G.S.R 316(E) - In exercise of the powers conferred by sub-section (1) of Section 23 of the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989 (33 of 1989), the Central Government hereby makes the following rules, namely:-

## 1. Short title and commencement.-

1. These rules may be called the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Rules, 1995.
2. They shall come into force on the date of their publication in the Official Gazette.
3. Definitions: In these rules, unless the context otherwise requires:-
a. "Act" means the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989 (33 of 1989);
b. "dependent", with its grammatical variations and cognate expressions, includes wife, children, whether married or unmarried, dependent parents, widowed sister, widow and children of pre-deceased son of a victims of atrocity;
c. "identified area" means such area where State Government has reason to believe that atrocity may take place or there is an apprehension of reoccurrence of an offence under the Act or an area prone to atrocity;
d. "Non-Government Organisation" means a voluntary organisation engaged in the welfare activities relating to the scheduled castes and the scheduled tribes and registered under the Societies Registration Act, 1860 ( 21 of 1860) or under any law for the registration of documents or such organisation for the time being in force;
e. "Schedule" means the Schedule annexed to these rules;
f. "Section" means section of the Act;
g. "State Government", in relation to a Union Territory, means the Administrator or the Union Territory appointed by the President under Article 239 of the Constitution;
h. words and expressions used herein and not defined but defined in the Act shall have the meanings respectively assigned to them in the Act.

## 3. Precautionary and Preventive Measures.-

(1) With a view to prevent atrocities on the Scheduled Castes and the Scheduled Tribes, the State Government shall:-
i. identify the area where it has reason to believe that atrocity may take place or there is an apprehension of reoccurrence of an offence under the Act:
ii. order the District Magistrate and Superintendent of Police or any other officer to visit the identified area and review the law and order situation;
iii. if deem necessary, in the identified area cancel the arms licences of the persons, not being member of the Scheduled Castes or Scheduled Tribes, their near relations, servants or employees and family friends and get such arms deposited in the Government Armoury;
iv. seize all illegal fire arms and prohibit any illegal manufacture of fire arms:
v. with a view to ensure the safety of person and property, if deem necessary, provide arms licences to the members of the Scheduled Castes and the Scheduled Tribes;
vi. constitute a high power State-level committee, district and divisional level committees or such number of other committees as deem proper and necessary for assisting the Government in implementation of the provisions of the Act;
vii. set-up a vigilance and monitoring committee to suggest effective measures to implement the provisions of the Act;
viii. set-up Awareness Centres and organise Workshops in the identified area or at some other place to educate the persons belonging to the Scheduled Castes and the Scheduled Tribes about their rights and the protection available to them under the provisions of various Central and State enactments or rules, regulations and schemes framed thereunder;
ix. encourage Non-Government Organisations for establishing and maintaining Awareness Centres and organizing Workshops and provide them necessary financial and other sort of assistance;
x. deploy special police force in the identified area;
xi. by the end of every quarter, review the law and order situation, functioning of different committees, performance of Special Public Prosecutors, Investigating Officers and other Officers responsible for
implementing the provisions of the Act and the cases registered under the Act.

## 4. SUPERVISION OF PROSECUTI ON AND SUBMISSION OF REPORT:-

1. The State Government on the recommendation of the District Magistrate shall prepare for each District a panel of such number of eminent senior advocates who has been in practice for not less than seven years, as it may deem necessary for conducting cases in the Special Courts. Similarly, in consultation with the Director Prosecution/incharge of the prosecution, a panel of such number of Public Prosecutors as it may deem necessary for conducting cases in the Special Courts, shall also be specified. Both these panels shall be notified in the Official Gazette of the State and shall remain in force for a period of three years.
2. The District Magistrate and the Director of Prosecution/in-charge of the prosecution shall review at least twice in a calendar year, in the month of January and July, the performance of Special Public Prosecutors so specified or appointed and submit a report to the State Government.
3. If the State Government is satisfied or has reason to believe that a Special Public Prosecutor so appointed or specified has not conducted the case to the best of his ability and with due care and caution, his name may be, for reasons to be recorded in writing, denotified.
4. The District Magistrate and the officer-in-charge of the prosecution at the District level, shall review the position of cases registered under the Act and submit a monthly report on or before $20^{\text {th }}$ day of each subsequent month to the Director of Prosecution and the State Government. This report shall specify the actions taken/proposed to be taken in respect of investigation and prosecution of each case.
5. Notwithstanding anything contained in sub-rule (1) the District Magistrate or the Sub-Divisional Magistrate may, if deem necessary or if so desired by the victims of atrocity engage an eminent Senior Advocate for conducting cases in the Special Courts on such payment of fee as he may consider appropriate.
6. Payment of fee to the Special Public Prosecutor shall be fixed by the State Government on a scale higher than the other panel advocates in the State.

## 5. INFORMATION TO POLICE OFFICER IN-CHARGE OF A POLICE STATI ON:

1. Every information relating to the commission of an offence under the Act, if given orally to an officer in-charge of a police station shall be reduced to writing by him or under his direction, and be read over to the informant, and every such information, whether given in writing or reduced to writing as aforesaid, shall be signed by the persons giving it, and the substance thereof shall be entered in a book to be maintained by that police station.
2. A copy of the information as so recorded under sub-rule (1) above shall be given forthwith, free of cost, to the informant.
3. Any person aggrieved by a refusal on the part of an officer in-charge of a police station to record the information referred to in sub-rule (1) may send the substance of such information, in writing and by post, to the Superintendent of Police concerned who after investigation either by himself or by a police officer not below the rank of Deputy Superintendent of Police, shall make an order in writing to the officer in-charge of the concerned police station to enter the substance of that information to be entered in the book to be maintained by the police station.

## 6. Spot inspection by officers.-

1. Whenever the District Magistrate or the Sub-Divisional Magistrate or any other executive Magistrate or any police officer not below the rank of Deputy Superintendent of Police receives an information from any person or upon his own knowledge that an atrocity has been committed on the members of the Scheduled Castes or the Scheduled Tribes within his jurisdiction, he shall immediately himself visit the place of occurrence to assess the extent of atrocity, loss of life, loss and damage to the property and submit a report forthwith to the State Government.
2. The District Magistrate or the Sub-Divisional Magistrate or any other executive Magistrate and the Superintendent of Police/Deputy Superintendent of Police after inspecting the place or area shall on the spot:-
i. draw a list of victims, their family members and dependents entitled for relief;
ii. prepare a detailed report of the extent of atrocity loss and damage to the property of the victims;
iii. order for intensive police patrolling in the area;
iv. take effective and necessary steps to provide protection to the witnesses and other sympathisers of the victims;
v. provide immediate relief to the victims.

## 7. I NVESTI GATI NG OFFICER:

1. An offence committed under the Act shall be investigated by a police officer not below the rank of a Deputy Superintendent of Police. The investigating officer shall be appointed by the State Government / Director General of Police/Superintendent of Police after taking into account his past experience, sense of ability and justice to perceive the implications of the case and investigate it along with right lines within the shortest possible time.
2. The investigating officer so appointed under sub-rule (1) shall complete the investigation on top priority within thirty days and submit the report to the Superintendent of Police who in turn will immediately forward the report to the Director General of Police of the State Government.
3. The Home Secretary and the Social Welfare Secretary to the State Government, Director of Prosecution the officer in-charge of Prosecution and the Director General of Police shall review by the end of every quarter the position of all investigations done by the investigating officer.

## 8. SETTING UP OF THE SCHEDULED CASTES AND THE SCHEDULED TRI BES PROTECTI ON CELL:

(1) The State Government shall set up a Scheduled Castes and the Scheduled Tribes Protection Cell at the State head quarter under the charge of Director General of Police/Inspector General of Police. This Cell shall be responsible for:-
i. conducting survey of the identified area;
ii. maintaining public order and tranquility in the identified area;
iii. recommending to the State Government for deployment of special police force or establishment of special police post in the identified area;
iv. making investigations about the probable causes leading to an offence under the Act;
v. restoring the feeling of security amongst the members of the Scheduled Castes and the Scheduled Tribes;
vi. informing the nodal officer and special officer about the law and order situation in the identified area;
vii. making enquiries about the investigation and spot inspections conducted by various officers;
viii. making enquiries about the action taken by the Superintendent of Police in the cases where an officer in-charge of the police station has refused to enter an information in a book to be maintained by that police station under sub-rule (3) of rule 5;
ix. making enquiries about the wilful negligence by a public servant;
x. reviewing the position of cases registered under the Act; and
xi. submitting a monthly report on or before 20th day of each subsequent month to the State Government nodal officer about the action taken/proposed to be taken in respect of the above.

## 9. NOMI NATI ON OF NODAL OFFI CER:

The State Government shall nominate a nodal officer of the level of a Secretary to the State Government preferably belonging to the Scheduled Castes or the Scheduled Tribes, for coordinating the functioning of the District Magistrates and Superintendent of Police or other officers authorised by them investigating officers and other officers responsible for implementing the provisions of the Act. By the end of the every quarter, the nodal officer shall review:-
i. the reports received by the State Government under sub-rule (2) and (4) of rule 4 , rule 6 , clause (xi) of rule 8 ;
ii. the position of cases registered under the Act;
iii. Iaw and order situation in the identified area;
iv. various kinds of measures adopted for providing immediate relief in cash or kind or both to the victims of atrocity or his or her dependent;
v. adequacy of immediate facilities like rationing, clothing, shelter, legal aid, travelling allowance, daily allowance and transport facilities provided to the victims of atrocity or his/her dependents;
vi. performance of non-Governmental organisations, the Scheduled Castes and the Scheduled Tribes Protection Cell, various committees and the public servants responsible for implementing the provisions of the Act.

## 10. APPOI NTMENT OF A SPECI AL OFFI CER:

In the identified area a Special Officer not below the rank of a Additional District Magistrate shall be appointed to co-ordinate with the District magistrate, Superintendent of Police or other officers responsible for implementing the provisions of the Act, various committees and the Scheduled Castes and the Scheduled Tribes Protection Cell.

The Special Officer shall be responsible for:
i. providing immediate relief and other facilities to the victims of atrocity and initiate necessary measures to prevent or avoid re-occurrence of atrocity;
ii. setting up an awareness centre and organizing workshop in the identified area or at the district head quarters to educate the persons belonging to the Scheduled Castes and the Scheduled Tribes about their rights and the protection available to them under the provisions of various Central and State enactments or rules and schemes etc. framed therein:
iii. co-ordinating with the Non Governmental organisations and providing necessary facilities and financial and other type of assistance to nonGovernmental Organisation for maintaining centres or organising workshops;

## 11. TRAVELLING ALLOWANCE DAILY ALLOWANCE MAINTENANCE EXPENSES AND TRANSPORT FACILITIES TO THE VICTIM OF ATROCITY, HIS OR HER DEPENDENT AND WITNESSES:

1. Every victim of atrocity or his/her dependent and witnesses shall be paid to and fro rail fare by second class in express/mail/passenger train or actual bus or taxi fare from his/her place of residence or actual bus or taxi fare from his/her place of residence or place of stay to the place of investigation or hearing of trial of an offence under the Act.
2. The District Magistrate or the Sub-Divisional Magistrate or any other Executive Magistrate shall make necessary arrangements for providing transport facilities or reimbursement of full payment thereof to the victims of atrocity and witnesses for visiting the investigating officer,

Superintendent of Police /Deputy Superintendent of Police, District Magistrate or any other Executive Magistrate.
3. Every women witness, the victim of atrocity or her dependent being a woman or a minor, a person more than sixty years of age and person having 40 percent or more disability shall be entitled to be accompanied by an attendant of her/his choice. The attendant shall also be paid travelling and maintenance expenses as applicable to the witness or the victim of atrocity when called upon during hearing, investigation and trial of an offence under the Act.
4. The witness, the victims of atrocity or his/her dependent and the attendant shall be paid daily maintenance expenses for the days he/she is away from the place of his/her residence or stay during investigation, hearing and trial of an offence, at such rates but not less than the minimum wages, as may be fixed by the State Government for the agricultural labourers.
5. In addition to daily maintenance expenses the witness, the victim of atrocity (or his/her dependent) and the attendant shall also be paid diet expenses at such rates as may be fixed by the State Government from time to time.
6. The payment of travelling allowance, daily allowance, maintenance expenses and reimbursement of transport facilities shall be made immediately or not later than three days by the District Magistrate or the Sub-Divisional Magistrate or any other Executive Magistrate to the victims their dependents/attendant and witnesses for the days they visit the investigating officer or in-charge police station or hospital authorities or Superintendent of Police/Deputy Superintendent of Police or District Magistrate or any other officer concerned or the Special Court.
7. When an offence has been committed under Section 3 of the Act, the District Magistrate or the Sub-Divisional Magistrate or any other Executive Magistrate shall reimburse the payment of medicines, special medical consultation, blood transfusion, replacement of essential clothing, meals and fruits provided to the victim(s) of atrocity.

