. [Commercial Weights, Measures. Weighing and Measuring instruments etc. to be verified and stamped periodically. [Substituted by Amended Notification No. 3 and then by Amended Notification No. 5. dated 8.9.1986.]

(1)All Weights, Measures and Weighing and Measuring instruments used or intended to be used, in transactions for trade or commerce shall be verified, re-verified and stamped in accordance with the Act and these rules atleast once in every period of one year.](2)[Notwithstanding anything contained in sub-rule (1), any weighing or measuring instrument which has been verified and

stamped in situation shall, if it is removed and re-erected before the expiry of the period referred to in sub-rule (1), shall be verified and stamped in accordance with the Act and these rules on such removal and re-erection.] [Inserted by Amended Notification No. 3, dated 30.12.1983.]

12. Inspection and verification of weights etc.

(1)An Inspector shall visit every factory and other place in the area under his charge where weights, measures and weighing and measuring instruments are used, or kept for use, in transactions for trade or commerce, for verifying the same at least once during the period specified in Rule 11, and may also from time to time, make such surprise visits as he may deem necessary.(1)[(i) Every person using weights, measures and weighing and measuring instruments in transaction for trade or commerce shall present such weights or measures or weighing or measuring instruments for verification at the office of the Inspector and at such other place as the Inspector may specify in this behalf on or before the date on which the verification falls due:Provided that Water-meters shall be verified and stamped before installation, and after every repair or repairs and shall be produced through the agency of the Public Health and Engineering Department of the State for verification and stamping.] [Inserted by Amended Notification No. 3, dated 30.12.1983.](2)All weights, measures and weighing and measuring instruments shall be tested in a clean condition, and if necessary, the Inspector shall require the owner or user to clean them.(3)Where a weight or measure or weighing or measuring instrument is brought to any Inspector for re-verification, the Inspector shall deal with it in the same manner as upon verification but it shall not. be necessary for him to test a glass or earthenware measure, unless the original stamp has been defaced.(4)The denomination or capacity of a weights, measure, weighing or measuring instrument, if not marked in full, shall be indicated by one of the abbreviations specified in Schedule VII.(5)[(a) Vehicle weighted on a weighbridge shall not be unloaded within a radius of 50 meters from the place where the weighbridge is fixed:Provided that the State Government may allow exemption in respect of certain class of trade premises from operation of this rule and the Controller may reduce the distance for any trade premises for the purpose of this sub-rule.(b)No weighment shall be done on a weighbridge after sunset or before, sunrise, unless adequate arrangement of lighting is made.(c)The gross weights of commodities in vehicle load and tare weight shall immediately be recorded by the trader or his agent and a signed record of weighment shall be handed over to the person concerned after each weighment is completed and before the vehicle is removed from the weighbridge.(d)A trader shall provide such number of standard weights not exceeding one-forth of the capacity of the machine as may be required by the Inspector for the purpose of verification, re- verification and inspection of weighing instruments of capacities of above five hundred kilograms.(e)To ensure a proper check of the accuracy of weighbridge and platform machines of capacities upon five tonnes, a trader shall keep at each weighbridge one tonne and for capacities above five tones, five tonnes of standard weights or standard weights equal to one-half of the capacity of the machine, whichever is less, alongwith a set of small standard weights of such denominations as may be directed by the Controller :Provided that the Controller may fix the total number of standard weights to be maintained in trade premises where the number of weighing machines is more than one.(f)A trader or his agent shall notify to the Assistant Controller and Inspector the site of all weighbridge for platform machines and the names of persons using or operating such weighbridges or platform machines, at least, a month before the commencement of their use or operation and get them

verified and stamped well in advance of their use.(g)No weighbridge or platform machine after it has been so verified and stamped by an Inspector, shall be removed or dismantled from original site without the prior approval of the Controller or Assistant Controller.(h)A trader or his agent shall cause to be prepared a list of persons using or operating weighbridge or platform machine owned by him and shall display such list prominently and conspicuously at the site of use or operation of such weighbridge or platform machine.]

13. Stamping of weights etc.

(1)Before stamping any weight, measure or weighing or measuring instrument, the Inspector shall satisfy himself that such weight, measure, weighing or measuring instrument complies with the requirements of the Act and these rules.(2)Any weight, measure, weighing or measuring instrument presented for verification shall be complete in itself, and shall not bear a manufactures or dealer's mark which might be mistaken for the Inspector's Stamp.(3)The Inspector shall stamp every weight, measure and weighing and measuring instrument with a stamp of uniform design issued by the Superintendent, indicating the area or district in which it has been stamped or the Inspector by whom it is stamped or both:Provided that:-(a)no weight, measure, weighing or measuring instrument shall be stamped, which is not, in the opinion of the Inspector, sufficiently strong to withstand the wear and tear or ordinary use in trade; and(b)no weighing or measuring instrument manufactured after the coming into force of these rules other than Class A beam scales shall be stamped unless provided by the manufacturer with a plug or stud of soft metal on which to place the Inspector's stamp, such plug or stud being made irremovable by undercutting or in some other suitable manner.(4)The Inspector shall also mark the date of stamping on all weights, measures (other than glass, earthenware and enamelled metal measure(s) and weighing and measuring instruments, except when the size of such weight, measure, or instrument makes it impracticable.(5)On completion of verification and stamping, the Inspector shall issue a certificate of verification in the form specified in Schedule VIII, to the trader.

14. Transitional provisions.

- Weight, measures and weighing and measuring instruments, which do not conform to the requirement of these rules but which conform to the requirements of the Rajasthan Weights and Measures Rules, 1956, shall be verified and stamped, so far as may be, in accordance with these rules so long as the use of such weights and measures and weighing and measuring instruments is permitted under the Standard of Weights and Measures Act, 1956 (Central Act No. 89 of 1956).

15. Procedure for earring out inspection etc.

- In carrying out his duties of inspection, verification and stamping of weights/measures and weighing and measuring instruments in situ the Inspector shall observe the procedure laid down in Schedule IX in addition to that laid down in [Schedules V, VI, VI-A, VI-B and VI-C.] [Substituted by Amended Notification 6. dated 30.12.1983.]

16. Monthly report of Inspector.

- Every Inspector shall submit a monthly report to the Superintendent showing the work done by him, in a form approved by the Superintendent.

17. Obliteration of Stamps.

- The Inspector, on inspection, shall obliterate the stamp on-(a)any weight, measure, or weighing or measuring instrument which cannot be made to conform to the requirements of these rules;(b)any weight or measure, if it does not admit of proper adjustment owing to its being broken, intended or otherwise defective;(c)any weight or measure or weighing instrument which since the last stamping, has been repaired or re-adjusted so as to cease to conform to the requirements of these rules;(d)any weight or measure or weighing or measuring instrument due and not submitted for re-verification and stamping.(e)any weight or measure of length of capacity or a weighing or measuring instrument, if the error exceeds the limits allowed at the time of inspection:Provided that where the error referred to in clause (e) is not in the Inspector's judgment, such as to require the immediate obliteration of the stamp he shall serve a notice on the trader, informing him of the defects found in the weight, measure or weighing or measuring instruments, and calling upon him to remove the defects within a stated period not exceeding eight days and shall-(i)if the trader fails to have them corrected within that period obliterate the stamp; or(ii)if the weight, measure or weighing or measuring instrument is adjusted to remove the defects within the stated period, re-verify the weight, measure or weighing or measuring instrument and stamp the same, if found correct :Provided further that where the defect in a weighing instrument may be corrected by re-balancing, the stamp shall not be obliterated.

18. Fees for verification, adjustment and stamping.

(1)Fees payable for verification and stamping of weights, measures, and weighing and measuring instruments at the office of the Inspector shall be as specified in Schedule X.(2)If verification is done at any premises other than the office of the Inspector, an additional fee shall be charged at half the rates specified in Schedule X and the owner or user, as the case may be, of the weight, measure or weighing or measuring instrument, shall also pay travelling and daily allowance admissible under relevant Government rules to the Inspector for visiting the premises, including the cost of transporting and handling the working standards, balances and other equipment :(i)[] [Renumbered by [G.S.R. 289, Notification No. F. 9(10),/Ind./II/71, dated 13.2.1978-Rajasthan Gazette, Extraordinary, Part 4-C(I), dated 9.3.1978, page 854.] = 1978 RSCS/II/P. 93/H. 107.] Provided that no additional fee shall be charged for verification and stamping in situ of-(a)petrol or fuel vehicles, weighbridges, doremant platform machines and such other instruments as may be specified in this behalf by the Superintendent, and(b)weights, measures and weighing and measuring instruments in the premises of a manufacturer, or stockist, of such weights, measures and instruments.(c)[] [Inserted by [G.S.R. 289, Notification No. F. 9(10),/Ind./II/71, dated 13.2.1978-Rajasthan Gazette, Extraordinary, Part IV-C(I), dated 9.3.1978, page 854.] = 1978 RSCS/II/P. 93/H. 107.] weights, measures, weighing and measuring instruments used and owned by the Railways](ii)[Provided that the Railways shall not be required to pay, travelling and daily

allowance admissible under relevant Government rules to the Inspector Weights and Measures for visiting the premises or the cost of transportation and handling the working standards, balances and other equipments required for verification and stamping of Weights and measures, weighing the measuring instruments.] [Inserted by [G.S.R. 289, Notification No. F. 9(10),/Ind./II/71, dated 13.2.1978-Rajasthan Gazette, Extraordinary, Part IV-C(I), dated 9.3.1978, page 854.] = 1978 RSCS/II/P. 93/H. 107.](3)[The Railways shall arrange for the travelling of the Inspectorial staff to visit the premises for inspections, verifications and stamping and shall also arrange the transportation and handling of working standards, balances and other equipments from the laboratory to the site of verification and stamping at their cost.] [Inserted by [G.S.R. 289, Notification No. F. 9(10),/Ind./II/71, dated 13.2.1978-Rajasthan Gazette, Extraordinary, Part IV-C(I), dated 9.3.1978, page 854.] = 1978 RSCS/II/P. 93/H. 107.](4)[] [Renumbered by [G.S.R. 289, Notification No. F. 9(10),/Ind./II/71, dated 13.2.1978-Rajasthan Gazette, Extraordinary, Part IV-C(I), dated 9.3.1978, page 854.] = 1978 RSCS/II/P. 93/H. 107.] An Inspector may carry out minor adjustments on payment of each additional fees as may be fixed by the Superintendent in each case.(5)[] [Renumbered by [G.S.R. 289, Notification No. F. 9(10),/Ind./II/71, dated 13.2.1978-Rajasthan Gazette, Extraordinary, Part IV-C(I), dated 9.3.1978, page 854.] = 1978 RSCS/II/P. 93/H. 107.] A weight, measure, weighing or measuring instrument, which on verification is found to be incorrect, shall be returned to the person concerned for adjustment, informing him in writing of the defects found in the same. When the necessary adjustment has been carried out, such weight, measure, weighing or measuring instrument shall be re-verified on payment of half the rate specified in Schedule X and if found correct shall be stamped.

19. No fees to be charged for re-stamping within a certain period.

- Notwithstanding anything in Rule 18, no fee shall be payable for re-stamping any weight, measure or weighing or measuring instrument, within the period specified in Rule 11 from the date on which it was last stamped, provided the original stamp was not obliterated under Rule 17.

20.

A weight, measure, or weighing or measuring instrument which on verification as provided in Rule 11 is found to be incorrect, shall be returned to the person concerned for adjustment.When the necessary adjustment has been carried out, such weight, measure or weighing or measuring instrument shall be re-verified on payment of 25% of the prescribed fees and if found correct shall be stamped.

21. Collection of fees and deposit into the Treasury.

(1)Before commencing the work of verification or re-verification, the Inspector shall inform the person concerned of the fees payable by him under these rules and shall receive the same and issue a receipt in the form approved by the Superintendent, two copies of such receipts being kept on record :[Provided that in case of railways, the Inspector shall on completion of verification and stamping, get the verification certificate signed by the concerned agency and tender the bills for the fees on monthly basis for payment in the form prescribed by the Controller] [Inserted by [G.S.R. 289,

Notification No. F. 9(10),/Ind./II/71, dated 13.2.1978-Rajasthan Gazette, Extraordinary, Part IV-C(I), dated 9.3.1978, page 854.] = 1978 RSCS/II/P. 93/H. 107.].(2)The Inspector shall maintain a register which shall be written up from day to day and shall show the amount of fees and carriage charges collected during the day :[Provided that in the case of railways, the Inspector shall maintain a register of bills tendered by him, in such form, as may be prescribed by the Controller.] [Inserted by [G.S.R. 289, Notification No. F. 9(10),/Ind./II/71, dated 13.2.1978-Rajasthan Gazette, Extraordinary, Part IV-C(I), dated 9.3.1978, page 854.] = 1978 RSCS/II/P. 93/H. 107.](3)All payments, received by the Inspector during the preceding week shall be paid into the Government Treasury every Monday for Credit to the Head 32 Industries and Supplies-C other Miscellaneous receipts (Weights and Measures), receipt obtained and intimation to that effect sent to the Superintendent.

22. Seizure, detention and disposal of unauthorised weights measures and instruments.

(1)(i)Weights and measures, beam scales spring balances counter machines and steel yards shall be liable to be seized and detained if:-(a)they are not of the denominations specified in Schedules V and VI,(b)they are false or defective,(c)fraud is committed in using them,(d)they are unstamped,(e)the stamp on them is forged or transferred.(ii)Weighing and measuring instruments other than those specified in clause (i) shall be liable to seizure and detention in cases (b), (c) and (e) of the clause.(2)Any weight or measure or weighing or measuring instrument or any other articles seized and detained under this rule or in pursuance of Section 17, which are not to be the subject of proceedings in a Court, shall, after expiry of one month after its seizure, to be dealt with as the Superintendent may by general or special order direct, and the materials thereof shall be sold and the proceeds credited to the Government.(3)Any weight or measure or weighing or measuring instrument seized and detained under this rule, which is to be the subject of proceedings in a court, shall be produced by the Inspector before the court and shall, after conclusion of the proceedings, be taken possession of by the Inspector and dealt with in accordance with the instructions issued by the Superintendent in this behalf.

23. Qualifications of Inspectors.

(1)No person shall be appointed as Inspector unless he:-(i)is a graduate of a recognised University preferably in Science or Engineering, or holds a recognised diploma in Engineering:(ii)is able to speak, read and write one of the regional languages of the State; and(iii)on selection, has satisfactorily completed atleast six week's training in a Department of Government responsible for the Enforcement of Weights and Measures :Provided that in case of Assistant Inspectors the academic qualification, prescribed above shall be Matriculation's preferably with Science.(2)Nothing in sub-rule (1) shall apply to persons who have been working as Inspectors for a period of not less than a year immediately before the commencement of these rules.

24. Duties of Inspectors.

- The duties of an Inspector are :-(a)Verification and stamping of weights and measures etc.(b)Inspections;(c)Collection of fees and other charges, and submission of the reports and returns prescribed in the rules or required by the Superintendents;(d)Safe custody of articles seized and detained in the course of his duty;(e)Safe and proper custody of the secondary and working standard and other equipment entrusted to his charge.(f)Maintenance of such books as may be specified by the Superintendent.

25. Licensing of manufacturers, repairers and dealers of weights, measures, etc.

(1)Every manufacturer or repairer of or dealer in weights, measures or weighing and measuring instruments shall obtain a licence from the Superintendent in the form set out in Schedule XI; such licence may be renewed from year to year [by the Assistant controller, weights and measures in their respective districts] [Inserted by Notification No. F.9(3) Ind/II/74, dated 28.6.1975, G.S.R. 81(37) Published in Rajasthan Gazette, Part IV-C, dated 3.7.1975, page 169(87).] ;(2)The fees payable for such licence and its renewal shall be as specified in Schedule XII.(3)The Superintendent may by order, refuse to grant or renew the licence or suspend or cancel the licence of a manufacturer or repairer of, or dealer in, weights, measures, weighing and measuring instruments on the ground of want of proper and adequate workshop facilities or staff or incompetency or failure to observe any provisions of the Act or these rules:Provided that no such order shall be made without giving the aggrieved person an opportunity of stating his case.(4)The Superintendent shall maintain a register of licensed manufacturers, repairers and dealers in the form set out in Schedule XIII.

26. Records to be maintained by manufacturer etc.

- Every manufacturer or repairer of, or dealer in, weights, measures or weighing and measuring instruments shall maintain such records in such form and submit such returns as the Superintendent may direct.

27. Certificate of verification to be exhibited.

- The person to whom a certificate of verification is issued shall exhibit the same in a conspicuous place in the premises where the weights, measures or weighing or measuring instruments to which the certificate relates are used and in case of hawkers, and persons selling goods in weekly bazars, such certificate shall be kept on his person.

28. Penalty.

- Any person who contravenes any provision of these rules shall be punishable with fine which may extend to [five hundred rupees] [Substituted by Amended Notification No. 1 for 'One Hundred Rupees'.].

29. Form and manner of appeal.

- An appeal under Section 20 of the Act shall be in the form of memorandum setting forth concisely the grounds of objections to the decision which is the subject of appeal and shall be accompanied in the original or a certified copy of that decision. A fee of Rs. 2/- shall be paid in respect of each appeal in the form of court fee stamp affixed to the memorandum of appeal.

30. Exemption from observing requirements.

- Where in the special circumstances in any case, it appears to an Inspector to be impracticable to comply literally with any requirement of these rules, he shall consult the Superintendent and the Superintendent may, on such reference, if he thinks fit, dispense with the observance of such requirement.

I

Denominations, Material, Shape Permissible Errors of Secondary Standards of Weights and Measures[See Rule 4]

1. Secondary Standard Weights

Denominations:-

Kilogram Series	Gram Series	Miligram Series
1	2	3
10	500	500
5	200	200
	200	200
	100	100
2	50	50
2	20	20
	20	20
	10	10
1	5	5
	2	2
	2	2
	1	1

Material:-(a)Weights of 10 kg to 1 g shall be cast from admiralty bronze of the following composition:-

Constituent	Per Cent

Tin	9.50 to 10.50
Zinc	1.50 to 2.50
Lead (Max.)	0.50
Nickel (Max.)	1.00
Other elements total (Max.)	0.15
Copper	Remainder

(b)Weights of 500 mg. to 50 mg. shall be made of cupro nickel having a nominal composition of 75 per cent Copper and 95 per cent Nickel.(c)Weights to 20 mg. to 1 mg. shall be made of commercially pure aluminium sheets.Shape:-(a)For kilogram and gram series Integral cylindrical body with knobs flatten d at the top.(b)For milligram series, the weights shall be in the form of square sheets, one of corners being bent at right angles.Permissible Errors :-The permissible errors in excess and in deficiency shall be as follows :-

Denomination	Permissible Error	
	in excess mg.	in deficiency mg.
1	2	3
10 kg	50	25
5 kg	25	12.5
2 kg	15	7.5
1 kg	10	5
500 g	5	2.5
200 g	4	2
100 g	3	1.5
50 g	2	1
20 g	1.5	0.75
log	1	0.5
5g	0.8	0.4
2g	0.6	0.3
1 g	0.4	0.2
500 mg	0.4	0.2
200 mg	0.2	0.1
100 mg	0.2	0.1
50 mg	0.1	0.05
20 mg	0.1	0.05
10 mg	0.05	0.02
5 mg	0.05	0.02
2 mg	0.05	0.02
1 mg	0.02	0.02

2. Secondary Standard Capacity Measures

Denominations :-

Litre Series (1)	Millilitre Series (ml.)
5	500
2	200
1	100
	50
	20
	10

Material :-Secondary measures of capacity shall be cast out of admiralty bronze of the composition as is employed in the case of secondary standard weights.Shape :-(a)The 5 litre measure shall be cyclindrical and have its inside diameter equal to the height of the measure. This shall have two handles attached securely to its sides.(b)Measures of 2 litres and belows shall be of the same shape as above but shall not have any handles.(c)The denominations of the measures shall be engraved on the outside surface.(d)Each set of measures shall be supplied with specially selected striking glasses.Permissible Errors :-The permissible errors in excess and in deficiency shall be as follows :-

Denomination	Permissible Error	
in excess	in deficiency	
1	2	3
5l	2	2
2l	1	1
1l	0.8	0.8
500 ml	0.5	0.5
200 ml	0.4	0.4
100 ml	0.3	0.3
50 ml	0.2	0.2
20 ml	0.1	0.1
10 ml	0.1	0.1

II

[See Rule 5]Denominations, Material, Shape, Permissible Errors for Working Standards of Weights and Measures

1. Working Standards Weights

(For Cast Iron and Non-bullion Weights)Denominations :-

Kilogram Series	Gram Series	Miligram Series

1	2	3
20	500	500
	200	200
	200	200
10	100	100
5	50	50
2	20	20
2	20	20
1	10	10
	5	5
	2	2
	2	2
	1	1

Material :-(a)Weights of 20 kg to 1 kg shall be cast from admiralty bronze or cupro-nickel of the following composition:-

Constituent	Per Cent
1	2
Admiralty Bronze :-	
Tin	9.50 to 10.50
Zinc	1.50 to 2.50
Lead (Maximum)	0.50
Nickel (Maximum)	1.00
Other elements	0.15
Total, maximum	
Copper	Remainder
Cupro-Nickel :-	
Copper	75
Nickel	25

(b)Weights of 500 mg to 100 mg shall be made of admiralty bronze (rolled) sheets. (Composition as in (a) above).(c)Weights of 50 mg to 1 mg shall be made out of commercially pure aluminium sheets.Shape:-(a)Weights of 20 kg and 10 kg shall be cylindrical in shape and shall be cast in two halves, the top half being screwed snugly into the bottom half. The top half shall be cast in the form of a handle for lifting purposes. The two halves after assembly shall be locked by means of a set screw over which the seal of the verifying authority shall be stamped.(b)Weights of 5 kg. to 200 g. (inclusive) shall be cast in two halves, the top half being screwed snugly into the bottom half. The top half shall be cast in the form of a knob for lifting purposes. The two halves, after assembly shall be locked by means of a set screw, over which the seal of the verifying authority shall be stamped.(c)Weights of 100 g to 10 g shall be as (b) above except that there shall be no locking arrangement.(d)Weights of 5 to 1 g shall be intergral solid weights.(e)Weights of 500 mg to 1 mg

(inclusive) shall be half square shape with one of the side bent at right angles to the flat surface for cast of handling.Permissible Errors :-The permissible error in excess and the deficiency shall be as follows :-

Denomination	Permissible Errors	
in excess mg.	in deficiency mg.	
1	2	3
20 kg	200	100
10 kg	100	50
5 kg	50	25
2 kg	30	15
1 kg	20	10
500 g	10	5
200 g	8	4
100 g	6	3
50 g	4	2
20 g	3	1.5
10 g	2	1
5 g	1.6	0.8
2 g	1.2	0.6
1 g	0.8	0.4
500 mg	0.8	0.4
200 mg	0.4	0.2
100 mg	0.4	0.2
50 mg	0.2	0.1
20 mg	0.2	0.1
10 mg	0.1	0.05
5 mg	0.1	0.05
2 mg	0.1	0.05
1 mg	0.05	0.05

2. Working Standard Capacity Measures

Denominations :-

Litre Series (1)	Millilitre Series (ml.)
20	500
10	200
5	100
2	50

1	20
	10

Materials of Construction :-Working Capacity Standards shall be pressed out of oxygen free, deoxidised annealed copper sheets of deep drawing quality.Shape:-(i)Working standard capacity measures of 10 litres shall be cyclindrical with the handles security fixed to the sides.(ii)All other working standard capacity measures shall also be cylindrical, but shall not be provided with handles. The diameter of each measure shall approximately be equal to the height of the measure. The measures shall be suitably reinforced.(iii)The denominations of the working standards measures shall be engraved on the outside surface.(iv)The outside of the body of the working standard measure shall be oxidised to give a smooth dull back surface and the inside shall be tinned.(v)Each set of working standard capacity measure shall be supplied with specially selected striking glasses and the measures and glasses shall be securely packed in velvet lined teakwood boxes.Permissible Errors :-

Denomination	Permissible Errors	
in excess (in ml.)	in deficiency (in ml.)	
1	2	3
10 l	8	8
5 l	4	4
2 l	2	2
1 l	1.5	1.5
500 ml	1.8	1.0
200 ml	0.8	0.8
100 ml	0.6	0.6
50 ml	0.4	0.4
20 ml	0.2	0.2
10 ml	0.2	0.2

III

[See Rules 6 & 7]Specifications for Precision and Secondary Standard Balances Range of Balances

Capacities	Sensitiveness mg/division of scale
20 kg	5
5 kg	1
1 kg	0.5
200 g	0.05 or 0.1
20 g	0.01
2 g	0.005

Note. - 1. Precision and Secondary Standard Balances shall be used only for indoor work in laboratories and shall be handled carefully by competent trained personnel. The balances shall be designed accordingly to well established practices of Precision Balance manufacturers.