## 12. MEASURES TO BE TAKEN BY THE DISTRICT ADMI NISTRATION

1. The District Magistrate and the Superintendent of Police shall visit the place or area where the atrocity has been committed to assess the loss of
life and damage to the property and draw a list of victim their family members and dependents entitled for relief.
2. Superintendent of Police shall ensure that the First Information Report is registered in the book of the concerned police station and effective measures for apprehending the accused are taken.
3. The Superintendent of Police, after spot inspection, shall immediately appoint an investigation officer and deploy such police force in the area and take such other preventive measures as be may deem proper and necessary.
4. The District Magistrate or the Sub Divisional Magistrate or any other Executive Magistrate shall make arrangements for providing immediate relief in cash or in kind or both to the victims of atrocity, their family members and dependents according to the scale as in the schedule annexed to these Rules (Annexure-I read with Annexure-II). Such immediate relief shall also include food, water, clothing, shelter, medical aid, transport facilities and other essential items necessary for human beings.
5. The relief provided to the victim of the atrocity or his/her dependent under sub-rule (4) in respect of death, or injury to, or damage to property shall be in addition to any other right to claim compensation in respect there of under any other law for the time being in force.
6. The relief and rehabilitation facilities mentioned in sub-rule (4) above shall be provided by the District Magistrate or the Sub-Divisional Magistrate or any other Executive Magistrate in accordance with the scales provided in the Schedule annexed to these rules.
7. A report of the relief and rehabilitation facilities provided to the victims shall also be forwarded to the Special Court by the District Magistrate or the Sub-Divisional Magistrate or the Executive Magistrate or Superintendent of Police. In case the Special Court is satisfied that the payment of relief was not made to the victim or his/her dependent in time or the amount of relief or compensation was not sufficient or only a part of payment of relief or compensation was made, it may order for making in full or part the payment of relief or any other kind of assistance.

## 13. SELECTION OF OFFICERS AND OTHER STAFF MEMBERS FOR COMPLETI NG THE WORK RELATI NG TO ATROCI TY:

1. The State Government shall ensure that the administrative officers and other staff members to be appointed in an area prone to atrocity shall have the right aptitude and understanding of the problems of the Scheduled Castes and the Scheduled Tribes.
2. It shall also be ensured by the State Government that person from the Scheduled Castes and the Scheduled Tribes are adequately represented in the administration and in the police force at all levels, particularly at the level of police posts and police station.

## 14. SPECI FIC RESPONSIBI LITY OF THE STATE GOVERNMENT:

The State Government shall make necessary provisions in its annual budget for providing relief and rehabilitation facilities to the victims of atrocity. It shall review at least twice in a calendar year, in the month of January and July the performance of the Special Public Prosecutor specified or appointed under Section 15 of the Act, various reports received, investigation made and preventive steps taken by the District Magistrate, Sub-Divisional Magistrate and Superintendent of Police, relief and rehabilitation facilities provided to the victims and the reports in respect of lapses on behalf of the concerned officers.

## 15. CONTI NGENCY PLAN BY THE STATE GOVERNMENT:

(1) The State Government shall prepare a model contingency plan for implementing the provisions of the Act and notify the same in the Official Gazette of the State Government. It should specify the role and responsibility of various departments and their officers at different levels, the role and responsibility of Rural/Urban Local Bodies and Non-Government Organisations. Inter alia this plan shall contain a package of relief measures including the following.
a. scheme to provide immediate relief in cash or in kind or both;
b. allotment of agricultural land and house sites;
c. the rehabilitation packages;
d. (d) scheme for employment in Government or Government undertaking to the dependant or one of the family members of the victim;
e. pension scheme for widows, dependant children of the deceased, handicapped or old age victims of atrocity;
f. mandatory compensation for the victims;
g. scheme for strengthening the socio-economic condition of the victim;
h. provisions for providing brick/stone masonary house to the victims;
i. such other elements as health care, supply of essential commodities, electrification, adequate drinking water facility, burial /cremation ground and link roads to the Scheduled Castes and the Scheduled Tribes habitats.
(2) The State Government shall forward a copy of the contingency plan or a summary thereof and copy of the scheme, as soon as may be, to the Central Government in the Ministry of Welfare and to all the District Magistrates, SubDivisional Magistrates, Inspector General of Police and Superintendents of Police.

## 16. CONSTITUTION OF STATE-LEVEL VIGILANCE AND MONITORING COMMI TTEE:

(1) The State Government shall constitute a high power vigilance and monitoring committee of not more than 25 members consisting of the following:
i. Chief Minister/Administrator - Chairman (in case of a State under President's Rule Governor - Chairman).
ii. Home Minister, Finance Minister and Welfare Minister - Members (in case of a State under the President's Rule Advisors - Members).
iii. All elected Members of Parliament and State Legislative Assembly and Legislative Council from the State belonging to the Scheduled Castes and the Scheduled Tribes - Members.
iv. Chief Secretary, the Home Secretary, the Director General of Police, Director/Deputy Director National Commission for the Scheduled Castes and the Scheduled Tribes -Members.
v. The Secretary in-charge to the welfare and development of the Scheduled Castes and the Scheduled Tribes - convener.
(2) The high power vigilance and monitoring committee shall meet at least twice in a calendar year, in the month of January and July to review the implementation of the provisions of the Act, relief and rehabilitation facilities provided to the victims and other matters connected therewith, prosecution of
cases under the Act, role of different officers/agencies responsible for implementing the provisions of the Act and various reports received by the State Government.

## 17. CONSTITUTION OF DISTRICT LEVEL VIGI LANCE AND MONITORING COMMI TTEE:

1. In each district within the State, the District Magistrate shall set up a vigilance and monitoring committee in his district to review the implementation of the provisions of the Act, relief and rehabilitation facilities provided to the victims and other matters connected therewith, prosecution of cases under the Act, role of different officers/agencies responsible for implementing the provisions of the Act and various reports received by the District Administration.
2. The district level vigilance and monitoring committee shall consist of the elected Members of Parliament and State Legislative Assembly and Legislative Council, Superintendent of Police, three group 'A' officers/Gazetted officers of the State Government belonging to the Scheduled Castes and the Scheduled Tribes, not more than 5 non official members belonging to the Scheduled Castes and the Scheduled Tribes and not more than 3 members from the categories other than the Scheduled Castes and the Scheduled Tribes having association with NonGovernment Organisations. The District Magistrate and Distt. Social Welfare Officer shall be chairman and Member Secretary respectively.
3. The district level committee shall meet at least once in three months.

## 18. MATERI AL FOR ANNUAL REPORT:

The State Government shall every year before the 31st March. forwarded the report to the Central Government about the measures taken for implementing provisions of the Act and various schemes/plans framed by it during the previous calendar year.
[File No.11012/1/89-PCR(Desk)]
GANGA DAS, Jt. Secy.

# Ministry of Social J ustice \& Empowerment NOTI FICATI ON 

## New Delhi, dated 23.12. 2011

G.S.R 896(E).-- In exercise of the powers conferred by sub-section (1) of Section 23 of the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989 (33 of 1989), the Central Government hereby makes the following rules to amend the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Rules, 1995, namely:-

1. (1) These rules may be called the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities)(Amendment) Rules, 2011
(2) They shall come into force on the date of their publication in the Official Gazette.
2. In the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Rules, 1995 (hereinafter referred to as the principal rules), in clause (iv) of sub-rule (1) of rule 16, for the words and figure "Director/Deputy Director, National Commission for the Scheduled Castes and the Scheduled Tribes", the words, "representatives of the National Commission for Scheduled Castes and the National Commission for Scheduled Tribes" shall be substituted.
3. In the principal rules, for the schedule and Annexure-I, the following shall be substituted, namely:-

## "SCHEDULE

## ANNEXURE-I

(see rule 12(4))
NORMS FOR RELEI F. AMOUNT

| SI. <br> No. | Name of the Offences | Minimum amount of Relief |
| :---: | :---: | :---: |
| (1) | (2) | (3) |
| 1. | Drink or eat inedible or obnoxious substance [Section 3 (1) (i)] | Rs. 60,000/- or more depending upon the nature and gravity of the offence to each victim and also commensurate with the indignity, insult, injury and defamation suffered by the victim. <br> Payment to be made as follows: <br> I. $25 \%$ when the charge sheet is sent to the Court <br> II. $75 \%$ when accused are convicted by the lower court. |
| 2. | Causing injury insult or annoyance [Section 3(1)(ii)] |  |
| 3. | Derogatory act [Sec. 3(1) (iii)] |  |
| 4. | Wrongful occupation or cultivation of land, etc. [Section 3(1)(iv)] | At least Rs.60,000/- or more depending upon the nature and gravity of the offence. The land/premises/water supply shall be restored where necessary at Government cost, Full payment to be made when charge-sheet is sent to the court. |
| 5. | Relating to land, premises and water [Section 3(1)(v)] |  |
| 6. | Begar or forced or bonded labour [Section 3(1) (vi)] | Atleast Rs.60,000/- to each victim, payment of $25 \%$ at FIR stage and $75 \%$ on conviction in the lower court. |
| 7. | Relating to right to franchise \{Section 3(1)(vii) \} | Upto Rs.50,000/ - to each victim depending upon the nature and gravity of the offence. |
| 8. | False, malicious or vexatious legal proceedings [Section 3(1) (viii)] | Rs.60,000/- or reimbursement of actual legal expenses and damages or whichever is less after conclusion of the trial of the accused. |
| 9. | False and frivolous information [Section 3 (1)(ix)] |  |


| 10. | Insult, intimidation and humiliation <br> [Section 3(1)(x)] | Upto Rs.60,000/- to each victim depending <br> upon the nature of the offence. Payment of <br> $25 \%$ when charge-sheet is sent to the court <br> and rest on conviction. |
| :--- | :--- | :--- |
| 11. | Outraging the modesty of a woman <br> [Section 3 (1) (xi)] | Rs.1,20,000/- to each victim of the offence <br> $.50 \%$ of the amount may be paid after <br> medical examination and remaining 50\% at <br> the conclusion of the trial. |
| 12. | Sexual exploitation of a woman <br> [Section 3(1)(xii)] | Fouling of water [Section 3 (1) (xiii)] |
| 13. | Upto Rs. 2,50,000/- or full cost of restoration <br> of normal facility, including cleaning when the <br> water is fouled. Payment may be made at the <br> stage as deemed fit by District <br> Administration. |  |
| 14. | Denial of customary rights of passage <br> [Section 3(1) (xiv)] | Upto Rs.2,50,000/- or full cost of restoration <br> of right of passage and full compensation of <br> the loss suffered, if any. Payment of 50\% <br> when charge sheet is sent to the court and |
| $50 \%$ on conviction in lower-court. |  |  |


|  | as contained in the Ministry of Social Justice \& Empowerment, G.O.I. Notification No. 154, dated 01.6.2001, as amended from time to time. A copy of the Notification is at Annexure - II to the Schedule. <br> (a) $100 \%$ incapacitation <br> (i) Non- earning Member of a family <br> (ii) Earning Member of a family <br> (b) Where incapacitation is less than 100\% | At least Rs.2,50,000/- to each victim of offence. $50 \%$ on FIR and $25 \%$ at charge sheet and $25 \%$ on conviction by the lower court. <br> At least Rs.5,00,000/- to each victim of offence, $50 \%$ to be paid on FIR/Medical examination stage, $25 \%$ when charge-sheet sent to court and $25 \%$ at conviction in lower court. <br> The rates as laid down in a(i) and (ii) above shall be reduced in the same proportion, the stages of payments also being the same. However, not less than Rs.40,000/- to non earning member and not less than Rs. $80,000 /$ - to an earning member of a family. |
| :---: | :---: | :---: |
| 20. | Murder / Death <br> (a) Non-earning Member of a family <br> (b) Earning Member of a family | At least Rs.2,50,000/- to each case. Payment of $75 \%$ after postmortem and $25 \%$ on conviction by the lower court. <br> At least Rs. 5,00,000/- to each case. Payment of $75 \%$ after postmortem and $25 \%$ on conviction by the lower Court. |
| 21. | Victim of murder, death, massacre, rape mass rape and gang rape, permanent incapacitation and dacoity | In addition to relief amounts paid under above items, relief may be arranged within three months of date of atrocity as follows:- <br> (i) Pension to each widow and/or other dependents of deceased SC and ST @ Rs. 3,000/- per month, or Employment to one member of the family of the deceased, or provision of agricultural land, an house, if necessary by outright purchase. |


|  |  | (ii) Full cost of the education and <br> maintenance of the children of the <br> victims. Children may be admitted to <br> Ashram Schools/ residential schools. |
| :--- | :--- | :--- |
| (iii) Provision of utensils, rice, wheat, dals, |  |  |
| pulses, etc. for a period of three |  |  |
| month. |  |  |

4. In the principal rules, for the existing Annexure-II, the following Annexure-II, shall be substituted, namely:-

## "Annexure-II

(See rules 12(4) \& 19)

## MI NI STRY OF SOCI AL J USTI CE AND EMPOWERMENT NOTI FICATI ON New Delhi, the 1st J une, 2001

## Subject :-Guidelines for evaluation of various disabilities and procedure for certification.

No. 16-18/97-NI. I.-In order to review the guidelines for evaluation of various disabilities and procedure for certification as given in the Ministry of Welfare's O.M. No. 4-2/83-HW.-III, dated the 6th August, 1986 and to recommend appropriate modifications/alterations keeping in view the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995, Government of India in Ministry of Social Justice and Empowerment, vide Order No. 16-18/97-NI. I, dated 28-8-1998, set up four committees under the Chairmanships of Director General of Health Services-one each in the area of mental retardation, Locomotor/ Orthopaedic disability, Visual disability and Speech \& Hearing disability. Subsequently, another Committee was also constituted on 21-7-1999 for evaluation, assessment of multiple disabilities and categorization and extent of disability and procedures for certification.
2. After having considered the reports of these committees the undersigned is directed to convey the approval of the President to notify the guidelines for evaluation of following disabilities and procedure for certification:-

1. Visual impairment
2. Locomotor / Orthopaedic disability
3. Speech \& hearing disability
4. Mental retardation
5. Multiple Disabilities.

Copy of the Report is enclosed herewith as Annexure.
3. The minimum degree of disability should be $40 \%$ in order to be eligible for any concessions/benefits.
4. According to the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Rules, 1996 notified on 31.12 .1996 by the Central Government in exercise of the powers conferred by sub-section (1) and (2) of section 73 of the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 (1of 1996), authorities to give disability Certificate will be a Medical Board duly constituted by the Central and the State Government. The State government may constitute a Medical Board consisting of at least three members out of which at least one shall be a specialist in the particular field for assessing locomotor/Visual including low vision/hearing and speech disability, mental retardation and leprosy cured, as the case may be.
5. Specified test as indicated in Annexure should be conducted by the medical board and recorded before a certificate is given.
6. The certificate would be valid for a period of five years for those whose disability is temporary. For those who acquire permanent disability, the validity can be shown as 'Permanent'.

7 The State Governments/UT Administrations may constitute the medical boards indicated in para 4 above immediately, if not done so far.

8 The Director General of Health Services Ministry of Health and Family Welfare will be the final authority, should there arise any Controversy/doubt regarding the interpretation of the definitions/classifications/evaluations tests etc.

## GAURI CHATTERJI, Jt. Secy.


#### Abstract

ANNEXURE Reports of the Committee set UP to review the guidelines for evaluation of various disabilities and procedure for certification and to recommend appropriate modifications/alternations keeping in view the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act 1995.


In order to review the definitions of various types of disability, the guidelines for evaluation of various disabilities and procedure for certification as given in the Ministry of Welfare's O.M.No.4-2/83-HW.III, dated the 6th August, 1986 and to recommend appropriate modifications/alterations keeping in view the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995, five Sub-Committees were constituted in the areas of Mental Retardation, Orthopedic/Locomotor Disability, Visual Disability, Speech \& Hearing and Multiple Disabilities, under the Chairmanship of Dr S.P.Agarwal, Director General of Health Services, vide the Ministry of Social Justice \& Empowerment's Order No.16-18/97-NI.I, dated 28.8.1998 and 21.7.1999. A copy each of the Order is at Appendix.I .
2. These Sub-Committees, after detailed deliberations, have submitted their reports. List ofparticipants of the meetings taken by the Committee is at Appendix.II. The reports of the Committees set up to review the guidelines for evaluation of various disabilities and procedure for certification on each of the area of the disabilities are given in Appendix.III.

## No 16-18/ 97-NI .I <br> Government of I ndia Ministry of Social J ustice \& Empowerment

## New Delhi Dated 28 ${ }^{\text {th }}$ August 1998.

## ORDER

In order to review the definitions of various types of disability, the guidelines for evaluation of various disabilities and procedure for certification as given in the Ministry of Welfare's O.M.No.4-2/83-HW.III, dated the 6th August. 1986 and to recommend appropriate modifications/alterations keeping in view the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995, the following. Sub-Committees are hereby constituted in the areas of Mental Retardation, Orthopedic/Locomotor Disability, Visual Disability and Speech \& Hearing disability:

## I Sub-Committee on Mental Retardation:

1. Dr. S P Aggarwal,

Chairperson
Director General
Health Services
Ministry of Health and Family Welfare,
Nirman Bhawan
New Delhi-11

| 2. Dr.R.Srinivastava Murthy, | Co-Chairperson |
| :--- | :--- |
| Prof.\&Head. |  |
| Deptt. of Psychiatry, |  |
| NI MHANS. |  |
| Bangalore-22. |  |
| 3. Dr. G G.Prabhu, | Member |
| Workchil Court |  |
| Mysore. |  |

4. Dr. (Mrs.)NeenaVohra, Member

Consultant \& HOD,
Psychiatry,
Dr.R.M.L.Hospital, New Delhi.
5. Dr Anand Pandit, Member Hony. Prof \& Director KEM Hospital Pune-11.
6. Dr. D.K Menon, Member-Secretary Director
National Instt. for Mentally Handicapped Secunderabad

## II. Sub-Committee on Locomotor / Orthopaedic Disability:

1. Dr. S P Aggarwal,

Chairperson
DGHS.
Ministry of Health Nirman Bhavan New Delhi-11
2. Dr. K.K. Singh.

Co-Chairperson

Prof. \& Head.
AHMS. New Delhi.
3. Dr. Balu Sankaran,

Member
FX-DOHS FX-Chairman AL1MCO. New Delhi
4. Dr. Suranjan Bhattacharji,

Member
HOD. Deptt. of PMR
CMC Hospital. Vellore.
5. Dr. R K Srivastava

Medical Superintendent.
Safdarjung Hospital New Delhi.
6. Dr. B P Yadav

Member
Ex-Chairman
Rehab Council of India
New Delhi
7. Dr. B R Avadhani

Member - Secretary
Director IPH
New Delhi

## III. Sub-Committee on visual Disability.

I. Dr. S P Aggarwal Chairperson
D.G.H.S.

Ministry of Health
New Delhi
2. Dr.V.K.Dada.

Head. Dr R.P.Centre.
AllMS. New Delhi.
3. Dr.Hari Mohan.

Director.
Mohan Eve Institute.
Rajender Nagar.
New Delhi
4. Shri Lal Advani

Member
Consultant
Saket. New Delhi
5. Dr. Bhushabn Punani

Member
Blind Men's Association
Ahmedabad
6. Shri S A Datrange

Member
National Association for the Blind Mumbai.
7. Dr. S R Shukla

Member-Secretary
Director
NIVH.
Dehradun.

## IV. Sub- Committee on Speech \& Hearing Disability:

1. Dr. S P Aggarwal
D. GH.S. Ministry of Health.

New Delhi
2. Dr.S.K.Kacker.

Ex-Director.
AllMS. New Delhi.
3 Dr S Nikam
Director AllMS, Mysore.
4. Dr. J.M.Hans.

Sr.ENT Surgeon. Dr. RML Hospital. New Delhi
5. Dr. M Raghunath

Professor in Audiology
PGIMER. Chandigarh
6. Dr. (MRS) RekhaRoy

Director
AYJ NIHH Mumbai-400050.
2. The terms of reference for the Committees are as follows:
a) Providing uniform definitions and categorisation of degree and extent of the disability.
b) Recommending authorities competent to give certification.
c) The Committees will submit their report in two months.
3. TA/DA to the members of the Committee will be borne by the concerned Institute whose Director is included as Member-Secretary of the Sub- Committee.
(Gauri Chatterjee) J oint Secretary to Govt. of India
Tele No. 3381641
To.
All Members of the Committees.
Copy for information to :
PSs to Secretary (SJ\&E)/AS(SJ \&E), J S(DD)

No. 16-18-97-NI.I<br>Government of India<br>Ministry of Social J ustice \& Empowerment

Shastri Bhavan,
New Delhi, Dated $21^{\text {st }}$ July, 1999

## ORDER

It has been decided to constitute a Sub-Committee in the sector of Multiple Disability, in order to have standard definitions and guidelines for evaluation and procedure for certification, arid to make appropriate recommendations. keeping in view the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995. Accordingly, a SubCommittee is hereby constituted in the sector of multiple disability, with the following Members:

1. Dr. SP Aggarwal, Chairman
Director General of Health Services
Ministry of Health \& Family Welfare Nirman Bhavan, New Delhi.
2. Smt. Aloka Guha.

Member
Director,
Spastics Society of Tamil Nadu,
Opp.TTTI, Taramani Road,
Ohennai-13
3. Dr. H.C. Goyal, Member

Consultant,
Rehabilitation Department Safdarjung Hospital, New Delhi.
4. Dr. Uma Tuli, Member General Secretary
Amar Jyoti Charitable Trust, N-192,Greater Kailash -1 New Delhi - 110048.
5. Dr DK. Menon,

Member- Secretary
Director,
National Institute for the Mentally Handicapped,
Manovikasnagar, Secunderabad-500 009,
3. The terms of reference for the Committee are as follows:-
(a) Providing uniform definitions and categorisation of degree and extent of the disabilities.
(b) Recommending authorities competent to give certification.
(c) The Committee will submit its report in two months.
4. TA/DA to the members of the Committee will be borne by the National Institute for the Mentally Handicapped, Secunderabad.
(Gauri Chatterji)
Joint Secretary to the Government of India.
Tele No. 3381641
To:
All Members of the Committees
Copy for information to-:
PSs to Secretary (SJ\&E)/ AS (SJ \&E)/ JS(DD).

List of participants of the meeting held on 29.2.2000 under the Chairmanship of Dr. S.P.Agarwal. Director General of Health Services with the Members of Subcommittee constituted vide Order No.16-18/96-NI.I (PWD). dated 28.8.1998 of Ministry of Social Justice \& Empowerment.

1. Dr. R.K. Srivastava. Addl.Director General of Health Services.
2. Dr. V.K. Dada, Head, R.P. Centre, AllMS, New Delhi.
3. Dr. R.Srinivasa Murthy, Prof. \& HOD, Deptt. of Psychiatry,

NIMHANS, Bangalore.
4. Dr. O.K. Menon, Director, NIMH, Hyderabad.
5. Dr. Rekha Roy, Director, NIHH, Mumbai.

6 Dr. S.R. Shukla, Director, NIVH, Dehradun.
7. Dr. Dharmendra Kumar, Officiating Director, NIRTAR, Cuttack.
8. Dr. A.S. Bais, Deputy Director General (Medical).
9. Dr. S.Chug, Consultant in Medicine \& Chairman, Medical Board, Dr. RML Hospital.
10. Dr. LS. Chauhan, ADG (IH),
11. Dr. A.N. Sinha, CMO (HA).

List of participants of the meeting held on 17.8.2000 under the Chairmanship of Dr. S.P.Agarwal. Director General of Health Services with the Members of Sub-Committee constituted vide Order No.16-18/96-NI.I (PWD). dated 21.7.1999 of Ministry of Social Justice \& Empowerment.

1. Dr. R.K. Srivastava, Addl. Director General of Health Services
2. Dr. H.C. Goyal, Consultant \& HOD, Rehabilitation, S.J.Hospital. New Delhi.
3. Dr. O.K. Menon, Director, National Institute for the Mentally Handicapped, Secunderabad.
4. Smt. Aloka Guha, Director, Spastic Society of Tamil Nadu, Opp. TTTI, Taramani Road, Chennai-13.
5. Dr. A.N. Sinha, CMO (HA).

## A. MENTAL RETARDATI ON

1. Definition:- Mental retardation is a condition of arrested or incomplete development of the mind, which is especially characterised by impairment of skills manifested during the development period which contribute to the over all level of intelligence, i.e., cognitive, language, motor and social abilities.

## 2. Categories of Mental Retardation:-

2.1 Mild Mental Retardation:- The range of 50 to 69 (standardised IQ test) is indicative of mild retardation. Understanding and use of language tend to be delayed to a varying degree and executive speech problems that interfere with the development of independence may persist into adult life.
2.2 Moderate Mental Retardation: - The IQ is in the range of 35 to 49. Discrepant profiles of abilities are common in this group with some individuals achieving higher levels in visuo-spatial skills than in tasks dependent on language while others are markedly clumsy by enjoy social interaction and simple conversation. The level of development of language in variable: some of those affected can take part in simple conversations while others have only enough language to communicate their basic needs.
2.3 Severe Mental Retardation:- The IQ is usually in the range of 20 to 34 . In this category, most of the people suffer from a marked degree of motor impairment or other associated deficits indicating the presence of clinically significant damage to or mal-development of the central nervous
system.
2.4 Profound Mental Retardation: - The IQ in this category estimated to be under 20. The ability to understand or comply with requests or instructions are severally limited. Most of such individuals are immobile or severally restricted in mobility, incontinent and capable at most of only very rudimentary forms of non-verbal communication. They posses little or no ability to care for their own basic needs and require constant help and supervision,

## 3. Process of Certifications:-

3.1 A disability certificate shall be issued by a Medical Board consisting of three members duly constituted by the Central/State Government. At least, one shall be a Specialist in the area of mental retardation, namely. Psychiatrist, Paediatrician and clinical Psychologist.

32 The examination process will consist of three components, namely, clinical assessment, assessment, of adaptive behaviour and intellectual functioning.

## B. VI SUAL DI SABI LITY

1. Definition: - Blindness refers to a condition where a persons suffers from any of the condition, namely,
i) total absence of sight; or
ii) visual acuity not exceeding $6 / 60$ or $20 / 200$ (snellen) in the better eye with best correcting lenses; or
iii) limitation of field of vision subtending an angle of 20 degree or worse;
2. Low Vision: - Persons with low vision means a person a with impairment of vision of less than $6 / 18$ to $6 / 60$ with best correction in the better eye or impairment of field in any one of the following categories:-
a) reduction of fields less than 50 degrees
b) Heminaopia with macular involvement
c) Altitudinal defect involving lower fields.