2. Both Precision and Secondary Standard Balances shall be manufactured to the specification given above.

IV

[See Rule 8]Specifications for Working Standard Balances

1. Range of Balances

Capacity	Sensitiveness mg/division of scale	Approximate Beam Length
50 kg	100	750 mm
5 kg	10	250-300 mm
200 g	1.0	150-200 mm
2 g	0.02	120-150 mm

2. Types. - Working Standard Balances shall be of both indoor and outdoor types.

3. Design and Construction. - The balances shall be constructed of non-magnetic materials and shall be robust in construction. They shall be capable of being easily assembled. Outdoor type balances shall be fitted in suitable carrying cases to enable the balances to withstand rough transport conditions. Smaller balances i.e., capacity 5 kg and, below shall be provided with glass cases. Portable balances of capacity 5 kg and below shall be fitted into one carrying case for ease of transportation.

V

[See Rule 9]Specifications for Commercial Weights and Measures of Length and Capacity

Part I – Commercial Weights (Other than Carat Weights) 1. Denominations :-

The denominations of the different types of weights shall be as follows :-(a)Iron and Steel Weights..

50 kg 500 g
20 kg 200 g
10 kg 100 g
5 kg

2 kg

1 kg

(b)Brass and Bronze Weights....

Bullion	Other than Bullion		
20 kg	500 g	1 kg	500 g
10 kg	200 g		200 g
5 kg	100 g		100 g
2 kg	50 g		50 g
1 kg	20 g		20 g
	10 g		10 g
	5 g		5 g
	2 g		2 g
	1 g		1 g

(c)Sheet Metal Weights.....(Bullion and other than Bullion).

500. mg.

200. mg.

100. mg.

50. mg.

20. mg.

10.

5.

2.

1.

The actual series to be used in practice shall consist of two weights of denominations 2, 20 or 200.

2. Iron and Steel Weights :-

(a)Materials. - Weights of 50 kg and down to and including 5 kg shall be made only of cast iron. Cast iron weights may preferably be made from material conforming to grade 10 B of IS : 210-1950. Weights of 2 kg and down to and including 100 g shall either be made of cast iron or forged mild

steel as specified by the purchaser. Mild steel weight may preferably be made from material conforming to steel designation B of IS : 226-1955(b)Shapes and Dimensions. - The shapes and dimensions of cast iron weights shall conform to Figs. 1 and 2 read with Tables 1 and 2 and those of mild steel shall conform to Fig. 2 read with Table 2.

Fig.- 1. Cast Iron Weight with cast in Handle Fig.-2. Cast Iron or Forged Mild Steel Weight

Table 1.-Dimensions of Cast Iron Weights with Handle.

Denomination	A	B	C	D	E	G	P	Q	R	S	T
1	2	3	4	5	6	7	8	9	10	11	12
50 kg.	236	253	134	170	100	27	53	43	24	102	32
20 kg.	188	200	112	113	90	21	44	28	19	66	22
10 kg.	152	161	92	88	74	18	36	30	15	54	19
5 kg.	125	132	75	65	62	15	29	25	12	40	16

All dimensions in millimetres Tolerance ondimensions + - 5 per cent.

Table 2.-Dimensions of Cast Iron or Forged Mild Steel Weights.

Denomination	A	B	C	D	H	P	Q	R	S	T
2 kg.	94	101	76	40	10	34	30	9	18	4
1 kg.	73	79	60	34	8	32	28	8	16	4
500 g.	57	62	46	27	6	23	20	6	13	3
200 g.	43	47	36	21	6	22	20	4	9	3
100 g.	34	36	28	16	4	18	16	3	7	2.5

Alldimensions in milimetres Tolerance on dimensions :-(a) For weights above 1 kg ... + -5 per cent.(b) For weights 1 kg and below ... + - 10 per cent.

(c)Cast-in-Handles. - Weights of denominations of 50 kg and down to and including 5 kg shall be provided with cast-in-handles made of mild steel which may conform to steel designation B of IS : 226-1955.(d)Nesting of weights. - Weight of denominations of 2 kg and down to and including 100 g shall nest with each other.(e)Loading Holes. - Weights with cast-in-handles (See Fig. 1) shall have one rectangular loading hole on the under surface, tapering outside along the width while the nesting weights (See Fig. 2) shall have one round loading hole, tapering outwards in the centre of the underside.(f)Permissible errors. -

Denomination	Verification	Inspection	
Errors in excess only	Excess	Deficiency	
1	2	3	4
	mg	mg	
50 kg	20,000		10,000
20 kg	10,000		5,000
10 kg	5,000		2,500
5 kg	3,000	Errors same as in verification	1,500

2 kg	1,600	800
1 kg	1,000	500
500 g	600	300
200 g	400	200
100 g	320	160

Note. - New Weights, when presented for checking and stamping, shall not weight less than the denomination value plus 50 percents of the excess tolerance shown above.

3. Brass and Bronze Weights. - (a) Materials. - The weights shall be made of cast brass or cast bronze, or processed from brass rods. The cast brass and brass rods may preferably conform to Grade 3 of IS : 292-1951 and to IS : 319-1951, respectively. Cast bronze may preferably conform to Grade 2 of IS : 306-1951.

(b)Shapes and Dimensions. - Brass and bronze weights shall be of the following types :-(I)Bullion Weights. - (i) Weights of denominations of 20 kg. and down to and including 1 g, shall be cylindrical in shape, with a handle for 20 kg and 10 kg weight, and a knob for the rest of the denominations. Shapes and dimensions shall conform to Fig. 3 and 4 read with Tables 3 and 4, respectively, weights of 20 kg. down to and including 20 g. shall be marked with the words 'Bullion' and ^cqfy;u* with a 'diamond' as shown in Fig. 3 and 4, and weights of 10 g and below shall be marked with only a 'diamond'.

Fig.- 1. Cylindrical Bullion Weights with Handle.

Fig.-2. Cylindrical Bullion Weight with knob.

Table 3.-Dimensions of Cyclinderical Bullion Weights with handle.

Denominations	A	B	C	D	E	F	G	H	L	J	K	S
20 kg	133	157	71	106	41	16	55	51	25	26	14	25
10 kg	106	130	64	85	33	14	50	49	25	25	13	25

All dimensions in millimetres.Tolerance on dimensions + - 5 per cent.Table 4.-Dimensions of Cyclindrical Bullion Weights with Knob.

Denominations	A	B	C	D	E	F	G	H	L	J
5 kg	86	88	41	56	37.5	22.5	18.5	38	19	20
2 kg	64	67	27	39	24	14	13	27	17	17.5
1 kg	50	50	23.5	33	21	12	11.5	25	16	17
500 g	41	29	20	20	17	10.5	8.5	19	16	17
200 g	32	29	16	25	12	9	7	13.5	13	13.5
100 g	24	24	12	17	9.5	6	6	11	11	12
50 g	19	19	10	14	8	5	5	9	9.5	10
20 g	14	14	6	10	6	3	3	6	6	7
10 g	11	11	5	0	5	3	2	–	–	–

5 g	9	9	4	6	4	2	2	–	–	–
2 g	6	6	3	4	2	1.5	1.5	–	–	–
1 g	6	6	2	3	1	1	1	–	–	–

All dimensions in millimetres.Tolerance on dimensions :(a)For weights above 1 kg + - 5 percent.(b)For weights 1 kg and below + - 10 percent.(ii)Weights of denominations 1 kg and down to and including 1 g shall be flat cylindrical in shape (without a knob) and shall nest with each other. Shapes and dimensions shall conform to Fig. 5 read with Table 5 Weight of 1 kg and down to and including 20 g shall be marked with the words 'Bullion' and ^cqfy;u* within a 'diamond' as shown in Fig. 5 and weights of 10 g and below down to and including 1 g. shall be marked with only a diamond.Fig. 5-Flat Cylindrical Bullion Weights.Table 5.-Dimensions of Flat Cylindrical Bullion Weights.

Denominations	A	B	C	D	E	F	G	H
1 kg	82.5	66.5	16	16	3	8.0	24	17
500 g	65	49.5	16	13	2.5	7.75	19	17
200 g	48.0	38.5	13	9.5	2.5	4.75	14	14
100 g	37.5	29.5	11	7	2	4	11.5	12
50 g	28.5	22.5	9.5	6	1.5	3	10.5	10
20 g	21.5	17.5	8	4	1.5	2.0	7	8
10 g	16.5	13.5	–	–	1	1.5	6	–
5 g	12.5	10.5	–	–	1	1	5	–
2 g	10	8	–	–	0.5	1	4	–
1 g	7.5	–	–	–	–	–	2.5	–

All dimensions in millimetres.Tolerance oh dimensions ±10 percent.(II)Other than Bullion Weights. - (For supplementing the Iron and Steel Series) weights of denominations 1 kg. and down to and including 1 g shall be flat cylindrical in shape and shall have a distinct down ward taper. Shapes and dimensions shall conform to Fig. 6 read with Table 6.Fig. 6-Flat Cylindrical WeightsTable 6.-Dimensions of Flat Cylindrical Weights

Denomination	A	B	C	D	E	F	G	J
1 kg	84.5	58	16	76	4	15	25.5	20
500 g	64	46.5	16	56	3	14	23	20
200 g	50	34.5	13	45	2.5	9.5	15	15
100 g	38	26	11	33.5	2	9.5	13	13
50 g	29	20.5	10	25	2	8	11.5	12
20 g	22	16.5	8	19.5	1	4	8	10
10 g	17.5	12.5	–	16	1	–	6	–
5 g	13	10	–	11.0	1	–	5	–
2 g	10	7.5	–	9	0.5	–	3.5	–
1 g	8	–	–	6.5	–	–	2.5	–

All dimensions in millimetres.Tolerance on dimensions ±10 percent.(c)Loading Holes. - Weights of denominations 20 kg and down to and including 20 g shall have a round loading hole, tapering

outwards in the centre of the underside (See Figs. 3, 4, 5 and 6).(d)Permissible Errors. -

Denominations	Verification Errors in excess only		Inspection			
Bullion Weights	Other than Bullion Weights	Bullion Weights	Other than Bullion Weights			
Excess	Deficiency	Excess	Deficiency			
1	2	3	4	5	6	7
	mg.	mg.	mg.	mg.	mg.	mg.
20 kg	500	–		250		–
	mg.	mg.	mg.	mg.	mg.	mg.
10	250	–	Error same as in verification	125	Error same as in verification	–
5	150	–	75	–		
2	80	–	40	–		
1	50	250	25	125		
500 g	30	150	15	75		
200	20	100	10	50		
100	16	80	8	40		
50	12	60	6	30		
20	10	50	5	25		
10	8	40	4	20		
5	6	30	3	15		
2	4	20	2	10		
1	2	10	1	5		

4. Sheet Metal Weights. - (a) Materials. - Sheet Metal Weights shall be made of stainless steel, aluminium, brass or nickel silver sheets. The aluminium and brass sheets may preferably conform respectively to IS : Designation NS : 3 of IS; 737-1955 and Grade 4 of IS : 410-1953.

(i)Nickel Silver Sheet. - Nickel Silver Sheet should preferably have the following composition :-

Constituent	Per Cent, by Weight
Copper	63.0 to 66.5
Nickel	17.5 to 19.5
Zinc	Remainder.

(ii)Stainless Steel Sheet. - Stainless Steel Sheet should preferably conform to the following composition :-

Constituent	Per Cent, by Weight

Carbon max.	0.16
Silicon, min	0.20
Manganese, max.	2.00
Nickel	7.0 to 10.0
Chromium	17.0 to 20.0
Sulphur, max.	1.045
Phosphorus, max.	1.045

* Nickel plus chromium not less than 25.0 per cent.(b)Shapes and Dimensions:-(I)Other than Bullion Weights. - After bending along one of the side (See Fig. 7) the weights shall have the dimensions given in Table 7 and the following shapes:-

Denomination	Shape
500,50,5	Hexagon
200,20,2	Square
100,10,1	Triangle

Fig. 7-Sheet Metal Weights.Table 7.-Dimensions of Sheet Metal Weights.

Denomination	B1	B2	B3	H	G
mg					
500	-	-	12	4	2
200	-	9.0	-	3.5	2
100	9.0	-	-	3.5	2
50	-	-	9.5e	3	1.5
20	-	6.4	-	2.5	1.5
10	6.4	-	-	2	1.5
5	-	-	6.3	2	1
2	-	3.6	-	2	1
1	3.6	-	-	2	1

All dimensions in millimeters.Tolerance on dimensions ±10 per cent.(II)Bullion Weights. - When intended for use in the Bullion trade, sheet metal weights, shall, after bending, have circular shape; their diameters shall be as given in Fig. 8 read with Table 8.Fig. 8 Sheet Metal Bullion WeightTable 8.-Dimensions of Sheet Metal Weights/(Bullion).

Denomination	D	C	H
1	2	3	4
mg			
500	11.0	2	2
200	10.0	2	2
100	9.0	2	2
50	8.0	1.5	2
20	6.3	1.5	1.6

10	5.6	1.5	1.6
5	5.0	1.0	1
2	4.0	1.0	1
1	3.2	1.0	1

All dimensions in millimeters.Tolerance on dimensions ±10 per cent,(c)Permissible Errors:-

Denominations	Verification Errors in excess only		Inspection			
Bullion Weights	Other than Bullion Weights		Bullion Weights	Other than Bullion Weights		
Excess	Deficiency		Excess	Deficiency		
1	2		3	4	5	6	7
mg.	mg.		mg.	mg.	mg.	mg.	mg.
500	1.6		8.0	Error same as in verification	0.8	Error same as in verification	4.0
200	1.2		6.0	0.6	3.0		
100	0.8		4.0	0.4	2.0		
50	0.4		2.0	0.2	1.0		
20	0.4		2.0	0.2	1.0		
10	0.2		1.0	0.1	0.5		
5	0.2		0.4	0.1	0.2		
2	0.2		0.2	0.1	0.1		
1	0.1		0.1	0.05	0.05		

5. Manufacture and Finish.: - General. - When the weights are cast, the casting shall be reasonably smooth and free from dross, pits blow holes and other defects. When the weights are made by machining or forging, the surface shall be reasonably smooth. Sheet metal weights shall be clearly sheared and shall be free from burrs. Cast iron and forged weights shall be coated with a thin film of suitable black paint or varnish.

The raised markings on weights shall be clean and legible. The stamped marking on sheet metal weights shall be legible and deep enough to ensure indelibility over a long period, but not so deep as to crack the sheet.When lead is used in adjusting weights, it shall be so fitted as to ensure that it does not dislodge itself under normal conditions of use.The steel handles of cast iron weights shall be rigidly fixed.

6. Marking. - Every weight, except weights of 10 g, and lower denominations, shall have the manufacturer's name or trade mark indelibly cast or stamped on it.

The denominations shall be indicated in art indelible manner with the abbreviations 'kg' & ^fdyks* [Added by Amended Notification 3, dated 30.12.1983.] to indicate kilogram 'g' & ^xzke* to indicate gram, and 'mg' and ^fefy* to indicate milligram. The size of numerals and letters (letters need not be stamped on weights 50 mg and below) indicating denominations of weights shall be at least twice the size of letters indicating the manufacturers, name or trade mark. The numerals used in the denomination shall be only Indo Arabic figures.

7. Adjustments. - The weights provided with loading holes shall be adjusted by pouring the required weighted quantity of molton lead into the loading hole and pressing the load firmly. The approximate distance of the lead from the surface shall be not less than 20 per cent of the minimum thickness of the weight when new. The lead used for adjusting may preferably conform to Grade Pb 99.8% of IS : 27-1956.

Part II – Commercial Carat Weights 1. General. - (a) Commercial Carat Weights shall be used in weighing precious stones and pearls.

(b)For case of calculation and convenience of use, a carat is usually sub-divided into 100 equal parts, called cents. A cent thus equal 2 mg. In the denominations of the commercial carat weights, the system followed is that where a fractional weight in the carat series occurs, that fraction is given as so many parts per 100 cents, e.g., 0.5 carat is designated as 50/100 carat.

2. Denominations. - The denominations of carat weights shall be as follows. The gram and milligram equivalents are shown against each for ready ref.:

(a)Knob Weights.

Denominations	Equivalents
Carat (c)	g
500	100
200	40
100	20
50	10
20	4
10	2
5	1

(b)Sheet Metal Weights-

Denominations	Equivalents

Carat (c)	g
2	400
1	200
50/100	100
20/100	40
10/100	20
5/100	10
2/100	4
1/100	2
0.5/100	1

The actual series to be used in practice shall consist of two weights of denominations 2, 20, or 200 and 2/100, 20/100 Carats.

3. Knob Weights. - (a) Materials. - The weights shall be made from rolled, drawn or extruded material and not cast.

The weights shall be made from brass, nickel silver, nickle chromium or bronze, which may preferably conform to the following :-

(i) Brass-IS : 319-1951

(ii) Nickel Silver-

Constituent	Per Cent
Copper	63.0 to 66.5
Nickel	17.5 to 19.5
Zinc	Remainder
Impurities	
Iron, max.	0.25
Manganese	0.25
Lead, max.	0.05

(iii) Nickel Chromium-

Constituent	Per Cent
Carbon, max.	0.10
Manganese, max.	0.50
Chromium	19.0-21.0
Silicon, max.	0.80
Copper, max.	0.20
Iron, max.	1.20
Nickel (small amount of cobalt) to be counted as nickel	Remainder

(iv) Bronze-

Constituent	Per Cent
Copper	89.0-91.0
Tin	Remainder
Impurities	
Lead, max.	0.05
Iron, max.	0.05
Others (total) max.	0.13

(b)Shape and dimensions. - The shape and dimensions of the weights shall be as shown in Fig. 9 and Table 9.Fig. 9-Knob Carat WeightTable 9.-Nominal Dimensions of Knob Carat Weights.(All dimensions in mm)

Denomination(Carat)	A	B	C	D	E*	F*	G*	H	J
5	5	2.0	6.3	1.5	1.0	0.75	0.20	7.99	2.49
10	6	2.5	8.2	1.6	1.0	0.80	0.20	9.36	3.26
20	7	3.0	10.5	1.7	1.0	0.85	0.25	11.07	4.37
50	8	3.5	15.0	1.8	1.0	0.90	0.25	13.25	5.95
100	9	4.0	19.0	2.0	1.0	1.0	0.30	15.71	7.71
200	10	4.5	24.5	2.2	1.5	1.10	0.30	18.70	9.50
500	12	5.0	33.2	2.5	1.5	1.25	0.40	23.76	10.5

*Recommended dimensions.(c)Permissible Errors. -

Denominations	Verification Errors in excess only		Inspection
Excess	Deficiency		
Carat(c)	mg.	mg.	mg.
500	8.0	Errors same as in verification	4.0
200	6.0	3.0	
100	5.0	2.5	
50	4.0	2.0	
20	3.0	1.5	
10	2.0	1.0	
5	1.0	0.5	

4. Sheet Metal Weights. - (a) Materials. - Weights of denominations 10/100 carat and below shall be made of aluminium sheet which may preferably conform to NS 3 of IS : 737-1955. Weights of higher denominations shall be made of sheets of brass, aluminium, nickel, silver, nickel chromium or bronze, which may preferably conform to the following:-

(i)	Brass	Grade 4 of IS : 410-1955.
(ii)	Aluminium	NS 3 of IS : 737-1955.