Categories of Visual Disability
All with correction

| Category | Better eye | Worse eye | \% age impairment |
| :---: | :---: | :---: | :---: |
| Category 0 | $6 / 9-6 / 18$ | $6 / 24$ to $6 / 36$ | $20 \%$ |
| Category I | $6 / 18-6 / 36$ | $6 / 60$ to Nil | $40 \%$ |
| Category II | $6 / 40-4 / 60$ or field <br> of vision $10^{\circ}-20^{\circ}$ | $3 / 60$ to Nil | $75 \%$ |
| Category III | $3 / 60$ to $1 / 60$ or field <br> of vision $10^{\circ}$ | F.C. at $1 \mathrm{ft}$. to Nil | $100 \%$ |
| Category IV | F. C. at $1 \mathrm{ft}$. to Nil or <br> field of vision $10^{\circ}$ | F.C. at $1 \mathrm{ft}$. to Nil | $100 \%$ |
| One eyed persons | $6 / 6$ | F. C. at $1 \mathrm{ft}$. to Nil <br> or field of vision $10^{\circ}$ | $30 \%$ |

Note: F.C. means Finger Count

## 4. Process of Certification

A disability certificate shall be issued by a Medical Board duly constituted by the Central/State Government having, at least three members. Out of which, at least one member shall be a specialist in ophthalmology.

## B. SPEECH \& HEARI NG DI SABI LI TY

1. Definition of Hearing: - A persons with hearing impairment having difficulty of various degrees in hearing sounds is an impaired person.
2. : Categories of Hearing Impairment.

| Category | Type of <br> Impairment | D B Level | Speech <br> discrimination |
| :---: | :---: | :---: | :---: |
| I | Mild hearing <br> Impairment | DB 26 to 40 <br> dB in better ear | 80 to $100 \%$ in <br> better ear |
| II (a) | Moderate <br> hearing | 41 to 60 dB in <br> better ear | 50 to $80 \%$ in <br> better ear |
| II (b) | Serve hearing <br> Impairment | 61 to 70 dB <br> hearing <br> Impairment <br> in better ear | 40 to $50 \%$ in <br> better ear |


| III | a) Profound <br> hearing <br> Impairment | 71 to 90 dB | Less than $40 \%$ <br> in better ear |
| :---: | :---: | :---: | :---: |
| 91 dB and <br> above/in <br> better ear/to <br> hearing | Very Poor <br> discrimination | $100 \%$ to $100 \%$ |  |

i) Pure tone average of learning in 500 , and $2000 \mathrm{HZ}, 4000 \mathrm{HZ}$ by conduction (AC and BC ) should be taken as basis for consideration as per the test recommendations.
ii) When there is only as island of hearing present in one or two frequencies in better ear, it should be considered as total loss of hearing.
iii) Wherever there is no response (NR) at any of the 4 frequencies ( $500,1000,2000$ and 4000 HZ ), it should be considered as equivalent to 100 dB loss for the purpose of classification of disability and in arriving at the average.

## 3. Process of Certification

A disability certificate shall be issued by a Medical Board duly constituted by the Central and the State Government. Out of which, at least, one member shall be a specialist in the field of ENT.

## C. LOCOMOTOR DISABI LITY

1 Definition .-
i) Impairment: An impairment in any loss or abnormality of psychological, physiological or anatomical structure or function in a human being.
ii) Functional Limitations: Impairment may cause functional limitations which are partial or total inability to perform those activities, necessary for motor, sensory or mental function within the range or manner of which a human being is normally capable.
iii) Disability: A disability, is any restriction or lack. ( resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being. iv) Locomotor Disability: Locomotor disability is defined as a persons inability to execute distinctive activities associated with moving both himself and objects, from place to place and such inability resulting from affliction of musculoskeletal and/or nervous system.
2. Categories of Locomotor Disability

The categories of locomotor disabilities are enclosed at Annexure-A.

## 3. Process of Certification

A disability certificate shall be issued by a Medical Board of three members duly constituted by the Central and the State Government, out of which, at least, one member shall be a specialist from either the field of Physical Medicine and Rehabilitation or Orthopaedics.

Two specimen copies of the disability certificate for mental retardation and others (visual disability, speech and hearing disability and locomotor disability) are enclosed at Annexure-B.

It was also decided that whenever required the Chairman of the Board may co-opt other experts including that of the members constituted for the purpose by the Central and the State Government.

On representation by the applicant, the Medical Board may review its decision having regard to all the facts and circumstances of the case and pass such order in the matter as it thinks fit.

## ANNEXURE-A

## LOCOMOTOR DISABI LITY

## REVI SED GUIDELI NES FOR EVALUATI ON OF THE PERMANENT PHYSI CAL I MPAI RMENT

### 1.1 Guidelines for Evaluation of Permanent Physical Impairment of Upper Limb

1. The estimation of permanent impairment depends upon the measurement of functional impairment and is not expression of a personal opinion.
2. The estimation and measurement should be made when the clinical condition has reached the stage of maximum improvement from the medical treatment. Normally the time period is to be decided by the medical doctor who is evaluating the case for issuing the PPI Certificate as per standard format of the certificate.
3. The upper limb is divided into two component parts; the arm component and the hand component.
4. Measurement of the loss of function of arm component consists of measuring the loss of motion, muscle strength and co-ordinated activities.
5. Measurement of loss of function of hand component consists of determining the prehension, sensation and strength. For estimation of prehension opposition, lateral pinch cylindrical grasp, spherical grasp and hook grasp have to be assessed as shown in Hand Component of Form A Assessment Proforma for upper extremity.
6. The impairment
combination

of the the \begin{tabular}{c}
entire extremity <br>
functional <br>
impairments

 of 

depends <br>
both

 

on the <br>
components
\end{tabular}

### 1.2 ARM COMPONENT

Total value of arm component is $90 \%$

### 1.2.1 Principles of evaluation of range of motion (ROM) of joints

1. The value of maximum ROM in the arm component is $90 \%$
2. Each of the three joints of the arm is weighed equally ( $30 \%$ )

## Example:

The intra articular fractures of the bones of right shoulder joint may affect range of motion even
after healing. The loss of ROM should be calculated in each arc of motion as. envisaged in the Assessment Form A (Assessment Proforma for Upper Extremity).

| Arc of ROM | Normal value | Active ROM | Loss of ROM |
| :---: | :---: | :---: | :---: |
| Shoulder Flexion- | $0-220$ | 110 | $50 \%$ |
| Rotation | $0-180$ | 90 | $50 \%$ |
| Abduction-Adduction | $0-180$ | 90 | $50 \%$ |

Hence the mean loss of ROM of shoulder will be

$$
50+50+50 / 3=150 / 3=50 \%
$$

Shoulder movements constitute $30 \%$ of the motion of the arm component, therefore the loss of motion for arm component will be $50 \times 0.3 \mathrm{~d}=15 \%$ If more than one joint of the arm is involved the loss of percentage in each joint is calculated separately as above and then added together.

### 1.2.2. Principles of evaluation of strength of muscles:

1. Strength of muscles can be tested by manual method and graded from 0-5 as advocated by Medical Research Council of Great Britain depending upon the strength of the muscles.
2. Loss of muscle power can be given percentages as follows:

| Manual muscle <br> Strength grading | Loss of Strength in <br> percentage |
| :---: | :---: |
| 0 | $100 \%$ |
| 1 | $80 \%$ |
| 2 | $60 \%$ |
| 3 | $40 \%$ |
| 4 | $20 \%$ |
| 5 | $0 \%$ |

3. The mean percentage of loss of muscle strength around a joint is multiplied by 0.30 .
4. If loss of muscle strength involves more than one joint the mean loss of percentage in each joint is calculated separately and then added together as has been described for loss of motion.

### 1.23 Principles of evaluation of coordinated activities:

1. The total value for coordinated activities is $90 \%$
2. Ten different coordinated activities should be tested as given in

Form A. (Appendix.I of Annexure-A)
3. Each activity has a value of $9 \%$

### 1.2.4 Combining values for the Arm Component:

The total value of loss of function of arm component is obtained by combining the value of loss of ROM, muscle strength and coordinated activities, using the combing formula.

```
a+b(90-a)
    90
where a = higher value
    b = lower value
```


## Example

Let us assume that an individual with an intra articular fracture of bones of shoulder joint in addition to $16.5 \%$ loss of motion in arm has $8.3 \%$ loss of strength of muscles and $5 \%$ loss of coordination. These values should be combined as follows:

| Loss of ROM $-16.5 \%$ | $16.5+\frac{8.3(90-16.5)}{90}$ |
| :--- | :---: |
| Loss of strength of muscles $-8.3 \%$ | $=23.33 \%$ |
| To add | $23.3+\frac{5(90-23.3)}{90}=270 \%$ |

So the total value of loss of function in Arm component will be $27.0 \%$

### 1.3 HAND COMPONENT:

1 Total value of hand component is $90 \%$
2 The functional impairment of hand is expressed as loss of prehension, loss of sensation and loss of strength

### 1.3.1 Principles of evaluation of prehension:

1. Total value of prehension is $30 \%$
it includes
a) Opposition - 8\%

Tested against - Index finger -2\%

- Middle finger-2 \%
- Ring -2\%
- Little finger - 2\%
b) Lateral pinch -5\% - Tested by asking the patient to hold a key between the thumb and lateral side of index finger.
c) Cylindrical grasp - 6\% Tested for
i) Large object of 4 inches size $-3 \%$
ii) Small object of 1 inch size - $3 \%$
d) Spherical grasp -6\% Tested for
i) Large object of 4 inches size - $3 \%$
ii) Small object of 1 inch size - $3 \%$
e) Hook grasp - 5\% -Tested by asking the patient to lift a bag


### 1.3.2. Principles of Evaluation of sensation:

1. Total value of sensation in hand is $30 \%$
2. It should be assessed according to the distribution given below:
i) Complete loss of sensation

Thumb ray 9\%
Index finger 6\%
Middle finger 5\%
Ring finger 5\%
Little finger 5\%
ii) Partial loss of sensation: Assessment should be made according to percentage of loss of sensation in thumb/finger(s)

### 1.3.3. Principles of Evaluation of strength

1. Total value of strength is $30 \%$
2. It includes:
i) Grip strength $20 \%$
ii) Pinch strength 10\%

Strength of hand should be tested with hand dynamo-meter or by clinical method (grip method).

Additional weightage - A total of $10 \%$ additional weightage can be given to following accompanying factors if they are continuous and persistent despite treatment.

1. Pam
2. Infection
3. Deformity
4. Mat-alignment
5. Contractures
6. Cosmetic disfiguration
7. Dominant extremity-4\%
8. Shortening of upper limb

First 1" - No weightage
For each 1" beyond first 1" - $2 \%$

The extra points should not exceed $10 \%$ of the total Arm Component and total PPI should not exceed $100 \%$ in any case.

### 1.3.4. Combining values of hand component:

The final value of loss of function of hand component is obtained by summing up values of loss of prehension, sensation and strength.

### 1.3.5. Combining values for the Extremity:

Values of impairment of arm component and impairment of hand component should be added by using combining formula:

$$
\begin{array}{cl}
a+b \frac{(90-a)}{90} & \begin{array}{l}
a=\text { higher value } \\
b=\text { lower value }
\end{array}
\end{array}
$$

## Example:

| Impairment of Arm $-27 \%$ | $64+\frac{27(90-64)}{90}$ |
| :--- | :---: |
| Impairment of hand $-64 \%$ | $=71.8 \%$ |

The total value can also be obtained by using the Ready Recknoer table for combining formula given at Appendix.II of Annexure.A.

## 2. Guidelines for Evaluation of permanent physical I mpairment in Lower Limb.

The measurement of loss of function in lower extremity is divided into two components: Mobility and standing components

### 2.1 Mobility Component:-

1 Total value of mobility component is $90 \%$
2. It includes range of movement (ROM) and muscle strength

### 2.1.1. Principles of Evaluation of Range of Movement:

1. The value of maximum range of movement in mobility component is $90 \%$
2. Each of three joints i.e. hip, knee and foot-ankle component is weighed equally - $30 \%$.

## Example:

A fracture of right hip joint bones may affect range of motion of the hip joint. Loss of ROM of the affected hip in different are should be assessed as given in Form B (Assessment Proforma for lower extremity). (Appendix.I of Annexure.A)

Affected Joint - Rt. Hip:

| Arc of Movement | Normal ROM | Active ROM | Loss in percentage |
| :--- | :---: | :---: | :---: |
| Flexion-Extension | $0-140$ | 70 | $50 \%$ |
| Abduction-Adduction | $0-90$ | 60 | $33 \%$ |
| Rotations | $0-90$ | 30 | $66 \%$ |

$$
\text { Mean loss of ROM of Rt Hip }=50+33+66=50 \%
$$

3

Since the hip constitute $30 \%$ of the total mobility component of the lower limb the loss of motion in relation to the lower limb will be $50 \times 0.30=15 \%$

If more than one joint of the limb is involved the mean loss of ROM in percentage should be calculated in relation to individual joint separately and then added together as follows to calculate the loss of mobility component in relation to that particular limb.