(iii) Nickel Silver:-

Constituent	Per Cent
Copper	63.0 to 66.5
Nickel	17.5 to 19.5
Zinc	Remainder
Impurities	
Iron, max.	0.25
Manganese	0.50
Lead, max.	0.50

(iv) Nickel Chromium As in 3 (a) (iii).

(v) Bronze As in (a) (iv),

(b)Shapes and Dimensions. - Sheet metal weights shall be square with a raised corner to facilitate manipulation (See Fig. 10). They shall have the dimensions given in Table 10.Fig. 10.-Sheet metal carat weightsTable 10.-Nominal Dimensions of Sheet Metal Carat Weights.

Denomination (carat)	Side (a) mm
1	2
2	10
1	8
50/100	6.3
20/100	5.0
10/100	8.0
5/100	7.0
2/100	6.0
1/100	5.5
0.5/100	4.0

(c)Permissible errors. -

Denomination	Verification	Inspection	
Errors in excess only	Excess	Deficiency	
Carat(c)	mg.	mg.	mg.
2	0.8	Errors same as in verification	0.4
1	0.6	0.3	
50/100	0.4	0.2	
20/100	0.2	0.1	
10/100	0.2	0.1	
5/100	0.1	0.05	
2/100	0.1	0.05	
1/100	0.1	0.05	
0.5/100	0.1	0.05	

5. Manufacture and Finish. - The surface of the weights shall be reasonably smooth. Sheet metal weights shall be smoothly sheared and shall be free from burrs.

6. Marking. - Every weights, except weights of 50 carats and lower denomination, shall have the manufacturer's name or trade mark and the denomination indelibly stamped on it.

The denomination shall consist of the Indo-Arabic numeral prefixed and suffixed by the letters 'K' and 'C' respectively, except that in the case of weights below 50 carats, only the numerals shall be marked. The size of numerals and letters indicating denomination of weight shall be at least twice the size of letters indicating the manufacturer's name or trade mark.The marking shall be legible and deep enough to ensure indelibility over a long period, but not so deep as to crack weight itself.

7. Packing. - The weights shall be supplied in a suitable velvet-lined box. The small sheet metal weights shall be so housed and provided with a cover of glass or any other transparent material that they will not get dislodged from their proper places. The box shall also contain a pair of forcepts for manipulating the weights.

Part III – Commercial Liquid Capacity Measures 1. General. - This part deals with two types of cylindrical liquid measures, namely, the dipping and the pouring types, and one type of conical measures. Cylindrical measures are generally used for measuring out commodities like milk while conical measures are generally used for mineral oils.

2. Denominations. - -The denominations of the different types of measures shall be as under :-

Cylindrical Measures	Conical Measures	
Dipping type	Pouring type	
1	2	3
1 litre	2 litres	20 litres
500 ml	1 litre	10 litres
200 ml	500 ml	

		5 litres
100 ml	200 ml	2 litres
50 ml	100 ml	1 litre
20 ml	50 ml	500 ml
	20 ml	100 ml

3. Shapes and Dimensions. - (a) The shape and dimensions of cylindrical measures (dipping and pouring types) shall be as shown in Figs. 11(A) and 11(B) and Table 11.

Fig. 11 (A) Dipping typeCylindrical Measures(Schematic).

Fig. 11(B) Pouring typeCylindrical Measures(Schematic).

Table 11.-Nominal Dimensions of Cylindrical Capacity Measures.

Denominations	D	H	B, max.	G, Min.	(SWG)
1	2	3	4	5	6
2 litres	120	180	360	1.6	(16)
1 litre	95	142	254	1.6	(16)
500 ml	75	112	224	1.6	(16)
200 ml	55.2	83	166	1.22	(18)
100 ml	44	66	132	1.22	(18)
50 ml	35	52	104	1.22	(18)
20 ml	26	38	76	0.91	(20)

Notes. - 1. All dimensions in millimeters.

2. Tolerance on dimensions + - 10 per cent.

(b)The shape and dimensions of conical measures shall be as shown in Fig. 12 and Table 12.Fig 12.-Pouring Type Conical Measures (Schematic)Table 12.-Nominal Dimensions of Conical Capacity Measures

Denominations	A	B	C	D	E	F	G min.	SWG	H	J	K
20 litres	97	388	388	208	194	390	0.91	(20)	12.5	86	29
10 litres	77	308	307	174	154	309	0.91	(20)	12.5	75	26
5 litres	61	244	245	147	122	247	0.71	(22)	12.5	65.5	24
2 litres	45	180	180	118	90	182	0.71	(22)	12.5	56	22
1 litre	36	143	143	95.5	72	145	0.56	(24)	12.5	45	18

500 ml	28	114	113	74	56	115	0.56	(24)	12.5	35	14	
200 ml	21	84	84	53	42	86	0.56	(24)	12.5	24.5	10	
100 ml	17	66	67	41	34	69	0.56	(24)	12.5	18.5	7	

Notes. - 1. All dimensions in millimeters.

2. Tolerance on dimension + - 10 per cent.

4. Materials. - (a) Cylindrical Measures. - The body of cylindrical measures shall be pressed from aluminium alloy sheets, brass sheets, or stainless steel sheets. The minimum thickness of the sheets shall be as specified in Table 11. The aluminium alloy sheets and brass sheets may preferably conform to NS 3 of IS : 737-1955 and Grade 4 of IS : 410-1953 respectively.

(b)Conical Measures. - The conical measures shall be fabricated from galvanised steel sheets, aluminium alloy sheets, copper sheets, brass sheets, stainless steel sheets or tinplate, as may be specified by the purchaser. The minimum thickness of the sheets shall be as specified in Table 12. The galvanised steel sheets, aluminium alloy sheets, brass sheets and tinplate may preferably conform to Class I of IS : 277-1951, NS 3 of IS : 737-1955, Grade 4 of IS : 410-1953 and Grade I (Cl) of IS : 597-1955, respectively.(c)The handles for the measures shall be fabricated from the same material as that used for the body.

5. Manufacture and finish. - (a) Measures made of brass sheets and copper sheets shall be well tinned uniformly all over the inside as the outside surface.

(b)The handles shall be of robust construction and shall be well formed and shaped generally as shown in Fig. 11 and Fig. 12. They shall be securely fixed to the body by means of riveting, soldering or brazing.(c)The measures shall be free from any surface defects and indentations and shall be smoothly finished at the top.(d)Cylindrical measures shall be provided with a well formed and proportioned spout to facilitate pouring.(e)Conical measures shall be provided with a retaining lip to avoid spilling. The retaining lip shall be provided with a brass plug with a collar to receive the lead for the inspector's seal. A small hole about 5 mm in diameter, shall be provided at the bottom of the retaining lip to indicate the level to which the measures shall be filled and the hole shall be located on the side at right angle to the handle. The bottom of conical measures shall be suitably reinforced.(f)The measures shall be so designed that, when they are titled to 120 degrees from the vertical, they shall become completely empty.(g)The finished measures shall have adequate robustness for durability.

6. Permissible Errors.-

Denominations	Verification Errors	Inspection

	in excess only					
Cylindrical Measures	Conical Measures	Cylindrical Measures	Conical Measures			
Excess	Deficiency	Excess	Deficiency			
	ml	ml	ml	ml	ml	ml
20	...	100	Errors same as in verification	...	Errors same as in verification	50
10	...	50	...	25		
5	...	30	...	15		
2	30	15	15	7.5		
1	20	10	10	5		
500 ml	15	8	7.5	4		
200 ml	8	4	4	2		
100 ml	5	3	2.5	1.5		
50 ml	3	...	1.5	...		
20 ml	2	...	1	...		

7. Marking. - (a) Every cylindrical measure shall have the denomination and manufacturer's name of trade mark indelibly stamped on it. In the case of conical measures, the denomination and manufacturer's name or trade mark shall be either embossed on the body or indelibly marked on a name plate securely fixed to the body.

(b)The denomination shall consist of Indo-Arabic numerals and abbreviation 'l' and ^fy* to indicate litre, and 'ml' and ^fefy* to indicate millilitre. The size of numerals to indicate and letters indicating denominations on the measures shall be twice the size of the letters indicating the manufacturer's name or trade mark.

Part IV – Dispensing Measures 1. General. - This part deals with two types of dispensing measures made of glass and transparent plastic materials, used for dispensing purposes.

2. Types and Denominations. - Dispensing measures shall be of the following types and denominations.

(a)Conical Measures. - 200 ml., 100 ml, 50 ml, 20 ml, 10 ml and 5 ml.(b)Beaker Measures. - 1000 ml and 500 ml.

3. Materials. - (a) Glass Measures. - The measures shall be made of clear and transparent glass. They shall be well annealed; free from stones,- cracks and chippings; and as free as possible from blister and other defects. Lead glass shall not be used for the measures.

(b)Transparent Plastic measures. - The measures shall be made of a clear and transparent plastic material, manufactured from plasticised polyvinyl chloride or copolymer, the major constituent of which is polyvinyl chloride. The plastic material used shall not contain any constituents known to be injurious to health and likely to be extracted by contract with liquids.

4. Definition of Capacity. - The capacity corresponding to any graduation mark is defined as the volume of water at 27°C, expressed in milliliters, required to fill the measures to that graduation mark at 27°C, the observer's eye being level with the front graduation mark and the lowest point of the water meniscus appearing to touch the top edge of that mark.

5. Conical Measures. - (a) Shape. - The measures shall be conical as shown in Fig. 13A to 13G; the 50 ml measures shall be either tall or squat as shown in Fig. 13C and 13D respectively.

Fig. 13A200 ml	Fig. 13B100 ml	Fig. 13C50 ml(Tall)	Fig. 13D50 ml(Squat)	Fig. 13E20 ml	Fig. 13F10 ml	Fig. 13G5 ml

Fig. 13-Conical Measures.(b)Construction. - (i) Each measures shall have a pouring lip. The form of the lip shall be such that, when the measures is filled with water to the highest graduation mark, the contents may be poured from the lip in a stream falling clear of the outside of the measure.(ii)Each measure shall have a base on which it shall stand vertically without rocking when placed on a horizontal surface. The size of the base shall be such that the measure when empty, shall not fall when placed on a plate inclined at 15° to the horizontal. The bottom of the measuring space, shall be uniformly rounded and shall merge smoothly into the side of the measure.(iii)The wall thickness of the measures shall be sufficient to ensure sturdy construction & shall not show any local departures from uniformity.(iv)The external surface of the measure shall be cone having an included angle of not less than 13° and not more than 14°.(v)The overall volume of the measure shall be such that when it is filled with water to the highest graduation mark and a volume of water equal to half its nominal capacity is added to it, there shall be no overflow. But, the addition of a further quantity of water equal to quarter the nominal capacity shall result in water overflowing from the pouring lip.(c)Graduation. - (i) The conical measures shall be graduated in accordance with Table 13.Table 13-Details of Conical Measures

Denomination	Graduated at	Numbered at	Back Lines at	Lowest graduation Mark	Height of Lowest Graduation Mark above bottomof measuring space	Minimum length of Mark

ml	ml	ml	ml	ml	ml	ml
200	50, 100, 120, 140, 160, 180, 200, 200	50, 100, 120, 140, 160, 180	50, 100, 200	50	6.5 + 0.5	2.0
100	Every 10 ml from 10 to 100 ml	10, 20, 40, 60, 80, 100	20, 60, 100	10	3.0 + 0.5	1.75
50	Every 10 ml from Tall 10 to 50 ml	10, 30, 50	30, 50	10	4.0 x .05	1.5
50 (Squat)	Every 10 ml from 10 to 50 ml	10, 30, 50	30, 50	10	2.0 + 0.5	1.5
20	Every 5 ml from 5 to 20 ml	5, 10, 20	10, 20	5	2.5 + 0.5	1.25
10	Every ml from 2 to 10 ml	2, 4, 6, 8, 10	2, 6, 10	2	2.5 + 0.5	1.0
5	Every ml from 1 to 5 ml	1, 3, 5	3, 5	1	2.5 x 0.5	0.75

(ii)With the pouring lip of measures facing to the right, the front graduation mark shall be placed at right angles to, and on the right hand side of a vertical line extending from above the top graduation mark to near the base of the measure and below the bottom graduation mark;(iii)The graduation marks shall be marked as shown in Fig 13A to 13G. The marks shall be engraved or etched and they shall be of uniform thickness not exceeding 0.3 mm, provided that they may taper slightly towards the ends. The graduation marks shall be in planes perpendicular to the axis of the measure and shall be horizontal when the measure is standing on a horizontal surface.(iv)Each graduation number shall be etched or engraved close to the end of the graduation mark to which it relates and in such a manner that it would be bisected by a prolongation of that graduation mark.(v)The numbered graduation marks shall have the minimum length specified in Col. 7 of Table 13. The unnumbered graduation marks shall be atleast two-third the length of the numbered graduation marks and clearly shorter than the numbered marks.(vi)The height to the lowest graduation mark above the lowest point the bottom of the measuring space shall be within the limits given in Col. 6 of Table 13.(d)Permissible Errors. - The permissible errors in capacity shall not exceed the figures given below (see Table 14). The permissible error in excess or deficiency shall be the same for verification or inspection.Table 14.-Permissible errors in capacity of conical measures

Capacity corresponding to Graduation Mark, ml	Measures except 50 ml (Squat)	50 ml (Squat) Measures
1	2	3
200, 180, 160	3.0	...
140, 120, 100	2.0	...
90, 80, 70, 60	1.5	...

50, 40	1.0	1.0
30	0.8	1.0
20	0.6	0.8
15	0.5	...
10, 9	0.4	0.6
8, 7, 6	0.3	...
5	0.25	...
4	0.20	...
3	0.16	...
2	0.12	...
1	0.08	...

Note. - The permissible errors, apart from those of the 50 ml (squat) measure, apply to graduation marks corresponding to the capacities stated,irrespective of the nominal capacity of the conical measure concerned.

6. Beaker Measures. - (a) Shape. - The measures shall be in the form shown in Fig. 14A and 14B.

Fig. 14A - 1000 ml Fig. 14B - 500ml.

Fig. 14-Beaker Measures

(b)Constitution - (i) Each measure shall be provided with a pouring lip. The form of the lip shall be such that, when the measure is filled with water to the highest graduation mark, the content may be poured from the lip in a stream falling clear of the outside of the measure.(ii)Each measure shall be provided with a base on which it shall stand vertically without rocking when placed on a horizontal surface. The size of the base shall be such that the measure, when empty, shall not fall when, placed on a place inclined at 15° to the horizontal. The bottom of the measuring space shall be uniformly rounded and shall merge smoothly into the sides of the measure.(iii)The overall volume of the measure shall be such that when the measure is filled with water to the highest graduation mark and a volume of water equal to quarter the denomination volume is added to it, the water shall not overflow.(c)Graduation. - (i) The graduation marks shall be marked as shown in Fig. 14A and 14B and Table 15. The marks shall be etched or engraved and shall be of a uniform thickness not exceeding 0.3 mm provided that they may taper slightly towards the ends. The graduation marks shall lie in planes perpendicular to the axis of the measure and shall be horizontal when the measure is standing on a horizontal surface.(ii)Each graduation number shall be etched or engraved close to the end of graduation mark to which it relates and in such a manner that it would be bisected by a prolongation of that graduation marks.(iii)The distance between the highest and the lowest graduation marks the height of the lowest graduation mark above the inside of the base of the measure shall be in accordance with Col. (3) and (4) respectively of Table 15.Table 15-Graduation and Dimensions of Beaker Measures.

Denomination	Graduation at	Distance between	Height of lowest graduation	Diameter of top	Minimum diameter	Overall Height

		lowest & highestgraduation marks	mark above bottomof measuring of surface		of base	
1	2	3	4	#5	#6	#7
ml	cm	cm	cm	cm	cm	
1000	200 to 1000 ml at each 100 ml; numbered at each ml;unnumbered back lines at 200, 600 and 1000 ml.	11 ± 1	4 ± 1	12	9	23
500	100 to 500 ml at each 50 ml; numbered at each 100ml; unnumbered back lines 100, 300 and 500.	9 + 0.5	3 + 0.5	10	8	18

These are only recommendatory.(d)Permissible Errors. - The permissible errors in excess or in deficiency for verification or inspection shall not exceed 7 ml for 1,000 ml measure and 5 ml for 500 ml measure.

7. Marking. - Each measure shall have permanently and legibly engraved or etched on it its denomination in Indo-Arabic numerals, the abbreviations 'ml' and ^fefy* being used to indicate mililiters. The manufacture's name or trade mark shall be marked on the underside of the base of each measure.

Part V – Commercial Length Measures (Non-Flexible)

1. General. - This part deals with the non-flexible type of commercial length measure made of metal or wood. Metallic measures are usually used for measuring textiles, ribbons and similar materials and wooden measures generally in the timber trade.

2. Denominations. - The denominations of the length measures shall be as follows:-

Metallic Measures	Wooden Measures
1 m	2 m
0.5 m	

3. Metallic Measures. - (a) Materials. - The measures shall be made from mild steel or brass plated with nickel and chromium or from stainless steel. The mild steel rods and brass bars may preferably conform to Designation B of IS : 226- 1955 and Grade A of IS : 319-1951 respectively.

(b)Shape and Dimensions. - The shape and dimensions of the measures shall be as shown in Fig. 15.Fig. 15-Metallic Measures(c)Graduation. - (i) The graduation marks shall be made at every centimetre for the first ten centimetres and thereafter at every five centimetres. The graduation marks at every ten centimetres shall be numbered. The marks at the centimetre divisions shall extend over half the breadth and those at five centimetres divisions over full breadth of the measures. A cross mark shall be provided at 25, 50 and 75 cm. in the case of 1 m. measure (See Fig. 15).(ii)The graduations shall be only on one side of the measure.(d)Permissible Errors. - The mark at every five centimetres shall not exceed or be deficient by more than 0.25 mm, and further the error from the beginning of the measure to any line mark shall not exceed 1.0 mm, always provided that the errors on the full length of the measures shall not exceed the following limits:-

Denomination	Verification	Inspection		
Excess	Deficiency	Excess	Deficiency	
1 m	1.0 mm	0.5 mm	1.0 mm	1.0 mm
0.05 m	0.5 mm	0.25 mm	0.5 mm	0.5 mm

(e)Provision for stamping. - The measures shall be provided with a copper rivet near each end (See Fig. 15) firmly fixed in a hole, countersunk on both sides, for the inspector's stamp. An arrow head shall be marked at each end of the measure to provide the points for checking the length.

4. Wooden Measures. - (a) Materials. - The measure shall be made from well seasoned timber of anyone of the following species:-

(a)teak (Tectona gradis Linn, f)(b)rosewood (Dalbergia Latifolia Roxb.)(c)shisham (Dalbergia sissoo Roxb.)(d)haldu (Adhina cordiloia Hock. f)(e)bijasal (Pterocarpus masuspium Roxb.)(f)boxwood (Buxux sempervirens)(g)beech (Fagus sulvatica)(b)Shape and Dimensions. - The Shape Dimensions of the measures shall be as shown in Fig. 16.Fig. 16-Wooden Measure.(c)Graduation. - The graduation marks shall be made at every centimetre for the first ten centimetres and thereafter at every five centimetres. The graduation marks at every ten centimetres shall be numbered. The marks at the centimetre divisions shall extend over half the breadth and those at the five centimetre division over the full breadth of the measures. A cross mark shall be provided at every 25 cm. excluding the one metre and two metre graduations (See Fig 16).The graduations shall be on one side of the measures only(d)Permissible Errors. - The mark at every five centimetres shall not exceed or be deficient by more than 1 mm, and further the error from the beginning of the measure to any line mark shall not exceed 2 mm, always provided that the errors on the full length of the measure shall not exceed the following limits :-

Denomination	Verification	Inspection

Excess	Deficiency	Excess	Deficiency	
2 m	4 mm.	2 mm.	4 mm.	4 mm.

(e)Provisions for stamping. - Each measure shall be provided at each end with a metal tip not less than 1 cm. in width, securely riveted with two rivets at each end, as shown in Fig. 16 for receiving the Inspector's stamp. The width of the tips shall be included in the total length of the measure.

5. Manufacture and Finish. - (a) The measure shall be evenly finished and shall be reasonably straight.

(b)In the case of metallic measures, the graduation marks and the cross marks shall be legible and-deep enough to ensure indelibility over a reasonable long period of use, but not so deep as to make the measure liable to be easily bent. In the case of wooden measures, the markings shall be finished neatly, sharply and legibly, in a colour contrasting with the wood finish. They shall be visible from a distance and shall remain indelible over a reasonably long period of use.

6. Markings. - (i) The denomination shall be stamped, on the un-graduated side of the measure at about one-third of the total length from the beginning of the measure and the manufacturer's name or trade mark at a similar distance from end of the measure. In the case of wooden measures, the markings shall be finished in the same manner as the graduation.

(ii)The denomination shall be given in Indo-Arabic numerals preceded by the word ^ehVj* and succeeded by the word 'metre'. The size of numerals and letters, indicating denominations of the measures, shall be twice that of the letters indicating the manufacturer's name or trade mark.

VI

(See Rule 10)Specification for Commercial Weighing Instruments

Part I – General Requirements 1. These specifications deal with all types of weighing instruments for commercial use and prescribed broad essential constructional requirement to ensure accuracy and long life. It also deals with marking, graduations, methods & manner of testing the tolerance, errors, sensitiveness etc.

Weighing Instruments of the following categories are included in these specifications.(a)Beam Scales.(b)Platform Weighing Machines.(c)Steel Yards.(d)Counter Machines.(e)Spring Balances.(f)Dormant Platform Machines and Weighbridges.(g)Crane Weighing Machines.(h)Automatic Weighing Machines.

2. (a) Weighing instruments shall be of such material, design and constructions to ensure under normal conditions of service, the following:-

(i)Maintenance of accuracy.(ii)Continued satisfactory functioning of operating parts.(iii)Adjustment remaining reasonably permanent.(iv)Prevention of the development of undue stresses.(b)All weighing instruments shall be of what is commonly known as vibrating type. A vibrating type of instruments is defined as an instrument which has its indicator oscillating on either side of the position of equilibrium.(c)Weighing instruments shall be of good workmanship and finish and shall be tested in clean condition.(d)Weighing instruments with assembly parts, the assembly of which will affect the accuracy of the instrument, shall be so constructed as to make their use impossible without such parts. They will be suitably identified with the weighing instruments of which they form essential components.(e)Where an instrument has an interchangeable or reversible part, the interchange or reversal shall not affect the accuracy of the instrument.(f)Knife Edges and Bearings Knife edges and bearings used in weighing instruments shall be of such material as will have a hardness not less than 62 Rc. or equivalent. They shall be so fitted as to allow the beam or steelyard to move easily and to allow the knife edges to bear upon practically the whole length of the bearings.(g)All graduations shall consist of sharply defined uniform lines.

3. Marking. - (a) All weighing machines shall be prominently, legibly, and indelibly marked with maker's name or a trade mark (registered under the Indian Trade Marks Act, 1940), capacity and class (wherever applicable).

(b)The marking shall be both in English as well as in Devnagri Scripts.(c)The manufacturer's name or the registered trade mark as per clause (a) above shall be such as will not be mistaken for the stamp or the seal of the verifying authority.(d)The capacity of the weighing instruments shall be indicated in the following manner e.g.

"To Weight Kg." ^^fdyks ds fy;s**
"To Weight g." ^^xkze ds fy;s**

4. Sealing. - All weighing instruments shall be provided by the manufacturer with a plug or stud of soft metal to receive the stamp or seal. Such plug or stud shall be provided in a conspicuous part of instrument and shall be made in such a manner as to prevent its removal without obliterating the seal of the verifying authority.

5. Test. - (a) All weighing instruments shall be tested in the condition of their normal-use wherever practicable. Not-portable weighing instruments shall be tested in Situ in addition to any other test that may be taken at the manufacturer's or dealer's premises.

(b)Weighing instruments shall be tested for sensitiveness (wherever applicable) and for greatest error at full load.(c)The terms "sensitiveness" and "error" appearing in clause (b) are defined as follows:-Sensitiveness is the least weight required to be added or removed from the loading platform or pan as the case may be, to cause an appreciable movement of the indicator from its position of equilibrium.Error is the least weight required to bring the indicator to the position of poise of equilibrium from its position of imbalance.

Part II – Beam Scales 1. Definition. - (a) A beam scale is weighing instrument with equal arms, having three knife edges, three bearings, an indicator in the centre, and pans suspended from the end knife edges.

2. Class of Beam Scales. - Beam Scales shall belong to one of the following four classes-

(a)Class A. - Shall include chemical and assay balances and other beam scales provided with means of relieving all the bearings and knife edges and satisfying the requirements of Table 16.(b)Class B. - Shall include beam scales generally used in bullion trade satisfying the requirements of Table 17.(c)Class C. - Shall include beam scales satisfying the requirements of Table 18.(d)Class D. - Shall cover beam scales satisfying the accuracy requirements of Table 19 and distinguished from Class 'C' scales by the provisions of two holes through the blade one on either side of the central knife edge.(e)This part does not prescribe the trades for which different classes of beam scales may be used. The following information may, however, serve as a guide:-(i)Class 'A' beam scales are intended to be used for assay and for fine weighments.(ii)Class 'B' scales are intended to be used in the trade mentioned below:-(1)Bullion.(2)Precious metals, precious stones and jewellery.(3)Saffron and similar expensive commodities.(4)Chemists & Druggists.(5)Perfumery.(iii)Class 'C' scales are intended to be used in the trades mentioned below:-(1)Base metals(2)Relatively costlier commodities such as tea, coffee, tobacco, dry fruits, oil-seeds etc.(3)[For postal transactions class-C beam scale may be provided with an open type pan as illustrated in fig. 17 given below:- [Added by Amended Notification No. 3, dated 30.12.1983.]Open Type PanFig. 17](iv)Class *D' scales are intended to be used for weightment of relatively cheaper such as scrap iron, fuel, wood, charcoal, cotton waste vegetables, cereals etc.

3. Materials. - (a) Beam scales shall be made of either mild steel, or brass, or bronze or aluminium alloy of stainless steel.

(b)The pans shall be made of either mild stainless steel, brass or bronze, hard wood or leather. Wood and leather shall be permissible only in Class 'C' and 'D' beam scales only.(c)Pans shall be suspended from the beam by metal chains or metal stirrup supports.(d)Beam scales of capacities less than 100 kg with wooden pans shall have metal sheets covering the pans.

4. Beam Fittings. - The knife edges and bearings used in beam scales shall be of one of the following types:-

(a)"Agate box" wherein agate bearings are fitted in brass or iron box, with side holes, which permit of the projecting ends of the knife edges passing into the boxes and resting on or rising to their bearings.(b)"Dutch end" wherein the end bearings are fixed inside plates bolted together across the beam to form a shackle.(c)"Swan neek" wherein the ends are curved and slotted, the bottom of the slot forming a knife-edge, the extremities of the beam being widened in a direction at right angles to its length so that the base of the slot is parallel to the central knife edge.(d)"Continuous Knife-edge" wherein the knife-edges bear along their whole length.

5. Constitution. - (a) Beam scales shall not have a loaded weight pan.

(b)Class 'A' scales shall be provided with a glass case. It shall also be provided with level indicator and levelling screws, to facilitate levelling of the beam scale.(c)(i)A beam scale of class 'C' and 'D' category may be provided with a balance ball or a balance box securely attached to one of the suspension chains or pans.(ii)Beam scales with wooden pans shall be provided with balancing ball or box.(iii)Any attachment for adjusting the balancing of beam scale shall be permanently fast end and where a balancing ball or box is used for occasional adjustments, it shall be so fixed that it cannot readily by tempered with.(iv)Balance ball or box shall not be so large as to contain more loose material than an amount exceeding one percent in weight of the capacity of beam scale under 50 kg or than an amount exceeding 1 kg for beam scales of capacity over 50 kg.(d)Except hawkers and persons selling goods in weekly bazars, every using a beam scale for trade in his premises shall suspend the same to a stand or to a chain by hook:Provided that if the State Government is satisfied that the requirements of this section cannot be immediately complied with by any other class of persons, the State Government made by notification in the Official Gazette exempt such class of persons from the provisions of this section for such period as may be specified in such notification.

6. Marking. - Beam scales shall be conspicuously, legibly and indelibly marked so as to indicate their class, capacity and the manufactures name or initials or trade mark registered under Indian Trade Marks Act, 1940. The capacity and class shall be indicated both in Devnagri as well as English scripts.

7. Tests. - (a) Beam scales shall be tested for sensitiveness and error at full load and shall comply with the requirements of Tables 16, 17, 18 A 19.

(b)Beam scales shall also be tested with the pans loaded to half the capacity. At this load, the beam scales shall not show difference 50 percent of the permissible error at full load when the knife edges or bearings are moved, laterally within their limits or movements. Similarly, when the load on the pan is moved to any position, the difference in weight shown shall not exceed 50 percent of the error permissible at full load.Table 16.-Sensitiveness and Errors for Beam Scales Class A'

Capacity	Verification	Inspection		
Sensitiveness pwe Division of scale when fullyloaded	Greatest error allowed either in excess or indeficiency when fully loaded	Sensitiveness pwe Division of scale when fullyloaded	Greatest error allowed either in excess or indeficiency when fully loaded	
1	2	3	4	5
2g	0.02 mg	0.1 mg	0.06 mg	0.2 mg
10 g	0.05 mg	0.5 mg	0.15 mg	1.0 mg
20 g	0.08 mg	0.8 mg	0.24 mg	1.6 mg
50 g	0.10 mg	1.0 mg	0.30 mg	2.0 mg
200 g	0.15 mg	1.2 mg	0.45 mg	2.4 mg
1 kg	5.0 mg	20.0 mg	15.0 mg	40.0 mg
5 kg	10.0 mg	40.0 mg	30.0 mg	80.0 mg
20 kg	20.0 mg	80.0 mg	60.0 mg	160.0 mg

Table 17.-Sensitiveness and Errors for Beam Scales Class 'B'.

Capacity	Verification	Inspection		
Sensitiveness when fully loaded	Greatest error allowed either in excess or indeficiency when fully loaded	Sensitiveness when fully loaded	Greatest error allowed either in excess or indeficiency when fully loaded	
1	2	3	4	5
20 g	2.0 mg	4.0 mg	6.0 mg	8.0 mg
50 g	5.0 mg	10.0 mg	15.0 mg	20.0 mg
100 g	8.0 mg	16.0 mg	24.0 mg	32.0 mg
200 g	15.0 mg	30.0 mg	45.0 mg	60.0 mg
500 g	30.0 mg	60.0 mg	90.0 mg	120.0 mg
1 kg	60.0 mg	120.0 mg	180.0 mg	240.0 mg
2 kg	100.0 mg	200.0 mg	300.0 mg	400.0 mg
5 kg	200.0 mg	400.0 mg	600.0 mg	800.0 mg

10 kg	400.0 mg	800.0 mg	1200.0 mg	1600.0 mg
20 kg	650.0 mg	1300.0 mg	1950.0 mg	2600.0 mg
50 kg	1200.0 mg	2400.0 mg	3600.0 mg	4800.0 mg
100 kg	2500.0 mg	5000.0 mg	7500.0 mg	10000.0 mg

Table 18.-Sensitiveness and Errors for Beam Scales Class 'C'

Capacity	Verification	Inspection		
Sensitiveness when fully loaded	Greatest error allowed either in excess or indeficiency when fully loaded	Sensitiveness when fully loaded	Greatest error allowed either in excess or indeficiency when fully loaded	
1	2	3	4	5
100 g	100.0 mg	200.0 mg	300.0 mg	400.0 mg
200 g	200.0 mg	400.0 mg	600.0 mg	800.0 mg
500 g	300.0 mg	600.0 mg	900.0 mg	1200.0 mg
1 kg	400.0 mg	800.0 mg	1200.0 mg	1600.0 mg
2 kg	600.0 mg	1.2 g	1800.0 mg	2.4 g
5 kg	1.8 g	3.6 g	5.4 g	7.2 g
10 kg	4.5 g	9.0 g	13.5 g	18.0 g
20 kg	7.0 g	14.0 g	21.0 g	28.0 g
50 kg	10.5 g	21.0 g	31.5 g	42.0 g
100 kg	20.0 g	40.0 g	60.0 g	80.0 g
200 kg	27.0 g	54.0 g	81.0 g	108.0 g
300 kg	32.0 g	64.0 g	96.0 g	128.0 g
500 kg	55.0 g	110.0 g	165.0 g	220.0 g
1000 kg	105.0 g	210.0 g	315.0 g	420.0 g

Table 19.-Sensitiveness and Errors for Beam Scales Class 'D'

Capacity	Verification	Inspection		
Sensitiveness when fully loaded	Greatest error allowed either in excess or indeficiency when fully loaded	Sensitiveness when fully loaded	Greatest error allowed either in excess or indeficiency when fully loaded	
1	2	3	4	5

200 g	800.0 mg	800.0 mg	2100.0 mg	1600.0 mg
500 g	1200.0 mg	1200.0 mg	3600.0 mg	2400.0 mg
1 kg	2.0 g	3.0 g	6.0 g	6.0 g
2 kg	3.2 g	4.5 g	9.6 g	9.0 g
5 kg	6.0 g	9.0 g	18.0 g	18.0 g
10 kg	12.0 g	18.0 g	36.0 g	36.0 g
20 kg	25.0 g	40.0 g	75.0 g	80.0 g
50 kg	30.0 g	45.0 g	90.0 g	90.0 g
100 kg	50.0 g	75.0 g	150.0 g	150.0 g
200 kg	70.0 g	100.0 g	210.0 g	200.0 g
300 kg	90.0 g	150.0 g	270.0 g	300.0 g
500 kg	130.0 g	250.0 g	390.0 g	200.0 g
1000 kg	250.0 g	500.0 g	750.0 g	1000.0 g

Part III – Platform Machines 1. Definition. - A platform weighing machine is a weighing instrument with compound levers and with the goods receipt able generally in the form of a platform. The capacity of these machines shall not exceed 3000 kg and weight of the loads shall be indicated either with a steelyard or with any other form of indicator.

2. Capacities. - Platform weighing machines shall be of one of the capacities shown in Table 20.

3. Design and Construction. - (a) The steelyard in the platform weighing machine shall not have any readily removable parts except the support for counterpoise proportional weights. There shall be a stop or stops to prevent the sliding poise or poises from travelling behind the zero mark.

The minimum travel of a steelyard in platform machines shall be mm either way.(b)If a movable hutch, barrow, frame or bucket is used instead of the ordinary platform it shall form an essential part of the machine without which the machine cannot be balanced. The movable hutch, barrow, frame or bucket shall be identified with machine.(c)Where a balance box is provided on the

steelyards, the balance ball should not be easily accessible.(d)The balancing arrangement for daily wear and tear shall have a range between 0.25 percent and 0.5 percent of the capacity of the machine and not less than 0.125 percent of the capacity each way. The balance box entertaining the balancing ball shall be securely attached to the steelyards, preferably by passing a bolt through the casing to the steelyard. The balancing ball shall be actuated by a detachable key (see Table 21).(e)In the case of the platform machines prodded with dials:-(i)racks and pinions shall be of hard wearing material;(ii)the extremity of the index shall, in no position, be at a greater distance from the graduated surface of the dial than 5 mm and shall be made to meet but not to obscure the graduation marks; and(iii)the dial shall be graduated into equal parts and the minimum width apart of the graduation shall not be less than 3 mm.(f)The permissible extension of the platform on either side of the box in the case of extended platform shall be more than 25 percent of the length of the box.

4. Counterpoise Proportional Weights. - (a) All loose counterpoise proportional weights in a platform machine shall be identified with the machine by a number or any other suitable mark of identification, which shall be indelible. The counterpoise weights shall be marked with their equivalent weights in the following manner.

100. fdyks=100 kg.

(b)The counterpoise weights shall be hexagonal in shape with the slot of a suitable size to allow them being placed on the counterbalance.(c)The counterpoise proportional weights shall be made of cast iron preferably of Grade 10B specified in IS : 210-1950 or brass of Grade 3 of IS : 292-1951.(d)The proportional weights shall have one rectangular loading hole which should be undercut or tapering inside so as to hold lead securely for adjustments. The under out hole shall be reasonably large to accommodate the lead required for normal wear and tear. The surface of lead in the loading hole, when new, shall be at least 3 mm inside from the bottom surface of the weight.(e)In the case of platform machines provided with proportional counterpoise weights, the smallest denomination of the counterpoise weight shall be equivalent to the maximum graduation on the minor steelyard.(f)The denomination of the proportional weights shall be in the ratio of 1:2:2:5 and the total equivalent of weight all the proportional weights provided shall not exceed the capacity of the weighing machine.Note. - While arriving at the capacity of the platform machines, the maximum graduation shown on the steelyard in the case of loose weight platform machines and on the minor steel yard in the case of no loose weight type machine, shall not be taken into account.

5. Tests. - (a) The steel yard of the platform machine shall remain horizontal at no load. With one quarter of the maximum load or as near thereto as is practicable, the platform machine shall indicate the same weight within half the prescribed limits of error, whether the load is placed in the centre or on any of the four corners of the platform.

(b)Platform machines shall be tested to verify the accuracy of any graduation up to the total capacity. All loose counterpoise weights, where such are provided, shall be tested and suitably sealed to prevent tampering.(c)When a platform machine is fitted with relieving gear, the prescribed limits of error shall not be exceeded when the machine is put steadily out of and into gear. The plate or platform shall be entirely disengaged from its bearing when the machine is in relief.(d)Dial machines shall be tested for error only. No sensitiveness test shall be taken on such machines. The permissible error at any load shall not exceed the limits prescribed in table 20.(e)Platform machines with the steelyard arrangement shall be tested for error as well as for sensitiveness at full load. The permissible errors and sensitiveness are indicated in table 20.(f)Platform machines shall not be tested for sensitiveness at loads less than full load.

6. Sealing. - A stud or a plug of soft metal shall be provided on the steelyard for receiving the seal in the case of steel yard weighing machines. In the case of dial machines, such a plug shall be provided either on the dial whether it is accessible or otherwise on the body of the machine.

Table 20.-Sensitiveness and Errors for Platform Machines

Capacity	Sensitiveness when fully loaded	Verification	Sensitiveness when fully loaded	Inspection		
General error allowed in excess in deficiencywhen fully loaded	Greatest error allowed in excess or indeficiency when fully loaded					
Vibrating machines	Platform machines fitted with dials	Vibrating machines	Platform machines fitted with dials			
1	2	3	4	5	6	7
50 kg	15 g	30 g		45 g	60 g	
100 kg	15 g	50 g	One-half of the weight represented by theinterval between consecutive graduation marks	75 g	100 g	The weight represented by the interval betweenconsecutive graduation marks.
150 kg	31 g	60 g	90 g	120 g		
200 kg	35 g	70 g	105 g	140 g		
350 kg	45 g	90 g	135 g	180 g		

300 kg	50 g	100 g	150 g	200 g
500 kg	90 g	180 g	270 g	360 g
1000 kg	150 g	300 g	457 g	600 g
1500 kg	200 g	400 g	600 g	800 g
2000 kg	250 g	500 g	750 g	1000 g

Note. - The capacities 150 kg and 250 kg are non preferred and shall not be used as far as possible.Table 21.-Range of balancing arrangement for Platform Machines.

Capacity	Range of Balancing Arrangement		
Maximum 0.5 per cent of capacity	Minimum 0.25 per cent of capacity	0.25 per cent each way	
1	2	3	4
50 kg	250 g	120 g	60 g
100 kg	500 g	250 g	120 g
150 kg	750 g	370 g	180 g
200 kg	1000 g	500 g	252 g
250 kg	1.3 kg	620 g	310 g
300 kg	1.5 kg	760 g	370 g
500 kg	2.5 kg	1.25 kg	620 g
1000 kg	5.0 kg	2.50 kg	1.25 kg
1000 kg	7.5 kg	3.75 kg	1.87 kg
2000 kg	10.5 kg	5.00 kg	2.50 kg

Part IV – Steelyards 1. Definition. - A steelyard is an unequal armed balance.

2. Capacities. - Steelyards shall be of one of the capacities mentioned in Table 22.

3. Design and Construction. - Steelyards shall be made of either mild steel or stainless steel. The shank shall be perfectly straight. Notches or graduation on the shank shall be cut in one piano and at right angles to the shank. All steelyards shall be provided with a step or other suitable arrangement to prevent excessive oscillation of the shank. The sliding poise and suspending hooks shall be securely attached to the instrument. All end-fittings such as the nut attached to prevent the poise carrier riding off the steelyard shall be securely fixed to the shank. The slide poise shall be freely movable and there shall be a stop to prevent it from travelling behind the zero mark. Steelyards having a counterpoise or travelling poise shall be provided with a hole or

suitable means for the future adjustment of the counterpoise or travelling poise, such hole being undercut. Wherever loose material is used in the travelling polise, it shall be securely enclosed. Steelyards shall be neither reversible not have 3 hooks and shall not be of counter type. Steelyards shall have a zero graduation.

4. Tests. - (a) Steelyards shall be tested at full load for sensitiveness and error and shall comply with the requirements of Table 22.

(b)The test for sensitiveness is carried out by loading the instrument with the maximum testing load with the steelyard in horizontal position and ascertaining that it turns with the addition of the amount shown in the table for sensitiveness.(c)Each numbered graduation shall be tested and the instrument shall be correct whether it is carried out with increasing or decreasing loads.(d)The intermediate graduations shall also be tested to see they are correct and are proper distance apart.(e)Steelyards shall be tested for error by ascertaining the weight excess of deficiency (if any) required to bring the steelyard to a horizontal position when fully loaded.(f)No test for sensitiveness at a lower load shall be made.

5. Sealing. - Each instrument shall be provided with a plug or stud of soft metal on the front face of the shoulder of the steelyard for receiving the seal such a plug or stud should be made irremovable by undercutting it or in some other suitable manner.

Table 22.-Sensitiveness and error for steelyards.

Capacity	Verification	Inspection		
Sensitiveness when fully loaded	Greatest error allowed either in excess or indeficiency when fully loaded	Sensitiveness when fully loaded	Greatest error allowed either in excess or indeficiency when fully loaded	
10 kg	5g	7.5 g	15 g	15.0 g
20 kg	10 g	15.0 g	30 g	30.0 g
50 kg	25 g	50.0 g	75 g	100.0 g
100 kg	40 g	80.0 g	120 g	160.0 g
150 kg	60 g	120.0 g	180 g	240.0 g
200 kg	65 g	130.0 g	195 g	260.0 g

250 kg	80 g	160.0 g	240 g	320.0 g
300 kg	90 g	180.0 g	270 g	360.0 g

Part V – Counter Machines 1. Definitions. - Counter machine is an equal armed weighing instrument of a capacity not exceeding 50 kg. the pans of which are above the beam.

2. Capacities. - Counter machines shall be of one of the capacities mentioned in Table 23.

3. Design and Construction. - (a) When the beam or body has two sides, they shall be connected together by not less than two crossbars. The supports for the pans shall be of a suitable rigid structure such as cross-members strengthened by straps. Central pieces or forks shall be fixed so that they cannot twist or get out of place.

(b)Bearing surfaces and points of contact of all stays, hooks and loops shall be of hard steel or agate. The knife edges and bearings shall be so fitted as to allow the beam to move freely and the knife edges shall practically bear upon the whole length of their working parts.(c)A counter machine may have a balance box for minor adjustment. In such cases, the balance box shall be permanently fixed beneath the weight pan and shall be large enough to contain loose material to an amount not exceeding 1 percent of the capacity of the machine. No other adjusting contrivance shall be used.(d)The pans shall be made of mild steel, stainless steel, brass or bronze.(e)The minimum fall either way on counter machines shall be as under:-

Capacity	Fall
Not exceeding 2 kg	6 mm
Above 2 kg and not exceeding 15 kg	10 mm
Above 15 kg and not exceeding 25 kg	12 mm
50 kg	13 mm

4. Tests. - (a) All counter machines shall be tested for sensitiveness and error at full load and shall comply with the requirements of Table 23.