## For example.

| Mean loss of ROM of Rt. Hip | $50 \%$ |
| :--- | :--- |
| Mean loss of ROM Rt. Knee | $40 \%$ |

Loss of mobility component of Rt. Lower Limb will be

$$
(50 \times 0.30)+(40 \times 0.30)=27 \%
$$

### 2.1.2. Principle of Evaluation of Muscle Strength:

1. The value for maximum muscle strength in the limb is $90 \%$
2. Strength of muscles can be tested by Manual Method and graded 0-5 as advocated by MRC of Great Britain depending upon the residual strength in the muscle group.
3. Manual muscle grading can be given percentage like below:

| Power Grade of Ms | Loss of strength in percentage |
| :---: | :---: |
| 0 | $100 \%$ |
| 1 | $80 \%$ |
| 2 | $60 \%$ |
| 3 | $40 \%$ |
| 4 | $20 \%$ |
| 5 | $0 \%$ |

4. Mean percentage of muscle strength loss around a joint is multiplied by 0.30 to calculate loss in relation to limb
5. If there has been a loss muscle strength involving more than one joint the values are added as has been described for loss of ROM

### 2.1.3. Combining values for mobility component:

1. The values of loss of ROM and loss of muscle strength should be combined with the help of combining formula: $a+\underline{b(90-a)}$
( $a=$ higher value, $b=$ lower value)
Example: Let us assume that the individual with a fracture of right hip bones has in addition to $16 \%$ loss of motion, $8 \%$ loss of muscle strength also.

Combined values
Motion-16\%

$$
\begin{aligned}
& 16+\frac{8(90-16)}{90} \\
& =22.6 \%
\end{aligned}
$$

Strength-8\%

### 2.2 Stability component:

1. Total value of the stability component is $90 \%$
2. It should be tested by clinical method as given in From B (Assessment Proforma for lower extremity). There are nine activities, which need to be tested, and each activity has a value of ten per cent ( $10 \%$ ). The percentage valued in relation to each activity depends upon the percentage of loss stability in relation to each activity.

### 2.3 Extra points:

Extra points have been given for pain, deformities, contractures, loss of sensations and shortening Maximum points to be added are 10\% (excluding shortening). Details are as following.

| i) Deformity | In functional position <br> In non-functional position | $3 \%$ |
| :--- | :--- | :---: |
| ii) Pain | Sever(grossly interfering <br> with function) <br> Moderate (moderately inter- <br> fering with function) <br> Mild (mildly interfering with <br> function) | $9 \%$ |
| iii) Loss of sensation | Complete Loss <br> Partial Loss | $3 \%$ |
| iv) Shortening | First $1 / 2^{\prime \prime}$ | Every $1 / 2^{\prime \prime}$ beyond first $1 / 2^{\prime \prime}$ |
| v) Complications | Superficial complications <br> Deep complications | $3 \%$ |

## 3. Guidelines for Evaluation of Permanent Physical I mpairment of Trunk (Spine) Basic guidelines:

1. As permanent physical impairment caused by spinal deformity tends to change over the years, the certificate issued in relation to spine should be reviewed as per the standard format of the certificate given at Annexure - B of Appendix.III.
2. Permanent physical impairment should be awarded in relation to spine and not in relation to whole body.
3. Permanent physical impairment due to neurological deficit in addition to spinal impairment should be added by combining formula. The local effects of the lesions of the spine can be conventionally divided into traumatic and non-traumatic. The percentage of PPI in relation to each situation should be valued as follows:

### 3.1 TRAUMATI C LESI ONS:

### 3.1.1 Cervical spine injuries

Percentage of PPI in relation to Spine
i) $25 \%$ or more compression of one or two adjacent $20 \%$ vertebral bodies with No involvement of posterior elements, No nerve root involvement, moderate Neck rigidity and persistent

Soreness.
ii) Posterior element damage with radiological Evidence of moderate parties dislocation/subluxation including whiplash injury.
A) With fusion healed, No permanent motor or sensory changes.
b) Persistent pain with radiologically demonstrable $25 \%$ instability.
iii) Severe Dislocation:
a) Fair to good reduction with or without fusion with $10 \%$
no residual motor or sensory involvement;
b) Inadequate reduction with fusion and persistent radicular pain

15\%

### 3.1.2. Cervical Intervertebral Disc Lesions Percentage of PPI In relation to Spine

i) Treated case of disc lesion with persistent pain $10 \%$ and no neurological deficit
ii) Treated case with pain and instability 15\%

### 3.1.3. Thoracic and Thoracolumbar Spine I njuries:

i) Compression of less than $50 \%$ involving one

10\% vertebral body with no neurological manifestation
ii) Compression of more than $50 \%$ involving single vertebra or more with involvement of posterior elements,healed, no neurological manifestations persistent pain, fusion indicated
iii) Same as (b) with fusion, pain only on heavy use of back
iv) Radiologically demonstrable instability with 30\% fracture or fracture dislocation with persistent pain.

### 3.1.3. Thoracic and Thoracolumbar Spine I njuries:

i) Compression of less than $50 \%$ involving one $10 \%$ vertebral body with no neurological manifestation
ii) Compression of more than $50 \%$ involving singlevertebra or 20\% more with involvement of posterior elements, healed, no neurological manifestations persistent pain, fusion indicated
iii) Same as (b) with fusion, pain only on heavy use of back $15 \%$
iv) Radiologically demonstrable instability with fracture or fracture 30\% dislocation with persistent pain.

### 3.1.4 Lumbar and Lumbosacral Spine: Fracture

| a) | Compression of 25\% or less of one or two adjacent Vertebral bodies, No <br> definite pattern or neurological Deficit | $15 \%$ |
| :--- | :--- | :--- |
| b) | Compression of more than 25\% with disruption of Posterior elements, persistent <br> pain and stiffness, healed With or without fusion, inability to lift more than 10 kgs. | $30 \%$ |
| c) | Radiologically demonstrable instability in low lumbar or Lumbosacral spine with <br> pain | $35 \%$ |

### 3.15 Disc lesion:

| a) | Treated case with persistent pain | $15 \%$ |
| :--- | :--- | :--- |
| b) | Treated case with pain and instability | $20 \%$ |
| c) | Treated case of disc disease with pain activities of lifting <br> moderately modified | $25 \%$ |
| d) | Treated case of disc disease with persistent pain and stiffness, <br> aggravated by heavy lifting necessitating modification of all <br> activities requiring heavy weight lifting | $30 \%$ |

### 3.2 NON TRAUMATIC LESI ONS:

### 3.2.1 Scoliosis:

Basic guidelines - following modification is suggested.

- The largest structural curve should be accounted for while calculating the PPI and not the compensatory curve or both structural curves.


### 3.2.2 Measurement of Spine Deformity:

Cobb's method for measurement, of angle of curve in the radiograph taken in standing position should be used. The curves have been divided into following groups depending upon the angle of major structural scoliotic deformity.

| Group | Cobb's Angle | PPI in relation to Spine |
| :---: | :---: | :---: |
| I | $0-20$ | NIL |
| II | $21-50$ | $10 \%$ |
| III | $51-100$ | $20 \%$ |
| IV | $101 \&$ above | $30 \%$ |

### 3.2.3 Torso I mbalance:

In addition to the above PPI should also be evaluated in relation the torso imbalance. The torso imbalance should be measured by dropping a plumb line from C7 spine and measuring the distance of plumb line from gluteal crease.

## Deviation of Plumb line PPI

Upto $1.5 \mathrm{Cm} \quad 4 \%$
$1.6-30 \mathrm{Cm} \quad 8 \%$
$3.1-50 \mathrm{Cm} \quad 16 \%$
5.1 and above $32 \%$

### 3.2.4 Head Tilt over C7 spine PPI

Upto 15 4\%

More than $15 \quad 10 \%$

### 3.2.5 Cardiopulmonary Test

In cases with scoliosis of severe type cardiopulmonary function tests and percentage deviation from normal should be assessed by one of the following method whichever seems more reliable clinically at the time of assessment. The value thus obtained may be added by combining formula.

## a. Chest Expansion

4-5 Cm.
Less than 4 cm reduction in Chest expansion No expansion
b counting in one breathe:

| Breathe Count | PPI |
| :--- | :--- |
| More than 40 | Normal |

0-40
$0-30$ 10\%
$0-20$ 15\%
0-10 20\%
Less than 5 25\%
3.2.6 Associated Problems: To be added directly but the total value of PPI in relation to spine should not exceed $100 \%$.
a) Pain

$$
\begin{array}{lc}
\text {-mildly interfering with ADL } & 4 \% \\
\text {-moderately restricting ADL } & 6 \% \\
\text {-severely restricting ADL } & 10 \%
\end{array}
$$

b) Cosmetic Appearance:
-No obvious disfiguration with clothes on Nil
-mild disfigurement 2\%
-severe disfigurement
4\%
c) Leg Length Discrepancy.
-First¹/2" shortening
Nil
-Every $^{1 / 2 "}$ beyond first¹⁄2" 4\%
d) Neurological deficit - Neurological deficit should be calculated as per established method of evaluation of PPI in such cases. Value thus obtained should be added telescopically using combining formula.

### 3.3 KYPHOSIS

Evaluation should be done on the similar guidelines as use for scoliosis with the following modifications:

### 3.3.1 Spinal Deformity

Less than 20
21-40
41-60
Above 60

## PPI

Nil
10\%
20\%
30\%
3.3.2 Torso I mbalance - Plumb line dropped from external ear normally falls at ankle level. The deviation from normal should be measured from ankle anterior joint line to the plumb line.
Less than 5 cm in front of ankle4\%
5 to 10 cm in front of ankle $8 \%$
10 to 15 cm in front of ankle $16 \%$
More than 15 cm in front of ankle 32\%
(Add directly)

## Miscellaneous conditions:

Those conditions of the spine which cause stiffness and pain etc. are rated as follows.

|  | Conditions | Percentage PPI |
| :---: | :--- | :---: |
| A | Subjective symptoms of pain, no involuntary <br> muscle spasm,, not substantiated by <br> demonstrable structural pathology | $-0 \%$ |
| B | Pain, persistent muscles spasm and stiffness of <br> spine, substantiated by mild radiological change. | $-20 \%$ |
| C | Same as B with moderate radiological changes | $-25 \%$ |
| D | Same as B with severe radiological changes <br> involving any one of the regions of spine | $-30 \%$ |
| E | Same as D involving whole spine | $-40 \%$ |

## 4. Guidelines for Evaluation of PPI in cases of Short Stature/ Dwarfism:

1. Recumbent length or longitudinal height below 3rd percentile or less than 2 Standard Deviation from the mean is considered to have short stature.
2. The evaluation of a Short Statured person should be considered only when it is of disproportionate variety and is accompanied by an underlying pathological conditions, e.g., Achondroplasia,Chandrodysplasia Punctata, spondyloepiphysical dysplasia,mucopoly and acchrydosis, etc.
3. The ICMR norms as enclosed at Appendix III of Annexure. A should be used as a guideline for the height.
4. Every $1^{\prime \prime}$ vertical height reduction should be valued as $4 \%$ permanent physical impairment.
5. Associated skeletal deformities should be evaluated, separately and total percentage of both should be added by combining formula.
6. Guidelines for Evaluation of Permanent Physical Impairment in Amputees:

## Basic Guidelines:

1. In cases of multiple amputees if the total sum of permanent physical impairment is above $100 \%$, it should be taken as $100 \%$ only.
2. If the stump is unfit for fitting the prosthesis additional weightage of $5 \%$ should be added to the value.
3. In case of amputation in more than one limb percentage of each limb is added by combining formula and another 10\% will be added but when only toes or fingers are involved only $5 \%$ will be added
4. Any complication in form of stiffness of proximal joint, neuroma infection, etc., should be given upto a total of $10 \%$ additional weightage.
5. Dominant upper extremity should be given $4 \%$ additional weightage.

|  | Upper Limb Amputations |  |  | PPI \& loss of physical function of each limb |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1. | Fore-quarter amputations |  |  | 100\% |  |
| 2. | Shoulder Disarticulation |  |  | 90\% |  |
| 3. | Above Elbow upto upper 1/3 of arm |  |  | 85\% |  |
| 4. | Above Elbow upto lower 1/3 of forearm |  |  | 80\% |  |
| 5. | Elbow disarticulation |  |  | 75\% |  |
| 6. | Below Elbow upto upper 1/3 of forearm |  |  | 70\% |  |
| 7. | Below Elbow upto lower 1/3 of forearm |  |  | 65\% |  |
| 8. | Wrist disarticulation |  |  | 60\% |  |
| 9. | Hand through carpal bones |  |  | 55\% |  |
| 10. | Thumb through C.M. or though $1^{\text {st }} \mathrm{MC}$ joint |  |  | 30\% |  |
| 11. | Thumb disarticulation through metacarpophalangeal Joint or through proximal phalanx. |  |  | 25\% |  |
| 12. | Thumb disarticulation through inter phalangeal joint or Through distal phalanx. |  |  | 15\% |  |
|  |  | $\begin{aligned} & \text { Index Finger } \\ & (15 \%) \end{aligned}$ | $\begin{array}{ll} \begin{array}{l} \text { Middle } \\ (5 \%) \end{array} & \text { Finger } \\ \hline \end{array}$ | $\begin{aligned} & \text { Ring Finger } \\ & (3 \%) \end{aligned}$ | Little Finger (2\%) |
| 13. | Amputation through Proximal phalanx or Disarticulation through M.P. Joint | 15\% | 5\% | 3\% | 2\% |
| 14. | Amputation through Middle phalanx or Disarticulation through PP joint. | 10\% | 4\% | 2\% | 1\% |
| 15. | Amputation through Distal phalanx or disarticulation through DIP joint. | 5\% | 2\% | 1\% | 1\% |

## 6. 1.3 Lower Limb Amputations:

1. Hind quarter

100\%
2. Hip disarticulation $90 \%$
3. Above knee upto upper $1 / 3$ of thigh $85 \%$
4. Above knee upto lower $1 / 3$ of thigh $80 \%$
5. Through keen $75 \%$
6. B.K. upto $8 \mathrm{~cm} \quad 70 \%$
7. B.K. upto lower $1 / 3$ of leg $60 \%$
8. Through ankle 55\%
9. Syme's 50\%
10. Upto mid-foot 40\%
11. Upto fore-foot 30\%
12. All toes 20\%
13. Loss of first toe 10\%
14. Loss of second toe 5\%
15. Loss of third toe 4\%
16. Loss of fourth toe 3\%
17. Loss of fifth toe $2 \%$

## 6. Guidelines for Evaluation of Permanent Physical Impairment of Congenital deficiencies of the limbs.

### 6.1 Transverse Deficiencies-

1. Functionally congenital transverse limb deficiencies are comparable to acquired amputations and can be called synonymously as congenital amputation, however, in some cases revision of amputation is required to fit in a prosthesis.
2. The transverse limb deficiencies therefore should be assessed on basis of the guidelines applicable to the evaluation of PPI in cases of amputees as given in the preceding chapter.

## For example:

## PPI

Transverse deficiency Rt. Arm complete 90\% (shoulder disarticulation)
Transverse deficiency at thigh complete 90\%
(hip disarticulation)
Transverse deficiency Proximal Upper arm 85\%
(Above elbow Amp.)
Transverse deficiency at lower thigh 80\%
(Above knee Amp. Lower 1/3)
Transverse deficiency forearm complete 75\%
(elbow disarticulation)
Transverse deficiency lower forearm 65\%
(Below Elbow Amp.)
Transverse deficiency carpal complete 60\%
(wrist disarticulation)
Transverse deficiency Metacarpal complete 55\%
(Disarticulation through carpal bones)

### 6.2 Longitudinal Deficiencies:

### 6.2.1 Basic Guidelines

1. In cases of longitudinal deficiencies of limbs due consideration should be given to functional impairment.
2. In upper limb, loss of ROM loss muscular strength and hand functions like prehension, etc should be tested while assessing the case for PPI.
3. In lower limb clinical method of stability component and shortening of lower limb should be given due weightage.

4 Apart from functional assessment the lost joint/part of body should also be valued as per distribution Given in chapter Guidelines for Evaluation of PPI in upper extremity and lower extremity The values so obtained should be added with the help of combing formula.

## Example:

Congenital Absence of humorous where forearm bones directly articulate with scapula.
There will be miled reduction in ROM and strength of muscles in the existing joints apart from loss of body part.

Loss of shoulder joint can be given - 30\%
Loss of ROM of Elbow/Shoulder \& Wrist
All the components should be added together by the combining formula of

$$
a+\frac{b(90-a)}{90}
$$

6.2.2 In cases of loss of single bone in forearm the evaluation should be based on the principles of evaluation of Arm component which include Evaluation of ROM, Muscle strength-and coordinated activities. The values so obtained should be added together with the help of combining
formula.
6.2.3 In cases of loss of single bone in leg the evaluation should be based on the principles of evaluation of mobility component and stability components of the lower extremity. The values obtained should be added together with the help of combining formula.

## 7. Guidelines for Evaluation of Physical Impairments in Neurological conditions.

### 1.1 Basic Guidelines:

1. Assessment in neurological conditions is not the assessment of disease but the assessment of its effects, i.e. clinical manifestations.
2. These guidelines should only be used for central and upper motor neurone lesions.
3. Proformas (form $A \& B$ ) will be utilized for assessment of lower motor neurone lesions, muscular disorders and other locomotor conditions.
4. Normally any neurological assessment for the purpose of certification has to be done six months after the onset of disease however exact time period is to be decided by the Medical Doctor who is evaluating the case and has to recommend the review of certificate as given in the standard format of certificate.
5. Total percentage of physical impairment in any neurological condition should not exceed $100 \%$
6. In mixed cases the highest score will be taken into consideration. The lower score will be added telescopically to it by the help of combining formula $a+\underline{b(90-a)}$
7. Additional rating of $4 \%$ will be given for dominant upper extremity.
8. Additional weightage up to $10 \%$ can be given for loss of sensation in each extremity but the total physical impairment should not exceed $100 \%$.

### 7.2Table-I

| Neurological Status | Physical I mpairment |
| :--- | :--- |
| Altered sensorium | $100 \%$ |

7.3 Table-II

I ntellectual I mpairment (to be assessed by Clinical Psychologist)

| Degree of Mental <br> Retardation | IQ Range | Intellectual Impairment |
| :--- | :--- | :--- |
| Border line | $70-79$ | $25 \%$ |
| Mild | $50-69$ | $50 \%$ |
| Moderate | $35-49$ | $75 \%$ |
| Serve | $20-34$ | $90 \%$ |
| Profound | Less than 20 | $100 \%$ |

### 7.4 Table - III

| Speech defect | Physical I mpairment |
| :--- | :--- |
| Mild dysarthria | Nil |
| Moderate dysarthria | $25 \%$ |
| Servere dysarthria | $50 \%$ |

### 7.5 Table - IV

| Type of Cranial Nerve I nvolvement | Physical Impairment |
| :--- | :--- |
| Motor cranial nerve | $20 \%$ for each nerve |
| Sensory cranial nerve | $10 \%$ for each nerve |

Sensory cranial nerve $10 \%$ for each nerve

### 7.6 Table-V

## Motor system Disability

## Neurological I nvolvement

Hemiparesis:-

- Mild 25\%
- Moderate . 50\%
- Severe 75\%


### 7.7 Table-VI

Sensory System Disability

| Extent of Sensory Deficit | Physical Impairment |
| :--- | :---: |
| Anaesthesia | Upto 10\% for each limb |
| Hypoaesthesia | Depending upon \% of |
| Paraestheis | Loss of sensation up to $30 \%$ depending |
| Hands/feet sensory loss | Upon \% of loss sensation |

7.8 Table - VIII

Bladder disability due to neurogenic Involvement

| Bladder /nvolvement | Physical /mpairment |
| :--- | :---: |
| Mild (Hesitancy/Frequency) | $25 \%$ |


| Moderate (precipitancy) | $50 \%$ |
| :--- | :---: |
| Severe(occasional but recurrent <br> Incontinence) | $75 \%$ |
| Very Severe (Retention/Total <br> Incontinence) | $100 \%$ |

### 7.9 Table - VIII

Post Head Injury Fits and Epileptic Convulsions

| Frequency/Severity of Convulsions | Physical / mpairment |
| :--- | :---: |
| Mild - occurrence of one convulsion oOnly | Nil |
| Moderate 1-5 Convulsions/month on <br> Adequate - Medication | $25 \%$ |
| Severe 6-10 Convulsions/month on <br> Adequate medication | $50 \%$ |
| Very Severe more than 10 fits/months <br> On adequate - Medication | $75 \%$ |

7.10 Table - IX

Ataxia (Sensory or Cerebellar)

| Severity of Ataxia | Physical Impairment |
| :--- | :---: |
| Mild (Detected on examination) | $25 \%$ |
| Moderate | $50 \%$ |
| Severe | $75 \%$ |
| Very Severe | $100 \%$ |

## 8. Guidelines for Evaluation of Physical I mpairment due to Cardiopulmonary Diseases.

### 8.1 Basic Guidelines:-

1. Modified New York Heart Association subjective classification should be utilised to assess the functional disability.
2. The assessing physician should be alert to the fact that patients who come for disability claims are likely to exaggerate their symptoms. In case of any doubt patients should be referred for detailed physiological evaluation.
3. Disability evaluation of cardiopulmonary patients should be done after full medical, surgical and rehabilitative treatment available, because most of these diseases are potentially treatable.
4. Assessment of cardiopulmonary impairment should also be done in diseases which might have associated cardiopulmonary problems, e.g.,amputees, myopathies, etc.
5. For respiratory assessment, routine respiratory functions test should be done, however, in cases of interstitial lung diseases, diffusion studies may be done.
6. In cases of Angina pectoris (chest pain) base line studies in resting ECG should be done. When there is persistence of symptoms, exercise or stress test should be done.

### 8.2 The proposed classification with loss of function is as follows:-

Group 0: A patient with cardiopulmonary disease who is asymptomatic (i.e. has no symptoms of breathlessness, palpitation, fatigue or chest pain).

Group 1: A patient with cardiopulmonary disease who becomes symptomatic during his ordinary physical activity but has mild restriction (25\%) of his physical activities.

Group 2: A patient with cardiopulmonary disease who becomes symptomatic during his ordinary physical activity and has $25-50 \%$ restriction of his ordinary physical activities.

Group 3: A patient with cardiopulmonary disease who becomes symptomatic during less than ordinary physical activity so that his ordinary physical activities are $50-75 \%$ restricted.

Group 4: A patient with cardiopulmonary disease who is symptomatic even at rest or on mildest exertion so that his ordinary physical activities are severely or completely restricted (75-100\%).

Group 5: A patient with cardiopulmonary disease who gets intermittent symptoms at rest (i.e. patients with bronchial asthma, paroxysmal nocturnal dyspnoea, etc.)

## 1. Definition of Multiple Disabilities:

Multiple disabilities means a combination of two or more disabilities as defined in clause (i) of Section (2) of the Persons with Disabilities. (Equal Opportunities, Protection of Rights and Full Participation) Act, 1'995, namely -
I. Locomotor disability including leprosy cured
II. Blindness/low vision
III. Speech and hearing impairment
IV. Mental retardation
V. Mental illness.

## 2. Guidelines for Evaluation: -

In order to evaluate the multiple disability, the same guidelines shall be used as have been developed by the respective sub-committees of various single disability, viz. Mental retardation, locomotor disability, visual disability, and speech and hearing disability and recommended in the meeting held on 29.2.2000 under the Chairmanship of Dr. S.P. Agarwal, Director General of Health Services, Government of India, with reference to Order No.16-18/96-NI.I, dated 28th August, 1998 and communicated to Ministry of Social Justice \& Empowerment, Government of India, vide letter No.S-13020/4/98-MH, dated 16th March, 2000.

However, in order to arrive at the total percentage of multiple disability, the combining formula

```
a + b (90-a). as given in the "Manual for Doctors to Evaluate
    90
```

Permanent Physical Impairment, Developed by Expert Group meeting on Disability Evaluation", shall be used, where "a" will be the higher score and "b" Will be the lower score. However, the maximum total percentage of multiple disabilities shall not exceed $100 \%$.

For example, if the percentage of hearing disability is $30 \%$ and visual disability is $20 \%$, then by applying the combining formula given above, the total percentage of multiple disability will be calculated as follows:-

$$
30+\underline{20(90-30)}=43 \%
$$

## 3. Procedure for Certification of Multiple Disability:-

The procedure will remain the same as has been developed by the respective sub-committees on various single disabilities and finalized in a meeting under the Chairpersonship of Dr. S.P. Agarwal held on 29.2.2000. The final disability certificate for multiple disability will be issued by Disability Board which has given higher score of disability by combining the score of different disabilities using the combining formula, i.e., $a+\underline{b(90-a)}$. In case, where two scores of disability are
equal, the final certificate of multiple disability will be issued by any one of them as decided by Local authority.

## APPENDIX.I OF ANNEXURE.A

FROM A

## ASSESSMENT PERFORMA FOR UPPER EXTERMITY

```
Name
```

$\qquad$

```Age.
```

$\qquad$

``` Sex. .
``` \(\qquad\)
``` Diagnosis.
``` \(\qquad\)
```

Address. O.P.D.