(b)Counter machines shall be tested on a level piano.(c)Where an instrument has an interchangeable or reversible part, the interchange or reversal shall not affect the accuracy of the instrument.(d)The counter machine shall be tested for sensitiveness at full load with the beam in

horizontal position and ascertaining that the addition of the amount specified in the table shall cause the pointer to rise or fall to the limit of its range of moment.(e)No test for sensitiveness at a lower load shall be made.(f)The counter machines shall be tested for error by ascertaining the weight in excess or deficiency (if any) required to bring the beam of the instrument to a horizontal position when fully loaded.(g)With the pans loaded to half the capacity, no appreciable difference in the accuracy of the counter machines shall result from moving the knife edges or bearings laterally or backwards and forwards within their limits of movement.(h)When the goods pan is not in the form of a scoop, the counter machines shall indicate the same weight within half the prescribed limits of error, if the centre of a load equal to half the capacity is placed on the goods pan anywhere within a distance from the centre equal to 1/3 of the greatest length of the pan, or if the pan has a vertical side, against the middle of that side, the weight being entirely on the weight pan, but in any position on it.(i)When the goods pan is in the form of a scoop, the counter machine shall be correct if half the full load is placed against the middle of the back of the scoop and the other half in any position on the scoop.

5. Sealing. - Each instrument shall be provided with a plug or stud of soft metal on a conspicuous part of the beam or body for receiving a seal. Such a plug or stud shall be made irremovable by undercutting it or in some other suitable manner.

Table 23.-Sensitiveness and errors for Counter Machines.

Capacity of machine	Verification	Inspection		
Sensitiveness when fully loaded	Greatest error allowed in excess or indeficiency when fully loaded	Sensitiveness when fully loaded	Greatest error excess or in deficiency whenfully loaded	
500 g	1.3 g	1.95 g	3.9 g	3.9 g
1 kg	1.8 g	2.65 g	5.4 g	5.3 g
2 kg	2.6 g	3.5 g	7.8 g	7.0 g
5 kg	4.5 g	6.25 g	13.5 g	12.5 g
10 kg	6.0 g	9g	18.0 g	18.0 g
15 kg	7.0 g	13 g	20.0 g	20.0 g
20 kg	8.5 g	13 g	25.5 g	26.0 g
25 kg	10.0 g	15 g	30.0 g	30.0 g
50 kg	14.0 g	21 g	42.0 g	56.0

g

Part VI – Spring Balances 1. Definition. - Spring balance is an instrument which determines the weight of an object by the extension or compression of a spring such extension or compression being registered by means of a pointer on a dial or on a graduated Scale.

2. Capacities. - Spring balances shall be of one of the capacities mentioned in Table 24.

3. Design and Construction. - (a) Spring balances with the pan below the spring shall be suspended permanently from a stand, support or bracket;

(b)The extremity of the index finger shall not exceed 1 mm, in width and shall not be more than 3.0 mm from the scale or dial.(c)The scale shall be graduated into equal parts, and the width apart of the graduations shall not be less than 2 mm for a capacity of 15 kg and under and not less than 3 mm for a capacity of 20 kg and above.(d)The weight corresponding the interval between consecutive graduation marks shall not exceed the values given in Table 24.(e)When the graduation commences at a fixed load, the position of the index when there is no load, shall be clearly indicated by a zero mark.(f)When a spring balance is provided with an adjustable indicator, the range of adjustment shall not exceed 1 per cent of the capacity of the instrument except in the case of instruments used for mixing purposes where it shall not exceed 2 per cent.(g)The body shall be constructed either of brass, or cast iron, or any other suitable material,and shall be sufficiently to bust in construction. If pans are provided for the balance, they shall be made of brass, bronze, cast iron, mild steel or stainless steel. Metal chains or metal stirrup supports, shall be provided if pans are suspended. Back and pinions, if provided, shall be made of hard wearing material.

4. Tests. - (a) When the pan is below the spring, the prescribed limits of error shall not be exceeded wherever the load is placed on it.

(b)Where the pan is above the spring-(i)When the goods pan is not in the form of a scoop the instrument shall indicate the same weight within half the prescribed limits of error, if the centre of a load equal to half the capacity is placed on the pan anywhere within the distance from the centre equal to the 1/3rd of the greatest length of the pan or if that pan has a vertical side against the middle of that side.(ii)When the pan is in the form of a scoop, the spring balance shall be correct, if half the full load is placed against the middle of the back of the scoop and the other half in any position on the scoop.(c)Each numbered graduation shall be tested and the intermediate graduation may also be tested.(d)The instrument shall be correct whether the test is made be increasing or decreasing loads provided that in either case the spring shall be allowed to vibrate before the reading is taken.(e)The instrument shall be tested for ability to recovery by allowing the load equal to its maximum capacity remaining on the same for a period of 24 hours and then after the expiry of

4 hours tested for accuracy, the load being removed in the meantime. 1(f)Spring balances shall not be tested for sensitiveness.

5. Sealing. - Spring balances shall be fitted with a soft metal plug to receive a seal and whether practicable, this plug shall pass through the dial or frame. The plug or stud shall be so supported as to allow no risk of injury to the instrument-

Table 24.-Permissible Errors for Spring Balances.

Capacity	Weight correspondence to interval betweenconsecutive graduations shall not exceed	Maximum Permissible error	Remarks	
Verification	Inspection			
500 g1 kg2 kg3 kg5 kg10 kg15 kg20 kg30 kg50 kg100 kg150 kg200 kg300 kg500 kg	5.0 g5.0 g20 g20 g20 g50 g50 g100 g100 g250 g500 g1.0 kg1.0 kg1.0 kg2.0 kg	A weight corresponding to a quarter of theinterval between successive graduations.	A wight corresponding to half the intervalbetween successive graduations	While fixing the diameter of effective circle ondial of one revolution a blank space of 20 mm at the end ofgraduation has to be provided. The minimum width apart ofgraduations shall not be less than 2.00 mm for capacities from500 g to 15 kg and 3.0 mm for the rest of the sizes. In the caseof multi revolution spring balances, the minimum blank space willnot apply.

Part VII – Weighbridges 1. Definition. - Weighbridge is a weighing instrument constructed with compound levers with the indicator system carried on foundations separate from the lever systems to weigh loads of a capacity of 3,000 kg. and over, through the medium of proportional weights or indicating mechanism.

Note. - Weighbridges of 2,000 kg and below, commonly known as Dormant Platform Machines, are also included in this part.

2. Capacities. - Weighbridges shall be of one of the capacities mentioned in Table 25.

3. Design and construction. - (a) The steelyard of a weighbridge shall not involve any readily removable parts except the support for the counterpoise. There shall be one or more stops to prevent the sliding poise or poises from travelling behind the zero mark.

(b)The minimum travel of the steelyard in weighbridges shall be 13 mm both ways.(bb)[The value of the smallest graduation on dials or minor steel yards, and wherever possible, major steel yards of weighing instruments may be 1 kg, 2 kg, 5 kg or any power of 10 (positive or negative) thereof.] [Inserted by Notification No. F. 23(11) Ind./A/58, dated 22.11.1960, Published in Rajasthan Gazette, Part 4-C, dated 2.2.1961, page 20.](c)If a movable hutch, barrow, frame or bucket is used instead of the ordinary platform, it shall from an essential part of the machine without it cannot be balanced.(d)All loose counterpoise shall be identified with the machines by a number or other sufficient mark of identification which shall be indelible. They shall be marked with their equivalent weights in the following manner:-

100. fdyks = 100 kg.

(e)Proportional weights shall be of the hexagonal shape with a slot of a suitable size to allow them being placed on the counter-balance. -(f)The proportional weights shall be made of cast iron preferably of the grade 10 B of IS : 210-1950 or brass of grade 3 of IS : 292-1951. The proportional weights shall have one rectangular loading hole which should be undercut or tapered so as to hold load securely for adjustment. Surfaces of the load in loading hole, when new, shall be at least 3 mm inside from the bottom surface of the weight.(g)The smallest denomination of the proportional weight shall be equivalent to the maximum graduation on the minor steelyard.(h)[Determination of Proportional Weights. - Proportional weights may be of the denomination 1 kg, 2 kg, 5 kg or any integral power of ten (positive or negative) thereof. Any number of proportional weights may be used provided the sum of their weights does not exceed the capacity of the weighing instrument. [Inserted by Notification No. F. 23(11) Ind./A/58, dated 22.11.1960, Published in Rajasthan Gazette, Part IV-C, dated 2.2.1961, page 20.]Note. - In assessing the capacity of weigh bridge for the purpose, the maximum graduations on the steel yard in the case of 'Loose Weight' weighbridge, and on the minor bar in the case of 'No Loose weight' weighbridge shall not be taken into account.(i)Balancing arrangement. - The balancing arrangement for daily wear and tear shall have a range not exceeding 0.5 per cent of the capacity of the machine and not less than 0.125 per cent of the capacity each way. (See Table 26)](j)The following provisions shall apply to weighbridges with dials:(i)Rack and Pinions shall be of hard wearing material.(ii)The extremity of the index shall, in no position be at a greater distance from the graduated surface of the dial than 5 mm and shall be made to meet but to obscure the graduation mark (except where dual graduation are made).(iii)The dial shall be

graduated into reasonably equal parts and minimum width apart of the graduation shall not be less than 3 mm.(k)(i)The frame work shall be built up of mild steel rolled sections or cast iron or steel casting. It shall be of rigid structure, strengthened suitably so that it will be capable of resisting any vibration and shall not throw the lever system out of alignment due to any subsidence of the foundation.(ii)Brackets shall be cast on the side frames to support the frame work.(l)(i)Where relieving gear is fitted, the relieving apparatus shall disengage the under-lever and save the knife edges from shock or wear.(ii)The plate or platform of the machine shall be entirely disengaged from its bearings when the machine is in relief.(m)All knife edges & steel bearings shall be of special high quality steel accurately lapped to gauge after hardening and shall be inter chargeable (steel knife edges and bearings which are welded into iron may also be permitted). Knife edges and steel bearings shall be readily replaceable without dismantling so that the weighbridge can be maintained in perfect working order. The knife edges and bearings shall be accurately and firmly secured in machine beds preferably by two shanks and nuts or alternatively by bolts and nuts or set- screws. All knife edges and bearings shall be protected against dirt and corrosion.(n)The platform shall be of steel chequered plate and shall be rigid. Accessibility to the pit shall be ensured.(o)[The value of the smallest division in the minor bar shall not exceed the greatest error allowed for that capacity. See Table 25.] [Inserted by Notification No. F. 23(11) Ind./1-A/58, dated 22.11.1960, Published in Rajasthan Gazette, Part 4-C, dated 2.2.1961, page 20.]

4. Tests. - (a) All weighbridges shall be tested for sensitiveness and error at full load and shall comply with the requirements of Table 25. When fully loaded, the load being equally distributed on the platform, it shall indicated the weight correctly with no greater error in excess of deficiency (if any) than permitted.

(b)In the case of dial machines, tests of numbered graduation up to the total capacity of the machine, or to such smaller capacities as the minimum graduation on the steelyard may indicate, shall be carried out.(c)Loose counterpoises, where they are provided, shall be tested.(d)The machines shall be tested by adding load equal to the major divisions of notches, and then ascertaining that additional load equal to the value of one notch or division is correctly indicated.(e)The test of dial machines shall be carried out in a similar manner with the exception of sensitiveness test.(f)The test for sensitiveness and error other than in dial machine is to be made at maximum load or as near thereto as possible.(g)With one quarter of the maximum load or as near thereto as is practicable, the weighbridge shall indicate the same weight within half the prescribed limits or error whether the load is placed in the middle or at any of the comers of the platform.(h)When provided with a relieving gear, the prescribed limits of errors shall not be exceeded when the machine is steadily put out of or into gear.,

5. Making. - All parts of each weighbridge shall be indelibly numbered or marked so as to facilities erection or site.

6. Sealing. - (a) Dial machines shall be fitted with a soft metal plug to receive a seal and wherever practicable, this plug shall be passed through the dial and frame. The plug or stud fitted on the dial shall be so supported as to allow no risk of injury to the instrument.

(b)On weighbridges other than dial machines, a plug or stud shall be provided in a conspicuous position on the indication lever or steel yard.Annexure 'B'Table 25.-Sensitiveness and Errors for Weighbridges.

Capacity of machine	Sensitiveness when fully loaded	Verification	Sensitiveness when fully loaded	Inspection		
Greatest error allowed in excess	Greatest error allowed in excess or indeficiency when fully loaded					
Vibrating machines	Machines fitted with dials	Vibrating machines	Platform Machines fitted with dials			
1	2	3	4	5	6	7
	kg	kg	kg	kg	kg	kg
1000 kg (1t)	1.1	1.2	2.4	3.3	2.4	4.8
2000 kg (2t)	1.2	1.4	2.8	3.6	2.8	5.6
3000 kg (3t)	1.3	1.6	3.2	3.9	3.2	6.4
5000 kg (5t)	1.5	2.0	4.0	4.5	4.0	8.0
10000 kg (10t)	2.0	3.0	6.0	6.0	6.0	12.0
15000 kg (15t)	2.5	4.0	8.0	7.5	8.0	16.0
20000 kg (20t)	3.0	5.0	10.0	9.0	10.0	20.0
25000 kg (25t)	3.5	6.0	12.0	10.5	12.0	24.0
30000 kg (30t)	4.0	7.0	14.0	12.0	14.0	28.0
40000 kg (40t)	5.0	7.0	14.0	15.0	14.0	28.0
50000 kg (50t)	5.2	7.8	15.6	15.6	15.6	31.2
60000 kg (60t)	5.5	8.5	17.0	16.5	17.0	34.0
80000 kg (80t)	6.0	10.0	20.0	18.0	20.0	40.0
100000 kg (100t)	6.5	11.5	23.0	19.5	23.0	46.0
900000 kg (200t)	9.0	19.0	38.0	27.0	38.0	76.0

Annexure 'C'Table 26 -Range of Balancing arrangement for Weighbridges

Capacity	Range of Balancing Arrangement
Maximum 0.5 per cent of capacity.	Minimum 0.125 per cent of capacity, each way.

1	2	3
	kg	kg
1000 kg	5	1.25
2000 kg	10	2.50
3000 kg	15	3.75
5000 kg	25	6.2
10000 kg	50	12.5
15000 kg	75	19.0
20000 kg	100	25.0
25000 kg	125	31.0
30000 kg	150	35.5
40000 kg	200	50
50000 kg	250	62
60000 kg	300	75
80000 kg	400	100
100000 kg	500	125
200000 kg	1000	250

Part VIII – Crane Weighing Machines 1. Definition. - Crane machine is a weighing instrument specially constructed to be suspended from the hook of a crane and is fitted with a hook for lifting the loads and may be constructed upon the lever or spring principle.

2. Capacities. - Crane, machines shall be of one of the capacities mentioned in Table 27.

3. Design and Construction. - (a) A crane machine shall be sufficiently strong to withstand wear and tear in the exacting conditions under which it works.

(b)No crane machine shall become a permanent link in the lifting gear. All working parts shall be suitably protected from the dust and damp of the atmosphere. In a lever machine, the steel-yard shall be made of corrosion resisting steel to resist the atmospheric influence and shall be sufficiently rigid and accurate.(c)In a dial machine, the rack and pinions shall be suitable hard wearing material.(d)The range of balancing or adjusting arrangement shall not exceed 2 per cent of the capacity of the machine.(e)There shall be free movement of steelyard and on a dial machine, the dial indicator shall work freely and return to its initial starting point after the load is removed.

4. Tests. - (a) Crane machines of the lever type shall be tested for sensitiveness and error at full load and shall comply with the requirements of Table 27.

(b)Spring crane machines shall not be tested for sensitiveness.(c)For spring machines the limits of errors shall be double than those of lever machines and are given in Table 28.(d)Each number graduation shall be tested as far as practicable.

5. Sealing. - Crane Machines shall be fitted with a plug or stud in a conspicuous part either on the steelyard or on the dial of the machines to receive the seal.

Table 27. - Sensitiveness and Errors for Crane Weighing Machines - Lever Type.

Capacity	Verification		Inspection	
	Sensitiveness when fully loaded	Greatest error allowed in excess or indeficiency when fully loaded	Sensitiveness when fully loaded	Greatest error allowed in excess or indeficiency when fully loaded
500 kg	80 g	160 g	240 g	329 g
1000 kg	700 g	700 g	2.1 kg	1.4 kg
2000 kg	1.0 kg	1.0 kg	3.0 kg	2.0 kg
3000 kg	1.2 kg	1.2 kg	3.6 kg	2.4 kg
5000 kg	1.5 kg	1.5 kg	4.5 kg	3.0 kg
10000 kg	2.5 kg	3.0 kg	7.5 kg	6.0 kg
15000 kg	3.0 kg	3.5 kg	9.0 kg	7.0 kg
20000 kg	3.5 kg	4.5 kg	10.5 kg	9.0 kg
30000 kg	4.0 kg	6.0 kg	12.0 kg	12.0 kg
50000 kg	4.5 kg	8.0 kg	13.5 kg	16.0 kg
100000 kg	6.5 kg	13.0 kg	19.5 kg	26.0 kg
200000 kg	8.0 kg	16.0 kg	24.0 kg	36.0 kg

Table 28.- Sensitiveness and Errors for Crane Machines Dial Type (Spring and Flexure).

Capacity	Weightd corresponding to interval betweensuccessive	Permissible	Maximum Error	Remarks

	graduation shall not exceed			
Verification	Inspection			
500 kg	5 kg	A weight corresponding to half the intervalbetween successive graduations	A weight corresponding to the interval betweensuccessive graduations	The maximum width apart of graduations shall notbe less than 3 mm.
1000 kg	5 kg			
2000 kg	5 kg			
3000 kg	10 kg			
5000 kg	25 kg			
10000 kg	50 kg			
15000 kg	50 kg			
20000 kg	100 kg			
30000 kg	100 kg			
50000 kg	250 kg			
100000 kg	500 kg			
200000 kg	500 kg			

Part IX – Automatic Weighing Machines 1. Definition. - An automatic weighing machine may be defined as any weighing scale which has an integral mechanism for automatically admitting and discharging a load, and may be fitted with an apparatus for counting or otherwise recording the number of loads handled.

2. Capacities. - Automatic machines shall be of the capacities as agreed upon between the puixhaser and the seller.

3. Design and Construction. - (a) Automatic weighing machines and their integral parts, shall be identified with the machines, by an indelible number or other mark of identification.

(b)The adjusting mechanism shall be suitably secured or constructed so that it cannot be tempered with(c)The capacity of the automatic weighing machine shall be marked legibly on a conspicuous part of the machine.

4. Tests. - (a) Automatic machines shall be tested for errors according to the requirement of Table 29.

(b)The accuracy of the out-put of the machine shall be verified by re-weighing in another weighing instrument not less than 20 continuous loads, or, where practicable, the machine may be tested directly by the application of standard weights.(c)In testing totalising machines, not less than 50 loads shall be passed over the machine, namely, 10 minimum loads, 10 maximum loads and 30 loads of the mean between the minimum and the maximum.

5. Sealing. - Automatic machines shall be fitted with a plug on the beam, shank or dial of the machine to receive the seal.

Table 29.-Permissing Errors for Automatic Machines.

Use	Capacity	Error(Verification or Inspection)	
Weighing small loads of tea, coffee etc.	20 g and upwards	0.5 per cent of the load in excess only.	The allowances in these cases are subject to theproviso that the error tolerated shall not exceed the weightrepresented by half a minimum division, marked on the dial orsteelyard.
Weighing grain etc.	5 kg and upwards.	0.25 per cent of the load, in excess ordeficiency.	
Weighing coal etc.	50 kg and upwards.	0.5 per cent of the load in excess or deficiency.	
"Totalising" machines used for weighingcoal etc.	500 kg and upwards.	0.5 per cent of the total load of 50 weighings,in excess, or deficiency.	

[Schedule VI A] [Schedules VI-A, VI-B and VI-C added by Amendment Notification No. 3 dated 30.12.1983.]Water Meters-Domestic Type

1. General. - This schedule applies to inferential (horizontal flow) and semi positive type of water meters with threaded end connections and of nominal size up to and including 50 mm. This schedule applies to both wet-dial and dry-dial meters.

2. Terminology. - (a) Meter Casing. - The outer casing in which the entire meter machanism is housed; consists of the body, the registration box, the cap and the lid. Some of these parts may be integral.

(b)Body. - The part of the meter casing which houses the impeller chamber and the transmission-gear train of the inferential water meter or the measuring Chamber of the semi-positive water meter.(c)Registration Box. - The part of the meter casing which houses the registration device.(d)Cap. - The part of the meter casing to which is fitted the dial cover and the lid.(e)Lid. - The top cover which is hinged to the cap with a view to protecting the transparent dial cover.(f)Impeller Chamber. - The enclosure in which the impeller of an inferential water meter operates. A separate impller chamber may not be necessary in case where the body is designed to act as impeller chamber. The transmission-gear train may be located either inside or outside the impeller chamber.(g)Measuring Chamber. - The enclosure in which the piston of a semi positive water meter operates. The transmission-gear train may be located either inside or outside the measuring chamber.(h)Registration Device. - The unit which comprises the recording gear train and indicating device consisting of a counter or pointers working on a dial or a combination of both. It registers in suitable volumetric units the quantity of water which has passed through the meter.(i)Water Meter, Dry Dial Type. - -Meter in which the counter mechanism is isolated from water flowing through the meter.(j)Water Meter, Wet-Dial Type. - Meter in which the complete counter unit is in contact with water flowing through the meter.(k)Water Meter, Inferential Type. - Meter which measures the velocity of flow from which the discharge is measured.(l)Water Meter Semi-positive Type. - Meter which volumentrically records practically down to Zero, flow of the water that has passed through with a small unavoidable leakage.

3. Nominal Sizes. - (a) Water meters shall be of the following nominal sizes.-

15. mm, 20 mm, 25 mm, 40 mm, 50 mm.

(i)The nominal size of the water meter shall be denoted by the nominal bore of its inlet.