``` \(\qquad\)
``` Deptt.
``` \(\qquad\)

ARM COMPONENT (Total Value 90\%)

Summary value for upper extremity is calculated from component and hand component values Add \(4 \%\) for dominant extremity \(10 \%\). Additional weightage to be given to infection, deformity, malalignment, contracture, cosmetic appearance and abnormal mobility
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{11}{|l|}{( APPENDIX .I OF ANNEXURE.A} \\
\hline \multicolumn{11}{|c|}{FROM B} \\
\hline \multicolumn{11}{|c|}{ASSESSMENT PROFORMA FOR LOWER EXTERMITY} \\
\hline \multicolumn{11}{|l|}{} \\
\hline \multicolumn{11}{|l|}{} \\
\hline \multicolumn{11}{|l|}{Diagnosis. ................................................................} \\
\hline \multicolumn{11}{|l|}{MCBI LITY COMPONENT (Total Value (90\%)} \\
\hline Joint & Component & Normal Value & Rt Side & Lt. Side & \begin{tabular}{l}
Loss \\
of \% \\
Rt. \\
Side
\end{tabular} & \begin{tabular}{l}
Loss of \% \\
Lt. \\
Side
\end{tabular} & \begin{tabular}{l}
Mean \\
\% \\
Rt. \\
Lt.
\end{tabular} & \[
\begin{aligned}
& \text { Mean } \\
& 0.30 \\
& \text { Rt. Lt. }
\end{aligned}
\] & Combing Value Rt. Lt. & \% Summary Value for mobility Component \(a+b \frac{(90+a)}{90}\) \\
\hline \multirow[t]{3}{*}{Range of Movement (Active)} & 1. FlexionExtension arc & 0-140 \({ }^{\circ}\) & & & & & & & & \\
\hline & \begin{tabular}{l}
2. \\
Abduction
\end{tabular} & \[
0-90^{\circ}
\] & & & & & & & & \\
\hline & Adduction & \(0-90^{\circ}\) & & & & & & & & \\
\hline HIP & 3. Rotation arc & & & & & & & & & \\
\hline Range of & 1. Flexion & \(0-125^{\circ}\) & & & & & & & & \\
\hline Movement & Extension are & & & & & & & & & \\
\hline \multicolumn{11}{|l|}{\begin{tabular}{l}
(Active) \\
KNEE
\end{tabular}} \\
\hline Range of Movement & 1. Dors flexion Panterlexion are & \(0-70^{\circ}\)
\(0-60^{\circ}\) & & & & & & & & \\
\hline \begin{tabular}{l}
ANKLE \\
\&
\end{tabular} & 2. Invesior - & & & & & & & & & \\
\hline
\end{tabular}



\section*{APPENDIX.II OF ANNEXURE .A}

\section*{Ready Reckon Table for \(\mathrm{A}+\mathrm{B}(90-\mathrm{A})\) \\ 90}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & B(1) & B(2) & B(3) & B(4) & B(5) & B(6) & B(7) & B(8) & B(9) & B(10) & B(11) & B(12) & B(13) & B(14) & B(15) \\
\hline A(1) & 1.99 & 3.98 & 3.97 & 4.96 & 5.94 & 6.93 & 7.92 & 8.91 & 9.90 & 10.89 & 11.88 & 12.87 & 13.86 & 14.84 & 15.83 \\
\hline A(2) & 2.98 & 3.96 & 4.93 & 5.91 & 6.89 & 7.87 & 8.84 & 9.82 & 10.80 & 11.78 & 12.76 & 13.73 & 14.71 & 15.69 & 16.67 \\
\hline A(3) & 3.97 & 4.93 & 5.90 & 6.87 & 7.83 & 8.80 & 9.77 & 10.73 & 11.70 & 12.67 & 13.63 & 14.60 & 15.57 & 16.53 & 16.67 \\
\hline A(4) & 4.96 & 5.91 & 6.87 & 7.82 & 8.78 & 9.73 & 10.69 & 11.64 & 12.65 & 13.50 & 14.44 & 15.39 & 16.33 & 17.28 & 18.33 \\
\hline A(5) & 5.94 & 6.89 & 7.83 & 8.78 & 9.72 & 10.67 & 11.61 & 12.56 & 13.50 & 14.44 & 15.39 & 16.33 & 17.28 & 18.22 & 19.17 \\
\hline A(6) & 6.93 & 7.87 & 8.80 & 9.73 & 10.67 & 11.60 & 12.50 & 13.46 & 14.38 & 15.30 & 16.27 & 17.20 & 18.13 & 19.07 & 20.00 \\
\hline A(7) & 7.92 & 8.84 & 9.77 & 10.69 & 11.61 & 12.53 & 13.46 & 14.38 & 15.29 & 16.20 & 17.11 & 18.07 & 18.99 & 19.91 & 20.83 \\
\hline A(8) & 8.91 & 9.82 & 10.73 & 11.64 & 12.56 & 13.47 & 14.38 & 15.29 & 16.20 & 17.10 & 18.02 & 18.93 & 19.84 & 20.76 & 21.67 \\
\hline A(9) & 9.90 & 10.80 & 11.70 & 12.60 & 13.50 & 14.40 & 15.30 & 16.20 & 17.10 & 18.00 & 18.90 & 19.80 & 20.70 & 21.60 & 22.50 \\
\hline A(10) & 10.89 & 11.87 & 12.67 & 13.56 & 14.44 & 15.33 & 16.22 & 17.11 & 18.00 & 18.89 & 19.78 & 20.67 & 21.56 & 22.44 & 23.33 \\
\hline A(11) & 11.88 & 12.76 & 13.63 & 14.51 & 15.39 & 16.27 & 17.14 & 18.02 & 18.90 & 19.78 & 20.66 & 21.53 & 22.41 & 23.29 & 24.17 \\
\hline A(12) & 12.87 & 13.73 & 14.60 & 15.47 & 16.33 & 17.20 & 18.07 & 18.93 & 19.80 & 20.67 & 21.53 & 22.40 & 23.27 & 24.13 & 25.00 \\
\hline A(13) & 13.86 & 14.71 & 15.57 & 16.42 & 17.28 & 18.13 & 18.99 & 19.84 & 20.70 & 21.56 & 22.41 & 23.27 & 24.12 & 24.98 & 25.83 \\
\hline A(14) & 14.84 & 15.69 & 16.53 & 17.38 & 18.22 & 19.07 & 19.91 & 20.76 & 21.60 & 22.44 & 23.29 & 24.13 & 24.98 & 25.82 & 26.67 \\
\hline A(15) & 15.83 & 16.67 & 17.50 & 18.33 & 19.17 & 20.00 & 20.83 & 21.67 & 22.50 & 23.33 & 24.17 & 25.00 & 25.83 & 26.67 & 27.50 \\
\hline A(16) & 16.82 & 17.64 & 18.47 & 19.20 & 20.11 & 20.93 & 21.76 & 22.58 & 23.40 & 24.22 & 25.04 & 25.87 & 26.69 & 27.51 & 28.33 \\
\hline A(17) & 17.81 & 18.62 & 19.37 & 20.24 & 21.06 & 21.87 & 22.68 & 23.49 & 24.30 & 25.11 & 25.92 & 26.73 & 27.54 & 28.36 & 29.17 \\
\hline A(18) & 18.80 & 19.60 & 22.33 & 21.20 & 22.00 & 22.80 & 23.60 & 24.40 & 25.20 & 26.00 & 26.80 & 27.60 & 28.40 & 29.20 & 30.00 \\
\hline A(19) & 19.79 & 20.58 & 23.30 & 22.16 & 22.94 & 23.73 & 24.52 & 25.31 & 26.10 & 26.89 & 27.68 & 28.47 & 29.26 & 30.04 & 30.83 \\
\hline A(20) & 20.78 & 21.56 & 24.27 & 23.11 & 23.89 & 24.67 & 25.44 & 26.22 & 27.00 & 27.78 & 28.56 & 29.33 & 30.11 & 30.89 & 31.67 \\
\hline A(21) & 21.77 & 22.53 & 25.23 & 24.07 & 24.83 & 25.60 & 26.37 & 27.13 & 27.90 & 28.67 & 29.43 & 30.20 & 30.97 & 31.73 & 32.50 \\
\hline A(22) & 22.76 & 23.51 & 26.20 & 25.02 & 25.78 & 26.33 & 27.29 & 28.04 & 28.80 & 29.56 & 30.31 & 31.07 & 31.82 & 32.58 & 33.33 \\
\hline A(23) & 23.44 & 24.49 & 27.17 & 25.08 & 26.72 & 27.47 & 28.21 & 28.96 & 29.70 & 30.44 & 31.19 & 31.93 & 32.68 & 33.42 & 34.17 \\
\hline A(24) & 24.73 & 25.47 & 28.13 & 26.93 & 27.67 & 28.40 & 29.13 & 29.87 & 30.60 & 31.33 & 32.07 & 32.80 & 33.57 & 34.27 & 35.00 \\
\hline A(25) & 25.72 & 26.44 & 29.10 & 27.89 & 28.61 & 29.33 & 30.06 & 30.78 & 31.50 & 32.22 & 32.94 & 33.67 & 34.39 & 35.11 & 35.83 \\
\hline A(26) & 26.71 & 27.42 & 30.07 & 28.84 & 29.56 & 30.27 & 30.98 & 31.69 & 32.40 & 33.11 & 33.82 & 34.53 & 35.21 & 35.96 & 36.67 \\
\hline A(27) & 27.70 & 28.40 & 31.03 & 29.80 & 30.50 & 31.20 & 31.90 & 32.60 & 33.30 & 34.00 & 34.40 & 25.40 & 36.10 & 36.80 & 37.50 \\
\hline A(28) & 28.69 & 29.38 & 32.00 & 30.76 & 31.44 & 32.13 & 32.80 & 33.51 & 34.40 & 34.89 & 35.58 & 36.27 & 36.96 & 37.64 & 38.33 \\
\hline A(29) & 29.68 & 30.36 & 32.97 & 31.71 & 32.39 & 33.07 & 33.74 & 24.42 & 35.10 & 35.78 & 36.46 & 37.13 & 37.81 & 38.49 & 39.17 \\
\hline A(30) & 30.67 & 31.33 & 32.00 & 32.67 & 33.33 & 34.67 & 35.33 & 36.00 & 36.67 & 36.67 & 37.33 & 38.00 & 38.67 & 39.33 & 40.00 \\
\hline A(31) & 31.66 & 32.31 & 34.97 & 33.62 & 34.28 & 34.93 & 35.59 & 36.24 & 36.90 & 37.96 & 38.21 & 38.87 & 39.50 & 40.18 & 40.83 \\
\hline A(32) & 32.64 & 33.29 & 33.93 & 34.58 & 35.22 & 35.87 & 36.51 & 37.16 & 37.80 & 38.44 & 39.09 & 39.73 & 40.38 & 11.02 & 11.67 \\
\hline A(33) & 33.63 & 34.27 & 34.90 & 35.53 & 36.17 & 36.80 & 37.43 & 38.07 & 38.70 & 39.33 & 39.97 & 40.60 & 41.23 & 41.87 & 42.50 \\
\hline A(34) & 34.62 & 35.24 & 35.87 & 36.49 & 37.11 & 37.73 & 38.36 & 38.98 & 39.60 & 40.22 & 40.84 & 41.47 & 42.09 & 42.71 & 43.33 \\
\hline A(35) & 35.61 & 36.22 & 36.83 & 37.44 & 38.06 & 38.67 & 39.28 & 39.89 & 40.50 & 41.11 & 41.72 & 42.33 & 42.94 & 43.56 & 44.17 \\
\hline A(36) & 36.60 & 37.20 & 37.80 & 38.40 & 39.00 & 39.60 & 40.20 & 40.80 & 41.40 & 42.00 & 42.60 & 43.20 & 43.80 & 44.40 & 45.00 \\
\hline A(37) & 37.59 & 38.18 & 38.77 & 39.36 & 39.94 & 40.53 & 41.12 & 41.71 & 42.30 & 42.89 & 43.48 & 44.07 & 44.66 & 45.24 & 45.83 \\
\hline A(38) & 38.58 & 39.16 & 39.73 & 40.31 & 40.89 & 41.47 & 42.04 & 42.62 & 43.20 & 43.78 & 44.36 & 44.93 & 45.51 & 46.09 & 46.67 \\
\hline A(39) & 39.57 & 4013 & 40.70 & 41.27 & 41.83 & 42.40 & 42.97 & 43.53 & 44.10 & 44.67 & 45.23 & 44.80 & 46.37 & 46.93 & 47.50 \\
\hline A(40) & 40.56 & 41.11 & 41.67 & 42.22 & 42.78 & 43.33 & 43.89 & 44.44 & 45.00 & 45.56 & 46.11 & 46.67 & 47.22 & 47.78 & 48.33 \\
\hline A(41) & 40.54 & 40.09 & 42.62 & 43.18 & 43.72 & 44.27 & 44.81 & 45.36 & 45.90 & 46.44 & 46.99 & 47.53 & 48.08 & 48.62 & 49.17 \\
\hline A(42) & 42.53 & 43.07 & 43.60 & 44.13 & 44.67 & 45.20 & 45.73 & 46.27 & 46.80 & 47.33 & 47.87 & 48.40 & 48.93 & 49.47 & 50.00 \\
\hline A(43) & 43.52 & 44.04 & 44.57 & 45.09 & 45.61 & 46.13 & 46.66 & 47.18 & 47.70 & 48.22 & 48.74 & 49.24 & 49.79 & 50.13 & 50.83 \\
\hline A(44) & 44.51 & 45.02 & 44.53 & 46.04 & 46.56 & 47.07 & 47.58 & 48.09 & 48.60 & 49.11 & 49.62 & 50.13 & 50.64 & 51.61 & 51.67 \\
\hline A(45) & 45.50 & 46.00 & 46.50 & 47.00 & 47.50 & 48.00 & 48.50 & 49.00 & 49.50 & 50.00 & 50.50 & 51.00 & 51.50 & 52.00 & 52.50 \\
\hline
\end{tabular}