4. Materials and Manufacture. - (a) General. - Water meter and their parts, especially parts coming in continuous contact with water shall be made of materials resistant to corrosion and shall be nontoxic and non-tainting. Use of dissimilar metals in contact under water shall be avoided as far as possible in order to minimise electrolytic corrosion.

(b)Body. - (1) The body of water meters shall be made either from Type A or Type B materials as specified below :(i)Type A. - The body of water meters shall be made from bronze, brass or any other corrosion-resistant material but not aluminium alloy.(ii)Type B. - The body of the water meters shall be made from ferrous metals or suitable plastics.(2)The body shall be free from all manufacturing and processing defects, such as blow holes and spongy structure, and shall not be repaired by plugging, welding or by the addition of materials. The internal shape of the body shall ensure smooth flow of water and easy dismantling.(c)Registration Box. - Registration box of water meters of Type A shall be made from bronze, brass, aluminium alloy or suitable plastics. Registration Box of water meters of Type B shall be made from any of the ferrous metals as specified for body of Type B meter, suitable plastics or aluminium alloy. The registration box of dry-dial water meter shall be provided with one or two escape holes for minimizing the accumulation of condensed water.Note. -

Aluminium alloy shall not be used for wet- dial meters.(d)Cap. - Cap of water meters of Type A shall be made from brass, bronze, aluminium alloy or suitable Plastics. The cap of water meters of Type B shall be made of Plastics, or aluminium alloy; where the cap and registration box are integral the material for cap may be the same as used for registration box. [see (c)). The cap shall be so designed and fixed to the registration box as to avoid entry of water and dirt. The transparent window which covers the dial shall be inserted from the inside into the cap. The protective lid shall be secured by a robust hinge or other suitable method of robust construction.(i)Provision shall also be made to lock the lid. The provision shall be such that the lock may be conveniently operated from the top. Where the provision is designed for use in conjunction with padlock, the hole provided for padlocks shall be of a diameter not less than 4 mm.(ii)In dry-Type water meters, the transparent window covering the dial may be provided with a wiper on the inner side for wiping of off condensed water.(e)Connections. - The meter casing shall be fitted in the pipe line by means of two conical or cylindrical nipples or tailpieces with connecting nuts which shall be provided with each meter. The nipples of water meters of Type-A shall be made of the same materials as specified for body [in (b) above) Nipples of water meters of Type-B shall be made of the same materials as specified for body where they are integral with the body of the water meters; where they are separate, they shall be made of malleable iron, galvanized steel or suitable plastics. The nut shall be of the same material as used for nipples. The internal diameter of the nipple where it connects the pipe line shall be equal to that corresponding to the nominal size of the meter.(f)Screws and Studs. - Screws and Studs shall be of brass or other corrosion resistant material.(g)Strainers.-Water meters shall be provided with strainers. Strainers shall be of a material which is not susceptible to electrolytic corrosion. They shall be of plastics or other corrosion resistant materials for both Type A and Type B meters. They shall be rigid, easy to remove and clean, and shall be fitted on the inlet side of the water meter. It shall be possible to remove and clean the strainer in such a way as not to permit disturbing the registration box or tampering with it. The strainer shall have a total area of holes not less than twice the area of the nominal inlet bore of the pipe of which the meter is connected; however, in the case of meters provided with internal strainer, involving opening of the registration box for cleaning an additional external strainers shall be fitted on the inlet side satisfying the above requirements.(h)(i)Impellers and Pistons. - Impellers of inferential meters shall be of ebonite, vulcanite or suitable plastic or other non-absorbent material or it shall be of corrosion-resistant metal. It shall be accurately balanced. Impeller shall rest on a self cleaning bearing which has as low frictional resistance as possible and shall be a non absorbent and corrosion resistant material.(ii)Impeller shaft may also be made of suitable plastics having adequate strength and wear-resisting properties.(iii)Rotary or oscillating pistons in the case of semi-positive type meters shall be of non-absorbent material, such as vulcanite or ebonite. Pistons shall be accurately finished and shall operate freely.(iv)Impellers and pistons shall be durable and shall work with as low a frictional resitance as possible.(i)Impeller or Measuring Chamber. - The impeller [See 2 (f)] or measuring chamber shall be a corrosion-resistant material and shall be rigid and shall not change its form as a result, of internal stresses or with use.(j)Gears and pinions. - Gears and pinions shall be so constructed as to fully and smoothly mesh with each other, and shall be firmly fitted on their shafts. Gears and pinions coming in contact with water shall conform to the material specified for impeller shaft in h(i) and h(ii) above.(k)Bearings. - Impeller bearings shall be of agate, sapphire or any other suitable material with good wear- resisting properties, suitably ground and polished. The shape of the impeller bearing shall be such as to prevent the penetration of particles of sand and to preclude

the deposit of anything in solution or suspension in water and to facilitate the washing away of such deposits of the water flow. The shafts of the gears shall revolve freely in their bearings. The length of the bearings shall ensure their effective operation.(l)Counter. - The counter shall be made of the material which will not corrode or distort, such as plate brass or suitable plastics. The counter shall be of the circular multi pointer pattern with all pointers reading clockwise. The individual pointers shall be located on the dial so that the reading can be taken in a clockwise direction. The indicating device may also be of the straight reading counter or a combination of pointer and counter. The rollers of the counters shall be made of nickel or nickel plated brass or plastics specially suitable for the purpose and shall be self-lubricating.(i)The ranges of registration shall be as given in Table-29.Table 29.-Ranges of Registration of Water Meters.

Nominal size of water meter	Minimum registration per dial division	Maximum Registration
1	2	3
mm	litres	litres
15	1	10,000,000
20	1	10,000,000
25	1	10,000,000
40	10	100,000,000
50	10	100,000,000

(m)Dial - The dial shall be of vitreous enamel on copper, anodize aluminum or plastics or of any other suitable material ensuring indestructible marking and good legibility. The unit, of measurement, namely, 'litre' shall be marked on the dial as 'LITRES' in bold face.(n)Sealing. - Sealing holes shall be provided and the meters shall be sealed in such a manner as to render it impossible to obtain access to the measuring unit without breaking the seals. The sealing wire shall be rust proof.(o)Regulator. - Every inferential meter shall be provided with a regulator. The regulator shall be either accessible from outside to be worked by a key without dismantling the meter and protected by a sealed cover or the regulating device shall be internal and not access-able from out side.(p)Location of serial number. - The serial number of the meter shall be clearly indicated on the screw cap or in any other suitable place.

5. Overall dimensions. - (a) Overall dimensions of water meters shall be as specified in Table 30.

Table 30.-Overall Dimensions of Water Meters

(All dimensions in millimeters)

Nominal size of meter	Overall length includes nipples	Overall width Max	Overall height Max
15	250	130	180
20	290	130	180

25	380	140	200
40	430	230	250
50	470	250	300

Tolerance on the over all length shall be ± mm.

6. Performance requirements. - (a) Temperature. - The meters shall be suitable for use with water temperature upto 45°C.

(b)Hydrostatic Test. - Meters shall satisfactorily withstand a pressure of 20 kg/cm2.(c)Capacity on Short period Rating or Nominal Capacity. - The nominal capacity of the water meters shall be as specified in Table 31. The meters shall be capable of giving minimum discharges as stated in the table without the head loss exceeding 10 m within the meters.(i)Head-loss within the meter shall be measured in accordance with the method given in appendix 'A'.Table 31.-Nominal Capacity of Water Meters.

Nominal size of meter	Discharge per hour	
Semi-positive	Type Inferential Type	
mm	litres	litres
15	2,000	2,500
20	3,400	3,500
25	5,500	5,500
40	10,000	16,000
50	15,000	23,000

(d)Continuous Running Capacity. - Continuous running capacity of water meters shall be as specified in Table 32. The meter shall be capable of giving the minimum discharges as stated in the table without the head loss exceeding 3 m within the meters.Table 32.-Continuous Running Capacity of Water Meters

Nominal size of meter	Discharge per hour	
Semi-positive	Type Inferential Type	
mm	litres	litres
15	1,000	1,500
20	2,000	2,500
25	3,000	3,500
40	6,000	8,000
50	9,000	14,000

(i)Head-loss within the meter shall be measured in accordance with the method given in Appendix 'A'.(e)Minimum Starting Flows. - The minimum flow at which the meter starts registering shall be as given in Table 33.Table 33.-Minimum Starting Flow

Nominal size of meter	Discharge per hour
Semi-positive Type	Inferential Type

mm	litres	litres
15	10	40
20	15	60
25	20	75
40	25	100
50	35	175

(f)Metering Accuracy. -(i)The metering accuracy shall be ± 2 percent for both semi-positive and inferential water meters above the lower limit of flow specified in (ii) below.(ii)Lower Limit of flow for ± 2 percent Metering Accuracy. The lower limit of flow at which the meter will start registering at an accuracy of ± 2 percent shall not be more than ½0th and ¼0th of the nominal capacity in the case of inferential and semi positive water meters respectively.

7. Frost Protection Devices. - Meters liable to be damaged by frost shall be protected with suitable frost protection devices.

8. Marking. - (a) Each water meter shall be marked with the following informations:-

(i)manufacturer's name or trade mark,(ii)nominal size of the meter, and(iii)direction of flow of water on both sides of the meter.Appendix 'A'Method of determination of loss of head in water meters.(i)Pressure gauges or manometers shall be fixed upstream and downstream of water meter under test. The inlet and outlet of the water meter shall each be provided with a strength pipe of internal diameter equal to the nominal size of the meter and having length equal to at least 10 times its diameter free from tees, bends, valves, etc., and the meter in no case shall freely discharge into the atmosphere. The internal surface of the pipe shall be smooth and shall not offer any obstruction to the flow of water. When discharging water at the specified rates (see 6(c) and 6(d)] the pressure drop shall be noted which shall be the loss of head at the corresponding flows.(ii)The niddle valve shall be situated at a distance not less than 40 times the diameter of the pipe from the inlet end of the water meter. When the feed of the water is through a pump instead of through an over-head tank, the pump shall be so situated and where required suitable damping devices, such as air vessels or automatic pressure switches shall be so provided that the pulsation in the flow of water through the meter is reduced to the minimum.[Schedule VI-B] [Schedules VI-A, VI-B and VI-C added by Amendment Notification No. 3 dated 30.12.1983.]Length and Time Measuring Instruments

Part I – Taxi-Meters 1. Terminology. - (a) Taxi-meter. - A device that computes and indicates the charges for the hire of a motor cab according to prescribed rates for distance and/or for time.

(b)Face. - That side of a taxi meter on which fare is indicated.(c)Flag. - A lever arm or any other device by which the operating condition of a taxi meter is controlled.(d)Money drop. - An increment in the fare indication.(e)Initial Money Drop. - The fare indication following the depression of the

Hag from For Hire to the Hired position.(f)Initial Distance or Initial Time Interval. - The distance or the time interval corresponding to the initial money drop.(g)Basic Rates. - The distance and waiting time rates for distances and time intervals other than those for the initial money drop.(h)Fare. - That portion of the charge for the hire of a motor cab that is computed by a taxi-meter through the operation of the distance and the mechanisms.(i)Extras. - Charges to be paid by the hire in addition to the fare for transportation of chargeable luggage.(j)Speed of Agreement of Basic Rates. - The speed at. which the basic distance and basic time rates correspond, that is, a meter operated at the speed of agreement for basic rates will show a money drop of distance travelled which is exactly the same as for time elapsed.Example: -

Basic rate for time	10 paise per 5 minutes.
Basic rate for distance	10 paise per 1/3 km.

Then basic rates agree when a distance of 1/3 km. is travelled in 5 minutes that is, the speed of the vehicle is 4 km. per hour.Fig. 18. Diagram Illustrating the Principle of the Pick-up(k)Effective Cab Wheel Circumference. - The distance covered by the cab driven wheel with correctly inflated tyre is on complete revolution when a motor cab with a full complement of passengers is pushed forward in a straight line.(l)Pick-up. - Fare is calculated by the basic rate for time elapsed or alternatively by the basic rate for distance travelled according as the speed of the vehicle is below, or above the speed of arrangement of basic rates. The arrangement of the transfer of the calculation between the two basic rates is sometimes called the pick up and sometimes the differential. An example of a simple design of pick up mechanism with the meter shown in Fig. 18.(m)Bench Test. - The test of taxi meter independent of the taxi cab.(i)Distance Test. - The test to check the equivalent distance intervals, without effect of time, between money drops.(ii)Time Test. - The test to check only the time intervals between money drops.(n)Road Test. - The test over a measured course of a complete taxi meter assembly when installed on the motor cab, the machanism being actuated as a result of the motor cab travel.(o)Gear Box. - An assembly of gears to permit adjustments for different type sizes, transmission ratios and the like.

2. Constructional Requirements. - (a) The taxi-meter shall be so designed and constructed as to ensure reliability over a long period.

(b)The taxi-meter shall be designed to register the fare to be charged for the distance travelled at a speed of or exceeding the speed of agreement of basic rates, and for the time elapsed when the cab is stationary or moving slower than the speed of agreement of basic rates.(c)When the fare is recorded by the distance mechanism the first change in fare shall occur only when the prescribed distance has been travelled. After that, the indication shall change in steps proportional to the distance.(d)Mechanical. - The mechanism for recording the time shall function, when required, as a clock. It shall be started by actuation of the flag. In the case of mechanical clock, it shall be capable of running 10 hours continuously.(e)Every meter shall be so constructed as to indicate in suitable windows upon the face the fare computed by time and/or by distance.(f)The meter shall be provided with an illuminated sign indicating when the cab is For Hire. The lettering used in size, colour, and back-ground shall be distinct by day or night at a distance of 25 m. If a plate is attached to the flag then its background colour shall be red.(g)The nature of information given in each window, namely,

fare position of flag, total and engaged distance, Trips and (extra charges), shall be, if provided, indicated by suitable wording immediately above or below the window. The words or signs denoting rupees and paise shall be placed immediately above, below or beside the appropriate disc or drum position. The face shall be provided with a suitable illuminating arrangement when the flag is in the Hired or Stopped position.(h)The letters and numerals indicating fare shall not be less than 10 mm. in height and shall be so placed as to be easily read by the passenger. All other letters and numerals required to be shown on meters shall be of such size, form and colour as would render them clearly legible.(i)When the flag is moved from one position to the other, it shall given audible warning.

3. Mechanism and Operation. - (a) The mechanism of meters shall be so designed that :

(i)When the flag is upright, the words For Hire shall be indicated in a window in the face. In this position the meter mechanism shall be arrested. No fare shall be visible to the intending hirer.(ii)When the flag is rotated forward to the Hired position, the word Hired shall replace For Hire in the window. In the Hired position the clock mechanism shall be released and in action; the distance recording mechanism shall be released and available to record. Also the initial money drop shall be indicated in the fare window. As the cab is used, in due course, further money drops will increase the fare shown.(iii)When the flag is rotated further from the For Hire position to the Stopped position, the word Stopped shall replace Hired in the window. The clock mechanism shall be arrested; the distance recording mechanism shall continue to be available to record. The fare shall continue to be indicated in the fare window.(iv)The flag shall not move back from the Hired position to For Hire position unless it passes through the Stopped position. It shall not go from the Stopped position to Hired position without making a positive stop at For Hire position through a locking device to ensure that the mechanism is arrested.(v)The time & distance mechanisms shall not be engaged or disengaged except by the normal sequence of operation of the flag arm referred to in (i) to (iv) above.(vi)The fare and extra windows in the face shall be covered by a shutter at the For Hire position. The removal and insertion of the shutter shall synchronize with the movement of the flag respectively from For Hire to Hired, and from Stopped to For Hire.(vii)The fare recorded by the meter for time and for distance travelled shall be according to the basic rates prescribed.(viii)The amount of fare shown in extra window, (if provided) shall be operated manually and shall advance by monetary units as prescribed.

4. Tests. - (a) Fare indications. - At all stages, the money drops on the dial shall make instant, accurate and complete change from one figure to the next. The error due to engaging and disengaging of the mechanism shall be within the tolerance limits specified in 5.

(b)Flag. - When the flag is unlocked from the For Hire position, it should be checked that the last recorded fare has been cleared and the meter is property re-set at the zero position. There shall be no possibility of the fare recording caught, either partly cleared or on a rebound. It shall be checked that any reverse movement between the ratchet lock and the next does not make improper recording or any kind of injury possible. It should be properly seen that no possibility exists for tampering by

improper use of the flag. From the moment the flag is put down the fare should be recorded and the figures expressing it shall appear on the face.(c)Distance Drive. - There will always be a critical point in a fare recording mechanism when the next fare increment is almost due to be recorded. Should the journey end at the critical point, which is seldom possible, an impact, such as slamming of the car door could cause the next increment to be recorded. A jerkey drive should be arranged in the test to check that no fault develops in the meter mechanism. Several tests shall be made to check that the possibility of a premature recording of an increment has been kept at a minimum.(d)Bench Test. - The test shall be performed on taxi meter fitted with an appropriate and reliable gear box.(i)Apparatus-(a)Test bench. - For testing taxi-meters, a device employing an electric motor to turn the taxi-meter spindle shall be used. This device shall also be capable of being rotated by hand. Brackets shall be provided for convenient mounting of the taxi-meters.(b)Counter. - -Counter shall be of such a design as to register one tenth of a spindle revolution.(ii)Procedure. - The test shall be carried out in two stages called "Short Haul and Long Haul".(a)Short haul test. - With the flag in the Stopped position the meter is driven for the equivalent of a distance of two or three kilometers. The number of input revolutions for each money drop are read from the counter and compared with the calculated number.(b)Long haul test.. - The flag shall be in the Stopped position. The taxi-meter shall be operated continually for an interval corresponding to not less than 60 kilometers. Throughout the test, the taxi meter shall be kept under observation so that any sticking of the money drop, any failure of the money drop to occure in the proper sequence, any incorrect alignment of figures or any other abnormal condition may be discovered which would lead to rejection of the taxi-meter.(e)Time Test. - (i) Apparatus. - This test requires the observations shall be made to the nearest second. A stop-watch or a desk type of interval timer, which may be started from and re-set to zero as desired, shall be used.(ii)Procedure. - The time test consists of timing the intervals between money drops with the flag in the Hired position and shall be conveniently divided into two tests, namely, individual interval test, and long interval test.(a)Individual interval test. - The individual interval test shall be initiated by depressing the taxi-meter flag to the Hired position and simultaneously starting the stop-watch or timer. At the instant each money drop occurs, the elapsed time to the nearest second shall be recorded. The watch or timer shall not be Stopped, but shall be allowed to continue running throughout the entire period of the time test. The test shall be continued for a minimum of one hour.(b)Long interval test. - The taxi-meter shall be cleared at the conclusion of the individual interval test, nor shall the stopwatch or timer be Stopped. Operation shall be continued for at least one hour or more, without intervening observations. When the test is to be concluded, the time at which money drop occurs shall be observed and recorded after which the taxi-meter shall be cleared.

5. Tolerances. - (a) Bench Test. - Tolerances for bench test shall be as follows:-

(a)	On over registration	1 percent.
(b)	On under registration	1 percent with an added tolerance of 30 m whenever the initialinterval is included in the interval test.

(b)Time Test. - Tolerance for time test shall be as follows:-

(a)	On individual interval test;	
	Over registration	5 percent.
	Under registration	10 percent on initial interval, 5 percent on other intervals.
(b)	Long interval test (excluding initial interval);	
	Over registration	Not permitted.
	Under registration	3 percent.

6. Sealing. - (a) A taxi-meter head found correct on a bench test shall be sealed. When a complete installation on a motor cab is approved, each of the several connections from taxi-meter head to transmission (or wheel) shall be similarly sealed.

(b)A plate of approved size pattern shall be attached to the taximeter gear box or to the taxi-meter itself in such a manner that it cannot be removed without either removing the seals affixed by the testing authority or opening the taxi-meter or taxi-meter gear box.The plate shall show in raised or sunken words and figures:-(i)the type of cab on which the taxi-meter is to be used, and(ii)the minimum effective circumference of the tyre on, the wheels of the cab by which the taxi-meter can be driven and by which its action and accuracy may be tested.

7. Marking. - (a) Taxi-meters shall be marked indelibly with the number of the instrument on the face plate and back plate.

(b)All letters shall be in Roman script and the numerals shall be Indo-Arabic.

Part II – Autorickshaw Meter Distance and Time Type

1. Terminology. - (a) Autorickshaw meter, distance and time type. - A device that computes and indicates the charges for the hire of an autorickshaw according to prescribed rates for distance and/or for time.

(b)Face. - That side of autorickshaw meter on which fare is indicated.(c)Flag. - A lever arm or any other device by which the operating condition of the Meter is Controlled.(d)Money drop. - An increment in the fare indication.(e)Initial money drop. - The fare indicating following the depression of the flag from For Hire to the Hired position.(f)Initial distance or initial time interval. - The distance or the time interval corresponding to the initial money drop.(g)Basic rates. - The distance and waiting time rates for distances and time intervals other than those for the initial money drop.(h)Fare. - That portion of the charge for the hire of autorickshaw meter that is computed by an autorickshaw meter through the operation of the distance and time mechanism.(i)Speed of agreement of basic rates. - The speed at which the basic distance and basic time rates correspond, that is, a meter operated at the speed of agreement for basic rates will show a money drop of

distance travelled which is exactly the same as for time elapsed.Example :

Basic rate for time	10 paise per 5 minutes.
Basic rate for distance	10 paise per 1/3 km.

Then basic rates agree when a distance of 1/3 km. is travelled in 5 minutes, that is, the speed of the vehicle is 4 km. per hour.(j)Effective autorickshaw wheel circumference. - The distance covered by the autorickshaw driven wheel with correctly inflated tyre in one complete revolution when an autorickshaw with a full complement of passengers is pushed forward in a straight line.(k)Pick up. - Fare is calculated by the basic rate for time elapsed or alternatively by the basic rate for distance travelled according as the speed of the vehicle is below, or above the speed of agreement of basic rates. The arrangement of the transfer of calculation between the two basic rates is sometimes called the pick up and sometimes the differential. An example of a simple design of pick up mechanism within the meter is shown in fig. 18 of part I of this schedule.(l)Bench test. - The test of an autorickshaw meter independent of the autorickshaw:-(i)Distance test. - The test to check the equivalent distance intervals, without effect of time, between money drops.(ii)Time test. - The test to check only the time intervals between money drops.(m)Road test. - The test over a measured course of a complete autorickshaw meter assembly when installed on the autorickshaw, the mechanism being actuated as a result of the auto rickshaw travel.(n)Gear box. - An assembly of gears to permit adjustments for different tyre sizes, transmission ratios and the like.

2. Constructional requirements. - (a) The autorickshaw meter shall be so designed and constructed as to ensure reliability over a long period.

(b)The autorickshaw shall be designed to register the fare to be charged for the distance travelled at a speed of or exceeding the speed of agreement of basic rates, and for the time elapsed when the autorickshaw is stationary or moving slower than the speed of agreement of basic rates.(c)When the fare is recorded by the distance mechanism, the first change in fare shall occur only when the prescribed distance has been travelled. Alter that, the indication shall change in steps proportional to the distance.(d)Mechanical. - The mechanism for recording the time shall function, when required, as a clock. It shall be started by actuation of the flag. In the case of mechanical clock, it shall be capable of running 6 hours continuously.(e)Every meter shall be so constructed as to indicate in suitable windows upon the face the fare computed by time and/or by distance.(f)The meter shall be provided with a sign indicating when the autorickshaw is For Hire. The lettering used in size, colour and background shall be distinct at a distance of 25 m. If a plate is attached to the Hag than to background colour shall be red.(g)The nature of information given in each window, namely, fare and position of flag, shall be indicated by suitable wording immediately above or below the window. The words or signs denoting rupees and paise shall be placed immediately above, below or beside the appropriate disc or drum position.(h)The letters and numerals indicating fare shall not be less than 10 mm. in height and shall be so placed as to be easily read by the passenger. All other letters and numerals required to be shown on meters shall be of such size, form and colour as would render them clearly legible.

3. Mechanism and operation. - (a) The mechanism of meters shall be so designed that-

(i)When the flag is upright, the words For Hired shall be indicated in a window in the face. In this position the meter mechanism shall be arrested. No fare shall be visible to the intending hirer.(ii)When the flag is rotated forward to the Hired position, the word Hired shall replace For Hire in the window. In the Hired position the clock mechanism shall released and in action; the distance recording machanism shall be released and available to record. Also the initial money drop shall be indicated in the fare window. As the autorickshaw is used, in due course further money drops will increase the fare shown.(iii)When the flag is rotated further from the For Hire position to the Stopped position, the word Stopped shall replace Hired in the window. The clock mechanism shall be arrested; the distance recording mechanism shall continue to be available to record. The fare shall continue to be indicated in the fare window.(iv)The flag shall not move back from the Hired position to For Hire position unless it passes through the Stopped position. It shall not go from the Stopped position to Hired position without making a positive stop at For Hire position through a locking device to ensure that the mechanism is arrested.(v)The time and distance mechanism shall not be engaged or disengaged except by the normal sequence of operation of the flag arm referred to in (i) to (iv) above.(vi)The fare window in the face shall be covered by a shutter at the For Hire position. The removal and insertion of the shutter shall synchronize with the movement of the flag respectively from For Hire to Hired, and from Stopped to For Hire.(vii)The fare recorded by the meter for time and for distance travelled shall be according to the basic rates prescribed.

4. Tests. - (a) Fare indications. - At all stages, the money drops on the dial shall make instant, accurate and complete change from one figure to the next. The error due to engaging and disengaging of the mechanism shall be within the tolerance limits specified in 5.

(b)Flag. - When the flag is unlocked from the For Hire position, it should be checked that the last recorded fare has been cleared and the meter is properly re-set at the zero position. There shall be no possibility of the fare recording caught either partly cleared or on a rebound. It shall be checked that any reverse movement between the ratchet lock and the next does not make improper recording or any kind of injury possible. It should be properly seen that no possibility exists for tampering by improper use of the flag. From the movement the flag is put down the fare should be recorded and the figures expressing it shall appear on the face.(c)Distance drive. - There will always be a critical point in a fare recording mechanism when the next fare increment is almost due to be recorded. Should the journey end at the critical point, which is seldom possible, an impact such as slaming of the car door could cause the next increment to be recorded. A jerkey drive should be arranged in the test to check that no fault develops in the meter mechanism. Several tests shall be made to check that the possibility of a premature recording of an increment has been kept at a minimum.(d)Bench test. - The test shall be performed on autorickshaw meter fitted with an appropriate and reliable gear box.(i)Apparatus :(a)Test bench. - For testing meters, a device employing an electric motor to turn the meter spindle shall be used. This device shall also be capable of being rotated by hand.

Brackets shall be provided for convenient mounting of the meters.(b)Counter. - Counter shall be of such a design as to register one tenth of a spindle revolution.(ii)Procedure. - The test shall be carried out in two stages called "Short Haul" and "Long Haul".(a)Short haul test - With the flag in the Stopped position the meter is driven for the equivalent of a distance of two or three kilometers. The number of input revolutions for each money drop are read from the counter and compared with the calculated number.(b)Long haul test. - The flag shall be in the Stopped position. The meter shall be operated continually for an interval corresponding to not less than 60 kilometers. Throughout the test, the meter shall be kept under observation so that any sticking of the money drop, any failure of the money drop to occur in the proper sequence, any incorrect alignment of figures or any other abnormal condition may be discovered which would lead to rejection of the meter.(e)Time test. - (i) Apparatus. - This test requires that observations shall be made to the nearest second. A stop watch or a desk type of interval time, which may be started from and re-set to zero as desired, shall be used.(ii)Procedure. - Tire time test consists of timing the intervals between money drops with the flag in the Hired position and shall be conveniently divided into two tests, namely, individual interval test, and long interval test.(a)Individual interval test. - The individual interval test shall be initiated by depressing the autorickshaw meter flag to the Hired position and simultaneously starting the stop watch or timer. At the instant each money drop occurs, the elapsed time to the nearest second shall be recorded. The watch or timer shall not be Stopped, but shall be allowed to continue running throughout the entire period of the time test. The test shall be continued for a minimum of one hour.(b)Long interval test. - The meter shall not be cleared at the conclusion of the individual interval test, nor shall the stop watch or timer be Stopped. Operation shall be continued for at least one hour or more, without intervening observations. When the test is to be concluded, the time at which money drop occurs shall be observed and recorded after which the meter shall be cleared.

5. Tolerances. - (a) Bench test. - Tolerances for bench test shall be as follows:

(i)	On over registration	1 percent
(ii)	On under registration	1 percent with an added tolerance of 30 m whenever the initialinterval is included in the interval test.

(b)Time test. - Tolerances for time test shall be as follows:

(i)	On individual interval test :	
	Over registration	5 percent.
	Under registration	10 percent on initial interval, 5 percent on other intervals.
(ii)	Long interval test (excluding initial interval):	
	Over registration	Not permitted.
	Under registration	3 percent.

6. Sealing. - (a) An autorickshaw meter head found correct on the bench test shall be sealed. When a complete installation on an autorickshaw is approved, each of the several connections from meter head to transmission (or wheel) shall be similarly sealed.

(b)A plate of approved size and pattern shall be attached to the meter gear box or to the meter itself in such a manner that it cannot be removed without either removing the seals affixed by the testing authority or opening the gear box. The plate shall show in raised or sunken words and figures :-(i)the type autorickshaw on which the meter is to be used, and(ii)the minimum effective circumference of the tyre on the wheels of the autorickshaw by which the meter can be driven and by which its action and accuracy may be tested.

7. Marking. - (a) Autorickshaw meters shall be marked indelibly with the number of the instrument on the face plate and back plate.

(b)All letters shall be in Roman script and the numerals shall be Indo-Arabic.

Part III – Autorickshaw Meter Distance Type

1. Terminology. - (a) Autorickshaw meters shall be marked indelibly with the automatically calculates, at a predetermined rate and indicates the charges For Hire of an autorickshaw by distance only. The face may also have a speedo-meter and distance indicator (odometer) .

Note. - The mechanism to calculate fare by time is not provided in this type of autorickshaw meter.(b)Face. - The side of an autorickshaw meter on which fare is indicated.(i)On over registration(ii)On under registration(c)Fare neutralizer. - A device by which the fare indication is brought to zero.(d)Fare. - The charges for the hire of autorickshaw which are automatically calculated by the faremeter through the operation of the distance mechanism.(e)Effective wheel circumference. - The distance covered by the Wheel, with correctly inflated tyre, in one complete revolution when the vehicle with a full complement of passengers is pushed forward in a straight line.(f)Bench test. - The test of an autorickshaw meter independent of the cab, to check the fare equivalent to the distance intervals.

2. Constructional requirements. - (a) The autorickshaw meter shall be a simple calculator indicating the fare for the distance travelled or speedometer-cum-fare meter combination with distance indicator (odometer).

(b)The drive to the meter shall be from the front wheel or rear axle, or gear box depending upon the arrangement provided by vehicle manufacturer. The instrument shall be calibrated to match the

wheel ratio of the vehicle on which it is mounted. It shall carry two counters-one indicating the cumulative distance travelled and the other counter indicating the fare for the specific journey.(c)The meter shall be provided with a fare neutralizer. The rupee and paise wheel shall be distinguishable. The rupee wheel shall be in black with white digits and paise wheel shall be white with red digits.(d)The fare neutralizer shall be capable of moving only in one direction manually.(e)When the fare neutralizer is operated and the fare reading comes to zero, an audible click shall be given. Knocking, vibration and wear and tear shall not affect the fare reading.(f)The meter of the autorickshaw shall be fitted with a suitable indicator to show whether the autorickshaw is occupied For Hire.

3. Tests. - (a) At all stages, instant, accurate and complete change from one figure to the next shall occur on the dial when the meter is operated. When the fare neutralizer is brought to the initial position, it should be checked that the last recorded fare has been cleared and the meter is properly re-set at zero position. There shall be no possibility of the fare recording being caught either partly cleared or on a rebound. It shall be checked that any reverse movement, between the ratchet lock and the next does not make improper recording or any kind of injury possible. There shall be no possibility of tempering with the fare indication by improper use Of the fare neutralizer.

(b)Distance drive. - There will always be a critical point in fare recording mechanism when the next fare increment is almost due to be recorded. Should the journey end at the critical point any impact could cause the next increment to be recorded. A jerky drive should be arranged in the test to check that no fault develops in meter mechanism. Several tests shall be made to check that this possibility has been kept at a minimum.(c)Bench test. - The test shall employ a variable speed electric motor, a counter to note the revolutions per minute and proper brackets for convenient mounting of the meters.

4. Tolerances. - (a) Bench test:-

(i)On over registration, one percent of fare recorded.

5. Sealing. - (a) After complete installation, the meter shall be properly sealed by suitable tamper-proof method. The driving cable shall have provision for sealing at both the ends.

6. Marking. - (a) Wheel ratio of the vehicle for which the meter is to be calibrated shall be indelibly marked at the back of the meter.

(b)The number of the instrument shall also be marked.(c)All letters shall be in Roman script and the numerals shall be Indo-Arabic.[Schedule VI-C] [Schedules VI-A, VI-B and VI-C added by

Amendment Notification No. 3 dated 30.12.1983.]Clinical Thermometers

1. General. - This schedule deals with mercury-in-glass clinical thermometers, with a maximum indicating device, intended to measure body temperature of human beings and animals.

2. Unit of temperature and graduation of scale. - (a) The thermometers shall be graduated in degrees Celsius (Symbol : °C)

(b)The graduated scale shall include the range of temperature from 35.5°C to 42°C and may be extended on either side upto 35°C or 43°C respectively.(3)The thermometer shall be graduated at every 0.1°C.

3. Types. - (a) Clinical thermometers may be of the stem type or the sheath type.

(i)In the stem type thermometers, the scale shall be marked directly over the tube of the capillary.(ii)In the sheath type thermometers, the scale shall be marked on a scale plate affixed lengthwise behind the capillary tube and the scale plate shall be fused into an air tight transparent tube which is joined to the mercury bulb and forms a protective sheath.(b)The thermometers shall be provided with a maximum indicating device which prevents the mercury from descending by itself when the thermometer is cooled.

4. Materials. - (a) The bulbs of the thermometers shall be made from glass which possesses the properties indicated in Appendix A and shall be identified legibly and indelibly either by the name or trade mark of the manufacturer of the thermometers.

(b)When determined by the method indicated in Appendix B, the glass used for maximum indicating device, the capillary tube and the bulb shall extract not more than 263.5 micrograms of sodium oxide (Na2O) per gram of glass.(c)The scale-plate of the sheat type thermometers shall be made of translucent material, metal or any other material having equivalent dimensional stability.

5. Construction. - (a) The clinical thermometers shall be free from all defects which may hamper their normal working or mislead the users into error.

(b)The capillary tube shall be of such shape that the entire mercury column and the meniscus at its end are easily and distinctly seen.Note. - It should preferably be of the thick prismatic type.(c)The mercury used shall be pure and dry. The bulb, the capillary tube and the mercury shall be free from entrapped gases so as to ensure the proper working of the thermometers.(d)The mercury column shall rise uniformly without noticeable jumps when the thermometer is gently heated. After the thermometer has been heated to at least 37°C and then cooled down to ambient temperature, the

column shall fall below the lowest numbered graduation line when the mercury is subjected to an acceleration of 600 m/s2 at the level of the bottom of the bulb.(e)The scale plate of the sheath type thermometers shall be fixed firmly to the capillary tube so as to prevent any mutual displacement of the two parts. Its position shall be indicated by an indelible mark on the sheath tube, level with one of the numbered graduation of the scale.Note. - This mark facilitates detection of any accidental displacement of the scale plate with respect to the capillary tube.(f)The sheath shall not contain any foreign matter shall be free from entrapped moisture.

6. Graduation and numbering. - (a) The interval between every degree celsius shall be not less than six mm for sheath type thermometers and not less than five mm for stem type thermometers.

(b)The graduations shall be uniform and distinct. They shall be engraved or printed indelibly. The lines shall be perpendicular to the axis of the thermometer. Their thickness shall be not more than one fifth the length of the maximum graduations in the case of the sheath type of the thermometers and one fourth the length of the minimum graduation in the case of stem type thermometers. The lines corresponding to half degrees and full degrees shall be longer than other lines.(c)Lines representing degrees shall be numbered. The numbers shall be engraved or printed indelibly.

7. Marking. - (a) The following markings shall be engraved or printed indelibly on the scale plate of the sheath type thermometers and on the stem of the stem type thermometers :-

(i)the symbol "C",(ii)the manufacturer's name or trade mark,(iii)an indication identifying the glass of the bulb, unless the glass is already identified by its manufacturer,(iv)in the case of veterinary thermometers, a special indication, for example, "Veterinary thermometer".(b)Other markings may be added provided they do not mislead the user.

8. Metrological controls. - (a) Approval of Model. - (i) Every model of the thermometer of each manufacturer shall be submitted for approval to a laboratory specified by the Directorate of Weights and Measures.

(ii)No change in an approved model shall be made with special authorisation.(b)Verification. - (i) New thermometers shall be submitted to tests for initial verification.(ii)Thermometers in use shall be submitted for verification every two years.

9. Sealing. - The Inspector's seal shall be applied by a suitable method on the stem of the stem type thermometers and on the sheath of the sheath type thermometers at such a place that it does not obstruct the normal use of the thermometers.

10. Maximum permissible errors. - After cooling down to a temperature between + 17°C and + 23°C, the readings of clinical thermometers throughout the length of the scale, shall not be incorrect by more than - 0.15°C or + 0.1°C

11. Time constant. - The time constant 'k' of clinical thermometers, in a stirred water bath, shall be less than or equal to 2.6 seconds.

Note. - The time constant "k" is defined by the formula :V2-reading = (V2-V1)e-t/kgiving approximately the value by which, after a time "t" (in seconds) of immersion, the reading of a thermometers, (if it is accurate), differs from the temperature V2, the thermometer initially being at. the temperature V1 and then being immersed in a water bath at the constant temperature V2. A clinical thermometer, at the temperature of 20°C, which is immersed in a bath at 40°C should have attained its final reading (40°C if it is accurate with an approximation of 0.01°C, after a time to, derived from the formula;

40.

-39.99=0.01=(40-20) e-t/2.6s or 20 seconds at the most.Annexure-AQualities of Glasses for Bulbs of ThermometerIn order to be suitable for the production of bulbs of clinical thermometers the glass shall have qualities such that thermometer, without a maximum indicating device, manufactured with that glass and heated in a boiling water bath at 100°C for half an hour does not give a depression of the zero by more than 0.05°C.Annexure-BDetermination of Hydrolytic Resistance of Glass Grains At 98°C

1. Apparatus. - (a) Balance accuracy ± 5mg or better.

(b)Burettes, 10 ml, graduated at 0.05 ml, and 1 ml or 2 ml, graduated at 0.01 ml.(c)Cooling bath of capacity sufficient to contain 1 litre of water for each flask used in the test.(d)Conical flasks, 100 ml. capacity, made of chemically resistant glass and pre-heated for filling to the base of the neck with water and heating as described in clause (e) below.(e)Volumetric flasks, 50 ml. capacity, made of chemically resistant glass, with glass stoppers. It is advisable to select flasks with the graduation line in the lower half of the neck. Before use, each flask should be pretested by filling to above the graduation mark with water and heating to 100°C in the heating bath for 3 separated periods of one hours, using a fresh quantity of water in the flask each time.Note. - Flask made from vitreous silica may also be used in which % case the pre-treatment is not required.(f)Hammer, weighing about 1 kg.(g)Mortar and pestle made of hardened steel.(h)Pipette 25 ml.(i)Sieves. - A set of 200 mm. diameter square aperture sieves, with stainless steel mesh, including.- a sieve (A) of 500 micrometres aperture.- a sieve (B) of 300 micrometres aperture, and- a sieve (C) of a convenient aperture between 600 and 1000 micrometres.The cover, pan and especially the rings should be of stainless steel or lacquered wood.The use of sieve (C) is recommended to retain larger pieces of glass and to avoid heavy wear on sieve (A).(j)Thermometer, covering the range 90° to 100°C, capable of being read to an accuracy of ± 0.2°C.(k)Heating bath, gas or electrically heated, thermostatically

controlled, or capacity sufficiently to contain 1 litre of liquid for each flask used in the. test and capable of carrying out the heating cycle described in clause 4 below.(l)Stoppered storage vessel.

2. Reagents. - (a) Analytical grade reagents shall be used throughout.

(b)Distilled water or deionized water, of high purity complying with the following requirements when tested immediately before use. It should be free from dissolved gases and heavy metals, particularly copper as shown by the dithiozone test; it should have a specific conductivity not exceeding 1 x 10--4 S/m at 20°C and it should be neutral to methyl red.(c)Citric acid 0.1 M. Dissolve 21.008 g of solid citric acid (C6H8O7H2O) in water and dilute to one litre.(d)Hydrochloric acid 0.0IN.(e)Disodium hydrogen phosphate 0.2 M. Dissolve 35.60 g of solid disodium hydrogen phosphate (Na2HPO42H2O) in water and dilute to one litre.(f)Buffer solution pH=5.2 Add 92.8 ml. of 0.1 M citric acid to 107.2 ml of 0.2 M Disodium hydrogen phosphate.(g)Methyl red indicator. Dissolve 25 mg. of the sodium salt of methyl red in 100 ml. of water.

3. Preparation of SAMPLE. - Wrap the glass article as received, which should preferably have a wall thickness less than 1.5 mm in clear paper and break it with a few hammer blows. Transfer at least 30g of pieces between 10 and 30 mm diameter to the hardened steel mortar insert the pestle and drive sharply, once only with hammer. Transfer the glass from the mortar to the upper sieve and shake the set of sieves briefly to separate the finer particles. Return to the mortar the glass remaining on sieves (A) and (C) and repeat the crushing sieving until only about lOg of glass remain on sieve (C). Discard the glass from sieve (C) and from the receiving pan. Shake the set of sieves by hand for five minutes. Reserve for the test the grains which pass through sieve (A) but are retained on sieve (B).

At least 10g of sample is required for the test. If it is necessary to crush and sieve more sample, it is essential that sample already obtained should be removed from sieve (B) and not sieved again.After completion of all crushing and sieving combine the samples, spread the grains on clear glazed paper and pass the magnet through them to remove any iron particle. Transfer the sample to the storage vessel and insert the stopper.

4. Procedure. - Transfer 2.00g of the freshly prepared sample into each of three 50 ml. volumetric flasks. Remove any adherent fine particles by swirling the grains six times in separate 30 ml. portions of water, decanting as much water as possible after each washing. Fill the flasks with water to the graduation line and fill a fourth flask with distilled water to serve as a blank test. Distribute the glass grains evenly over the flask bases of the sample flask by gently shaking them, on the heating bath maintained at

98°C+0.5°C so that they are immersed halfway up the neck (a rack to hold the flask may be used). Increase the rate of heating so that the specified temperature is recorded within 3 minutes; after 5 minutes when the Flask has been warmed continue the heating for 60 minutes from time of immersion, maintained the heating bath at 98°C+0.5°C.

Remove the flask from the bath, take out stoppers place the flask in the cooling bath, cool in running water and agitate contents of each flask throughtly then allow to stand until the grains settle and a clear supernatant solution is obtained.By means of a pipette, transfer 25ml. of the clear solution from each flask into separate 100ml. conical flask, add to each of these flasks two drops of methyl red indicator and titrate with 0.01 N hydrochloric acid, matching the end pint with 25ml. of buffer solution plus two drops of indicator contained in a similar conical flask. Titrate all three sample solution and the blank test solution in the same way.

5. Expression of results. - Subtract the blank test value from each of the three values obtained from the samples and calculate the mean of the results per gram of sample; report this value and its equivalent in alkali extracted, calculated as micrograms of sodium oxide (Na2O) per one gram of glass.

1. ml. of 0.01 N hydrochloric acid = 310 micrograms of sodium oxide.

Note. - If the wall thickness of the article used for the test is less than 1.5 mm, or if the density of glass is outside the range 2.3 to 2.7 g per ml at 20°C, these values should also be reported.

Part 3 – Testing of Water Meters 1. General. - Water meters shall be tested to conform to the specifications given in Schedule VI-A.

2. Tests. - Tests shall be classified into three groups namely:-

(i)Type tests. - The type tests shall consist of the tests that would be necessary to check up the performance and characteristics of the meter and its components and shall be carried out by the Controller or such other officer as desired by the Controller. Once a meter has undergone type tests, any major or essential alterations, which the manufacturer intends to make, shall be reported to the Controller and further type tests shall be carried out in accordance with the procedure laid down in this part.(ii)Production routine tests. - These shall consist of routine tests that would be conducted on each and every meter after completion at the manufacturer's works.(iii)Acceptance tests. - If the purchaser desires any of the production routine tests to be repeated at the time of purchase, then the tests may be repeated.(B)Sample for tests. -(i)Type tests. - Three meters of each size and type shall be sent alongwith six copies of the manufacturer's detailed specifications with figures for the loss of head and accuracy curves to the Controller.(ii)Acceptance tests. -(a)Lot. - In any consignment all the

water meters of the same type and same size and manufactured by the same firm under similar condition of production shall be grouped together to constitute a lot.(b)The number of water meters to be selected at random from each lot shall depend upon the size of the lot, and shall be in accordance with cols. (1) and (2) of Table 34; if required additional water meters as given in col. (3) of the Table 34 shall also be selected at random. All the meters so selected shall be subjected to the Acceptance tests.(c)Criteria for acceptance :-(i)The lot shall be accepted if the number of failures in any one or more acceptance tests out of the first sample No. 1 does not exceed Cl as given in Col. 5 of table 34. The lot shall be rejected if the number of failures is equal to or greater than C2 as given in Col. 6 of Table 34.(ii)If the number of failures is, between Cl and C2 further sample N2 meters as given in Col. 3 of Table 34 shall be subjected to acceptance tests. The lot shall be accepted if out of the total N1 + N2 water meters tested, the number of failures is less than C2 and the Lot shall be rejected if the number of failure out of the total N1 + N2 is equal to or greater than C2.Table 34-Sample Size and Criteria for Acceptance

Lot Size	N1	N2	(N1 + N2)	C1	C2
1	2	3	4	5	6
up to 50	3	6	9	0	2
51 to 100	7	14	21	0	3
101 to 200	10	20	30	0	3
201 to 300	13	26	39	0	5
301 to 500	20	40	60	1	5
501 to 800	25	50	75	1	6
801 and above	35	70	105	2	7

3. Type tests. - The type tests shall comprise the following.

(a)All the three meters shall be subjected to the hydrostatic test.(b)Construction. - -One of the three meters shall be dismantled completely to its component parts and checked for conformity with regard to dimensions and tolerances. A study of the detailed assembly shall also be made. The meter shall then be re-assembled and report shall be made on matters such as the case of assembly, absence of riveted or turned over parts, forced fitting and liability of parts to break during dismantling and assembly. The meter shall then be subjected to hydrostatic test.(c)Flow test - All the three meters shall then be subjected to the flow test measure the following:-(i)Lose of heat at nominal capacity and at continuous running capacity.(ii)Minimum starting flow, and(iii)Metering accuracy.Note. - Before the meter is subjected to the flow test it shall be run in and brought to normal condition by passing through them water at continuous running capacity for a period of two hours.(d)Life test (Wear Capacity Tests):-(i)The two unopened meters shall then be subjected to the life test by passing through them water at the continuous running capacity rating for a period of 60 x 24 hours, but the running period being not less than 8 hours in a day.(ii)After the meters have undergone the life test they shall again be subjected to flow test described under clause 3 (c) and they shall be deemed satisfactory if their performance after in the life test satisfies the requirements as given in clause 6 of Schedule VI-A.(iii)One of the meters which has undergone the life test (preferably the one that has shown greater deterioration in its performances under the flow test)

shall be dismantled completely and examined with a view to ensuring that there is no undue wear or distortion. Particular attention shall be paid during examination to the wear of the actuating unit comprising of van wheel or piston the impeller shaft and measuring chamber bearing gears and pinions, pivots and the gland packing.(iv)The part of one of the meters which was subjected to life test shall be broken and chemical analysis of the material shall be carried out to check conformity with the specifications reported by the manufacturer.(v)Result of the type tests shall be reported in the form given in Appendix-A.Appendix-AProforma for Type Tests on Water Meters

Name of manufacturer

Type designation

Nominal size

Kind of meter

Date of receipt

Date on which tests were started

Dimensions and tolerances

Case or re-assembly, maintenance and inspection.

Flow Test:-

Quality of water used in the test.

{|

Value according to Indian Standard	Meter 1 (reassembled)	Meter 2 (Unopened)	Meter 2 (Unopened)
Before life test	After life test	Before life test	After life test

|-| (a) Minimum flow at whichmeasurement commences.||-| (b) Loss of head at :-||-| (1) continuous running capacity.||-| (2) Nominal capacity.||-| (c) Accuracy at :-||-| Lower limit of flow :|-| Report of dismantling the metre after life test.|-| Life test:-|-| Commenced on|-| Finished on|-| Remarks.|-| Chemical analysis of material remarks.| Signature and designation of Testing Authority.|-| Date :|-| Seal of the testing authority.|}

4. Production routine test. - Production routine tests shall consists of -

(a)Hydrostatic test; and(b)Those conducted to determine the following requirements:-(i)Nominal capacity.(ii)Continuous running capacity.(iii)Minimum starting flow.(iv)Metering accuracy.

VII

(See Rule 12)Abbreviations of Denominations

1. Decimal Multiples and Sub-Multiples

Prefix	Value in terms of unit	Abbreviation
kilocentimillimicro	10000 01 (10-2)0 001 (10-3)0 000001 (10-6)	kcmu

2. Weights

Denomination	Value	Abbreviation
tonnequintalkilogramgrammilligramCarat	1000 kg100 kg1 kg1 g1 mg.200 mg.	t.q.kg.g.mg.C

3. Capacity

Denomination	Value	Abbreviation
Klolitrelitremillilitre	1000 l1 l1 ml	kl.l.ml.

4. Volume

Denomination	Value	Abbreviation
Cubic metreCubic centimetreCubic millimetre	m3cm3mm3	m3or cu m*cm3or cucm*mm3or cu mm *

* Both these abbreviations are current, but the first set should preferably be used.

5. Length

Denomination	Value	Abbreviation
kilometremetrecentimetremillimetremicron	1000 m1 m1 cm1 mm1/1000 mm or 10-3mm	kmmcmmm/u m

6. Area

Denomination	Value	Abbreviation
square kilometresquare metresquare centimetresquare millimetre	1,000,000 m210 m2cm2mm2	km2or sqkm*m2m or sqm*cm2or sqcm*mm2or sq mm*

Note. - No change shall be made in the abbreviation to indicate plurality.*Both these abbreviations are current, but the first set should preferably be used.

VIII

(See Rule 13)Certificate of VerificationSuperintendent of Weights and Measures.....Name of Inspector..... No. .....I hereby certify that I have this day verified and stamped/rejected the under mentioned weights, measures etc. belonging to..... Locality..... Trader No..... under the above Act.

Quantity	Denomination	Capacity	Weighing Instruments	Measuring Instruments	Verification fee	Carriage, conveyance adjusting charges etc.	
Weights	Measures	Class	Manufacturer	Type	Rs.	nP.	Rs. nP.

Repaired by.....(Signature)InspectorNext verification is due on.....

IX

(See Rule 15)Procedure to be Followed for Inspection, Verification and Stamping of Commercial Weights and Measures and Weighing and Measuring Instruments Used or for use in Transactions

Part I – Weights and Measures 1. Weights. - (a) All weights before stamping shall be verified for correctness against the corresponding working standard weight in the appropriate working standard balance subject to the permissible errors specified.

(b)Weights shall be stamped on the lead in the loading hole at the bottom of the weight provided that weights without an adjusting hole shall be stamped on the under-surface.(c)No weights used in gold and silver trade shall be stamped unless they are bullion weights.(d)No weights used in pearl and precious stone trade shall be marked unless they are carat weights.

2. Liquid measures of capacity. - (a) Liquid capacity measures shall be tested by filling the working standard measure with water and emptying the contents of the working standard into the measure under test.

(b)In testing a glass measure, the capacity of which is not defined by the brim, the level of the water shall be taken at the bottom of the meniscus.(c)Where the capacity is indicated by a line, the measure shall be tested to the bottom of the line.

3. Measures of length. - (a) Every measure of length shall be verified by comparison with the working standard.

(b)A link measure, or woven metallic or steel tape measure shall be tested when subjected to a tension or pull as follows:-

Link measures	... ... 8 g
Woven Metallic Tape measures	... ... 1 kg
Steel Tape Measure	... ... 5 kg

(c)The measure under test shall be supported throughout its whole length on a plane and even base.(d)Tape measures which are intended to be used in cases may be accepted for verification and stamping if submitted even without the case.(e)All non-flexible measures of length shall be stamped on the rivets provided in the measure.(f)In the case of tape measure, the stamp shall be placed on the metal strip at the beginning of the measure.(g)In the case of link measures, the stamp shall be placed either on a metal level or disc permanently attached to the measure or on the brass handle.

4. Volume measures. - (a) All measures of volume shall be examined with the object of discovering flaws or want of straightness and proper right angles at the corners.

(b)Every measure of volume shall be verified by comparing length of each side against the working standard of length at or near the normal temperature.(c)The limits of errors in the case of lengths of the sides of measures of volume shall be the same as prescribed for linear measures.(d)All measures of volume shall be stamped near the top edge or brass plate securely fastened to them.

Part II – Weighing and Measuring Instruments 1. General. - Weighing and Measuring instruments shall be tested to conform to the specifications given in Schedule VI.

2. Beam scales. - (a) On beam scales, the verification stamp shall be placed on the stud or plug on the beam, immediately under or over the central knife edge.

(b)The Inspector may stamp, the plug or stud in the same manner as he would stamp a weight.

3. Counter machines, spring balances, steelyards and automatic machines. - The verification stamp shall be placed upon the plug or stud provided in the instrument for that purpose.

4. Platform machines and weighbridges. - (a) Weighbridges, Platform Machines and such other weighing instruments as the Superintendent may specify in this behalf, shall be verified and stamped in situ in addition to any preliminary test in the manufacturer's or dealer's premises. Such a preliminary test shall be made at the request of the manufacturer or dealer.

(b)The verification stamp shall be placed upon the plug or stud provided for the purpose in the machine.

5. Crane Machines. - (a) Hydraulic Machine in which it is necessary in order to get a correct weight indication, to twist the load hook, shall not be stamped unless a prominent notice to this effect is permanently affixed to the machine.

(b)The verification stamp shall be placed upon the plug or stud provided for the purpose in the machine.[Schedule X] [Substituted by Amendment Notification No. 1 and then by [G.S.R. 16,

Notification No. F. 9(9)/Ind./II/82, dated 1.6.1985-Rajasthan Gazette, Extraordinary, Part 4-C(I), dated 1.6.1985, page 97.] = 1985 RSCS/II/P. 287/H. 132.](See Rule 18)Fees Payable for Verification and Stamping Commercial Weights and Measures and Weighing and Measuring Instruments Used in Transaction for Trade or Commerce

S. No.	Denomination	Fees per Piece
1	2	3
1.	Weights	
	(a) Bullion Weights	
	20 Kg.	6.00
	10 kg.	6.00
	5 Kg.	4.00
	2 kg.	4.00
	1 k.	4.00
	500 g.	1.50
	200 g.	1.50
	100 g.	1.50
	50 g.	1.50
	20 g.	1.50
	10 g.	1.50
	5 g.	1.50
	2 g.	1.50
	1 g.	1.50
	500 mg.	1.00
	200 mg.	1.00
	100 mg.	1.00
	50 mg.	1.00
	20 mg.	1.00
	10 mg.	1.00
	5 mg.	1.00
	2 mg.	1.00
	1 mg.	1.00
	(b) Brass Weights other than Bullion	
	1 kg.	2.00
	500 gm.	1.00
	200 gm.	1.00
	100 gm.	1.00

50 gm.	1.00
20 gm.	1.00
10 gm.	1.00
5 gm.	1.00
2 gm.	1.00
1 gm.	1.00
(c) Sheet Metal Weights	
500 mg.	1.00
200 mg.	1.00
100 mg.	1.00
50 mg.	1.00
20 mg.	1.00
10 mg.	1.00
5 mg.	1.00
2 mg.	1.00
1 mg.	1.00
(d) Cast Iron (Steel) Weights	
50 kg.	3.00
20 kg.	2.00
10 kg.	2.00
5 kg.	2.00
2 kg.	2.00
1 kg.	2.00
500 g.	1.00
200 g.	1.00
100 g.	1.00
50 g.	1.00
(e) Carat Weights	
500 g.	2.00
200 g.	2.00
100 g.	2.00
50 g.	2.00
20 g.	2.00
10 g.	2.00
5 g.	2.00
2 g.	2.00
1 g.	2.00

	50/100 c.	1.00
	20/100 c.	1.00
	10/100 c.	1.00
	5/100 c.	1.00
	2/100 c.	1.00
	1/100 c.	1.00
	0.5/100 c.	1.00
2.	Liquid capacity Measures (Including vehicle,tanks, dispensing measure and peg measure.)	
	50 l & Above	Rs. 10/- for the 1st 100 litres & Rs. 3/- forevery addl. 100 litres or a part thereof subject to max. of Rs.1000/-.
	20 l.	4.00
	10 l.	4.00
	5 l.	2.00
	2 l.	2.00
	1 l.	2.00
	500 ml.	1.00
	200 ml.	1.00
	100 ml.	1.00
	50 ml.	1.00
	20 ml.	1.00
	10 ml.	1.00
	5 ml.	1.00
	2 ml.	1.00
	1 ml.	1.00
	Peg measures	
	60 ml.	1.00
	30 ml.	1.00
3.	Length Measures	
	(a) Non-flexible Type	
	2 m.	2.00
	1 m.	2.00
	0.5 m.	2.00
	1 m & 0.5 m	4.00
	graduated at every cm.	
	(b) Wooven Metallic Tape	

	50 m.	6.00
	30 m.	6.00
	20 m.	5.00
	15 m.	5.00
	10 m.	5.00
	5 m.	2.00
	2 m.	2.00
	(c) Steel Tape	
	50 m.	10.00
	30 m.	10.00
	20 m.	6.00
	15 m.	6.00
	10 m.	4.00
	5 m.	4.00
	3 m.	4.00
	2 m.	2.00
	1 m.	2.00
	0.5 m.	2.00
	(d) Folding Scale	
	1 m.	2.00
	0.5 m.	1.00
	(e) Surveying Chains	
	30 m.	6.00
	20 m.	5.00
4.	Weighing Instruments (Other than Beam Scale ofClass C & Automatic Weighing Machines and TotalisingMachines.	
	400 t.	500.00
	300 t.	400.00
	200 t.	300.00
	150 t.	250.00
	100 t.	200.00
	80 t.	180.00
	60 t.	150.00
	50 t.	150.00
	40 t.	150.00
	30 t.	150.00

	25 t.	150.00
	20 t.	150.00
	15 t.	150.00
	10 t.	100.00
	5 t.	100.00
	3 t.	50.00
	2 t.	50.00
	1500 kg.	50.00
	1000 kg.	30.00
	500 kg.	30.00
	300 kg.	30.00
	250 kg.	30.00
	200 kg.	25.00
	150 kg.	25.00
	100 kg.	20.00
	50 kg.	15.00
	30 kg.	15.00
	20 kg.	10.00
	15 kg.	10.00
	10 kg.	6.00
	5 kg.	6.00
	3 kg.	6.00
	2 kg.	6.00
	1 kg.	6.00
	500 g. & below	4.00
	Person Weighing Machines Excluding Bath Room Scale	25.00
5.	Beam Scale (Classes C & D)	
	1000 kg.	30.00
	500 kg.	20.00
	300 kg.	20.00
	200 kg.	10.00
	100 kg.	10.00
	50 kg.	6.00
	20 kg.	6.00
	10 kg.	6.00
	5 kg.	4.00

	2 kg.	4.00
	1 kg.	4.00
	500 g. & below	2.00
6.	Automatic WeighingMachines :	
	Exceeding 10t.	200.00
	Not exceeding 10t. but exceeding 11.	150.00
	Not exceeding 1t. but exceeding 50kg.	100.00
	Not exceeding 50 kg. but exceeding 10 kg.	60.00
	Not exceeding 10 kg.	40.00
7.	Totalising Machine (each Machine)	300.00
8.	Volume Measuring Instruments	
	(a) Dispensing pumps (Each pump)	100.00
	(b) Other instruments exceeding 100 litres.	Rs. 180/- for the 1st 100 litres plus Rs. 75/- foreach addl. 100 l. or part thereof subject to maximum of 1500.00
	Not exceeding 100l. but exceeding 50 l.	100.00
	Not exceeding 50 l. but exceeding 20 l.	75.00
	Not exceeding 20 l.	50.00
9.	Linear Measuring Instruments	
	(a) Taxi and Auto Rickshaw Meters	10. [00] [Substituted by G.S.R. 72, Notification No. F. 9(9)/Ind./II/82, dated 7.2.1982-Rajasthan Gazette, Extraordinary, Part 4-C(I), dated 7.12.1983, page 255 - 1984 RSCS/II/P. 100/H. 53.]
	(b) Other Instrument Exceeding	1000 m. Rs. 15 per for the 1st 100 m. plus 5/- forevery addl. 100 m. or part thereof subject to maximum of Rs.100/-
	Not exceeding 1000 m. but exceeding 500 m.	20.00
	Not exceeding 500 m. but exceeding 100 m.	10.00
	Not exceeding 100 m.	6.00
10.	Clinical Thermometers	0.50
11.	Water Meters Domestic Type	10.00
12.	Electricity Meters	10.00

XI

(See Rule 25)Licensing FormsForm 'A'Office of the Superintendent of Weights and MeasuresLicence to manufacture/repair weights, measures, weighing instruments or measuring instrumentsLicence

No. ..... Year.....(1)The Superintendent of Weights and Measures.....hereby grants to..... (Name and address of party or parties) a licence to manufacture/repair the following:-(Include details of the types of weights, measures, weighing instruments or measuring, instruments that are licenced to the manufactured/repaired by the Party.)(2)The licence is valid for the party named above in respect of his workshop located at.....(3)This licence is valid from.....to.....(4)The manufacturer/repairer shall comply with the conditions noted below. If he fails to comply with any of these, his licence is liable to be cancelled.(5)The trade mark monogram being used by the manufacturer is as under -

... ...

... ...

... ...

Date.....Place.....SignatureSuperintendent of Weights & Measures.....(Seal)Note. - In the case of firm, its name with the names of all its members should be given in paragraph 1.Conditions of Licence

1. The person in whose favour this licence is issued shall-

(a)comply with all the relevant provisions of the Act and Rules for the time being in force;(b)not encourage of countenance any infringement of the provisions of the Act, or the Rules for the time being in force and shall report without delay to the Inspector any infringement that may come to his notice;(c)keep this licence exhibited in some conspicuous part of the premises to which it relates;(d)comply with any general or special directions that may be given by the Superintendent of Weights and Measures of.....;(e)surrender the licence if and when required to do so by the Superintendent or any other officer employed under the Act.

2. Every condition prescribed after the issue of this licence shall, if notified in the Official Gazette, be binding on the person/persons to whom the licence has been granted.

Form 'B'Office of the Superintendent of Weights and MeasuresLicence to a dealer in weights, measures, weighing instruments or measuring instrumentsLicence No.....year.....(1)The Superintendent of Weights and Measures.....hereby grants to ..... (Name and address of party or parties) a licence to deal in the following:-(Indicate details of the types of weights, measures, weighing or measuring instruments that are licenced to be dealt with by the party).(2)The licence is valid for the party named above in respect of his premises located at .....(3)This licence is valid from.....to.....(4)The dealer shall comply with the conditions noted below. If he fails to comply with any one of these, his licence is liable to be cancelled.Date.....Place .....SignatureSuperintendent of Weights and Measures.(Seal)Note. - In the case of firm, its name with the names of all its members should be given in the paragraph 1.Conditions of Licence

1. The person in whose favour this licence is issued shall:-

(a)comply with all the relevant provisions of the Act and Rules for the time being in force;(b)not encourage or countenance any infringement of the provisions of the Act or the Rules for the time being in force and shall report without delay to the Inspector any infringement that may come to his notice;(c)keep this licence exhibited in some conspicuous part of the premises to which it relates;(d)comply with any general or special directions that may be given by the Superintendent of Weights and Measures of.....;(e)surrender the licence if and when required to do by so the Superintendent or any other officer employed under the Act.

2. Every condition prescribed after the issue of this licence shall, if notified in the Official Gazette, be binding on the person/persons to whom the licence has been granted.

[Schedule XII] [Substituted by Amendment Notification No. 1 and then by [G.S.R. 16, Notification No. F. 9(9)/Ind./II/82, dated 1.6.1985-Rajasthan Gazette, Extraordinary, Part 4-C(I), dated 1.6.1985, page 97.] = 1985 RSCS/II/P. 287/H. 132.][See Rule 25(2)]Licensing and Renewal Fees for Manufacturer, Dealers and Repairers of Weights & Measures

1. Manufacturers 150.00
2. Dealers 100.00
3. Repairers 50.00

XIII

[See Rule 25]Register of Licenced Manufacturers/Repairers/Dealers in Weights/ Measures/Weighing Instruments/ Measuring InstrumentsOffice of the Superintendent of Weights and Measures.

Licence No.	Date of Issue	Name, parentage and residential address of themanufacturer/ repairer/ dealer	Place where workshop is situated	Articles to be manufactured/ repaired/ sold	Trade mark, monogram being used	Orders regarding cancellation of licence	Result of appeal	Remarks
1	2	3	4	5	6	7	8	9

Note. - (1) In the case of a firm, its name with the name of all its members shall be given in column no. 3.(2)Column no. 6 does not apply to repairers and dealers.