READY RECKONER TABLE FOR A + B(90-A)
90
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & B(1) & B(2) & B(3) & B(4) & B(5) & B (6) & B(7) & B (8) & B(9) & B(10) & B(11) & B(12) & B(13) & B(14) & B(15) \\
\hline A(46) & 46.49 & 46.98 & 47.47 & 47.96 & 48.44 & 48.93 & 49.42 & 49.91 & 50.40 & 50.89 & 51.38 & 51.87 & 52.36 & 52.84 & 53.33 \\
\hline A(47) & 47.48 & 47.96 & 48.43 & 48.91 & 49.39 & 49.87 & 50.34 & 50.82 & 51.30 & 51.78 & 52.26 & 52.73 & 53.21 & 53.69 & 54.17 \\
\hline A(48) & 48.47 & 48.93 & 49.40 & 49.87 & 50.33 & 50.80 & 51.27 & 51.73 & 52.20 & 52.67 & 53.13 & 53.60 & 54.07 & 54.53 & 55.00 \\
\hline A(49) & 49.46 & 49.91 & 50.37 & 50.82 & 51.28 & 51.73 & 52.19 & 52.64 & 53.10 & 53.56 & 54.01 & 54.47 & 54.92 & 55.38 & 55.83 \\
\hline A(50) & 50.44 & 50.89 & 51.33 & 51.78 & 52.22 & 52.67 & 53.11 & 53.56 & 54.00 & 54.44 & 54.89 & 55.33 & 55.78 & 56.22 & 56.67 \\
\hline A(51) & 51.43 & 51.87 & 52.30 & 52.73 & 53.17 & 53.60 & 54.03 & 54.47 & 54.90 & 55.33 & 55.77 & 56.20 & 56.63 & 57.07 & 57.50 \\
\hline A(52) & 52.42 & 52.84 & 53.27 & 53.69 & 54.11 & 54.53 & 54.96 & 55.38 & 55.80 & 56.22 & 56.64 & 57.07 & 57.49 & 57.91 & 58.33 \\
\hline A(53) & 53.41 & 53.82 & 54.23 & 54.64 & 55.06 & 55.47 & 55.88 & 56.29 & 56.70 & 57.11 & 57.52 & 57.93 & 58.34 & 58.76 & 59.17 \\
\hline A(54) & 54.40 & 54.80 & 55.20 & 55.60 & 56.00 & 56.40 & 56.80 & 57.20 & 57.60 & 58.00 & 58.40 & 58.80 & 59.20 & 59.60 & 60.00 \\
\hline A(55) & 55.39 & 55.78 & 56.17 & 56.56 & 56.94 & 57.33 & 57.72 & 58.11 & 58.50 & 58.89 & 59.28 & 59.67 & 60.06 & 60.44 & 60.83 \\
\hline A(56) & 56.38 & 56.76 & 57.13 & 57.51 & 57.89 & 58.27 & 58.64 & 59.02 & 59.40 & 59.78 & 60.16 & 60.53 & 60.91 & 61.21 & 61.67 \\
\hline A(57) & 57.37 & 57.73 & 58.10 & 58.47 & 58.83 & 59.20 & 59.57 & 59.93 & 60.30 & 60.67 & 61.03 & 61.40 & 61.77 & 62.13 & 62.50 \\
\hline A(58) & 58.36 & 58.71 & 59.07 & 59.42 & 59.78 & 60.13 & 60.49 & 60.84 & 61.20 & 61.56 & 61.91 & 62.26 & 62.62 & 62.98 & 63.33 \\
\hline A(59) & 59.34 & 59.69 & 60.03 & 60.38 & 60.72 & 61.07 & 61.41 & 61.76 & 62.10 & 62.44 & 62.79 & 63.13 & 63.48 & 63.82 & 64.17 \\
\hline A(60) & 60.33 & 60.67 & 61.00 & 61.33 & 61.67 & 62.00 & 62.33 & 62.67 & 63.00 & 63.00 & 63.67 & 64.00 & 64.33 & 64.67 & 65.00 \\
\hline A(61) & 61.32 & 61.64 & 61.97 & 62.29 & 62.61 & 62.93 & 63.26 & 63.58 & 63.90 & 64.22 & 64.54 & 64.87 & 65.19 & 65.51 & 65.83 \\
\hline A(62) & 62.31 & 62.62 & 62.93 & 63.24 & 63.56 & 63.87 & 64.18 & 64.49 & 64.80 & 65.11 & 65.42 & 65.73 & 66.04 & 66.36 & 66.67 \\
\hline A(63) & 63.30 & 63.60 & 63.90 & 64.20 & 64.50 & 64.80 & 65.10 & 65.40 & 65.70 & 66.00 & 66.30 & 66.60 & 66.90 & 67.20 & 67.50 \\
\hline A(64) & 64.29 & 64.58 & 64.87 & 65.16 & 65.44 & 65.73 & 66.02 & 66.31 & 66.60 & 66.89 & 69.18 & 67.47 & 67.76 & 68.04 & 68.33 \\
\hline A(65) & 65.28 & 65.56 & 65.83 & 66.11 & 66.39 & 66.67 & 66.94 & 67.22 & 67.50 & 67.78 & 68.06 & 68.33 & 68.61 & 68.89 & 69.17 \\
\hline A(66) & 66.27 & 66.53 & 66.80 & 67.07 & 67.33 & 67.60 & 67.87 & 68.13 & 68.40 & 68.67 & 68.93 & 69.20 & 69.47 & 69.73 & 70.00 \\
\hline A(67) & 67.26 & 67.51 & 67.77 & 68.02 & 68.28 & 68.53 & 68.79 & 69.04 & 69.30 & 69.56 & 69.81 & 70.07 & 70.32 & 70.58 & 70.83 \\
\hline A(68) & 68.24 & 68.49 & 68.73 & 68.98 & 69.22 & 69.47 & 69.71 & 69.96 & 70.20 & 70.14 & 70.69 & 71.93 & 71.18 & 71.42 & 71.67 \\
\hline A(69) & 69.23 & 69.47 & 69.70 & 69.93 & 70.17 & 70.40 & 70.63 & 70.87 & 71.10 & 71.33 & 71.57 & 71.80 & 72.03 & 72.27 & 72.50 \\
\hline A(70) & 70.22 & 70.44 & 70.67 & 70.89 & 71.11 & 71.33 & 71.56 & 71.78 & 72.00 & 72.22 & 72.44 & 72.67 & 72.89 & 73.11 & 73.33 \\
\hline A(71) & 71.21 & 71.42 & 71.63 & 71.84 & 72.06 & 72.27 & 72.48 & 72.69 & 72.90 & 73.11 & 73.32 & 73.53 & 73.74 & 73.96 & 74.17 \\
\hline A(72) & 72.20 & 72.40 & 72.60 & 72.80 & 73.00 & 73.20 & 73.40 & 73.60 & 73.80 & 74.00 & 74.20 & 74.40 & 74.60 & 74.80 & 75.00 \\
\hline A(73) & 73.19 & 73.38 & 73.57 & 73.76 & 73.94 & 74.13 & 74.32 & 74.51 & 74.70 & 74.89 & 75.08 & 75.27 & 75.46 & 75.64 & 75.83 \\
\hline A(74) & 74.18 & 74.36 & 74.53 & 74.71 & 74.89 & 75.07 & 75.24 & 75.42 & 75.60 & 75.78 & 75.96 & 76.13 & 76.31 & 76.49 & 76.67 \\
\hline A(75) & 75.17 & 75.33 & 75.50 & 75.67 & 75.83 & 76.00 & 76.17 & 76.33 & 76.50 & 76.67 & 76.83 & 77.00 & 77.17 & 77.33 & 77.50 \\
\hline A(76) & 76.16 & 76.31 & 76.47 & 76.62 & 76.78 & 76.93 & 77.09 & 77.24 & 77.40 & 77.56 & 77.71 & 77.87 & 78.02 & 78.18 & 78.33 \\
\hline A(77) & 77.14 & 77.29 & 77.43 & 77.58 & 77.72 & 77.87 & 78.01 & 78.16 & 78.30 & 78.44 & 78.59 & 78.73 & 78.88 & 79.02 & 79.17 \\
\hline A(78) & 78.13 & 78.27 & 78.40 & 78.53 & 78.67 & 78.80 & 78.93 & 79.07 & 79.20 & 79.33 & 79.47 & 79.60 & 79.73 & 79.87 & 80.00 \\
\hline A(79) & 79.12 & 79.24 & 79.37 & 79.49 & 79.61 & 79.73 & 79.86 & 79.98 & 80.10 & 80.22 & 80.34 & 80.47 & 80.59 & 80.71 & 80.83 \\
\hline A(80) & 80.11 & 80.22 & 80.33 & 80.44 & 80.56 & 80.67 & 80.78 & 80.89 & 81.00 & 81.11 & 81.22 & 81.33 & 81.44 & 81.56 & 81.67 \\
\hline A(81) & 81.10 & 81.20 & 81.30 & 81.40 & 81.50 & 81.60 & 81.70 & 81.80 & 81.90 & 82.00 & 82.10 & 82.20 & 82.30 & 82.40 & 82.50 \\
\hline A(82) & 82.09 & 82.18 & 82.27 & 82.36 & 82.44 & 82.53 & 82.62 & 82.71 & 82.80 & 82.89 & 82.98 & 83.07 & 83.16 & 83.24 & 83.33 \\
\hline A(83) & 83.08 & 83.16 & 83.23 & 83.31 & 83.39 & 83.47 & 83.54 & 83.62 & 83.70 & 83.78 & 83.86 & 83.93 & 84.01 & 84.09 & 84.17 \\
\hline A(84) & 84.07 & 84.13 & 84.20 & 84.27 & 84.33 & 84.40 & 84.47 & 84.53 & 84.60 & 84.67 & 84.73 & 84.80 & 84.87 & 84.93 & 85.00 \\
\hline A(85) & 85.06 & 85.11 & 85.17 & 85.22 & 85.28 & 85.33 & 85.39 & 85.44 & 85.50 & 85.56 & 85.61 & 85.67 & 85.72 & 85.78 & 85.83 \\
\hline A(86) & 86.04 & 86.09 & 86.13 & 86.18 & 86.22 & 86.27 & 86.31 & 86.36 & 86.40 & 86.44 & 86.49 & 86.53 & 86.58 & 86.62 & 86.67 \\
\hline A(87) & 87.03 & 87.07 & 87.10 & 87.13 & 87.17 & 87.20 & 87.23 & 87.27 & 87.30 & 87.33 & 87.37 & 87.40 & 87.43 & 87.47 & 87.50 \\
\hline A(88) & 88.02 & 88.04 & 88.07 & 88.09 & 88.11 & 88.13 & 88.16 & 88.18 & 88.20 & 88.22 & 88.24 & 88.27 & 88.29 & 88.13 & 88.33 \\
\hline A(89) & 89.01 & 89.02 & 89.03 & 89.04 & 89.06 & 89.07 & 89.08 & 89.09 & 89.10 & 89.11 & 89.12 & 89.13 & 89.14 & 89.16 & 89.17 \\
\hline A(90) & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 \\
\hline
\end{tabular}

\section*{READY RECKONER TABLE FOR A + B(90-A)}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & B(16) & B(17) & B(18) & B(19) & B(20) & B(21) & B(22) & B(23) & B(24) & B(25) & B(26) & B(27) & B(28) & B(29) & B(30) \\
\hline A(1) & 16.82 & 17.81 & 18.80 & 19.79 & 20.78 & 21.77 & 22.76 & 23.74 & 24.73 & 25.72 & 26.71 & 27.70 & 28.69 & 29.68 & 30.67 \\
\hline A(2) & 17.64 & 18.62 & 19.60 & 20.58 & 21.56 & 22.53 & 23.51 & 24.49 & 25.47 & 26.44 & 27.42 & 28.40 & 29.38 & 30.36 & 31.33 \\
\hline A(3) & 18.47 & 19.43 & 20.40 & 21.37 & 22.33 & 23.30 & 24.27 & 25.23 & 26.20 & 27.17 & 28.13 & 29.10 & 30.07 & 31.03 & 32.00 \\
\hline A(4) & 19.29 & 20.24 & 21.20 & 22.16 & 23.11 & 24.07 & 25.02 & 25.98 & 26.93 & 27.89 & 28.84 & 29.80 & 30.76 & 31.71 & 32.67 \\
\hline A(5) & 20.11 & 21.06 & 22.00 & 22.94 & 23.89 & 24.07 & 25.78 & 26.72 & 27.67 & 28.61 & 29.56 & 30.50 & 31.44 & 32.39 & 33.33 \\
\hline A(6) & 20.93 & 21.87 & 22.80 & 23.73 & 24.67 & 24.83 & 26.53 & 27.47 & 28.40 & 29.33 & 30.27 & 31.20 & 32.13 & 33.07 & 34.00 \\
\hline A(7) & 21.76 & 22.68 & 23.60 & 24.52 & 25.60 & 25.60 & 27.13 & 28.04 & 29.13 & 30.06 & 30.98 & 31.90 & 32.82 & 33.74 & 34.67 \\
\hline A(8) & 22.58 & 23.49 & 24.40 & 25.31 & 26.37 & 26.37 & 27.90 & 28.80 & 29.87 & 30.78 & 31.69 & 32.60 & 33.51 & 34.42 & 35.33 \\
\hline A(9) & 23.40 & 24.30 & 25.20 & 26.10 & 27.00 & 27.90 & 28.80 & 29.70 & 30.60 & 31.50 & 32.40 & 33.30 & 34.20 & 35.10 & 36.00 \\
\hline A(10) & 24.22 & 25.11 & 26.00 & 26.89 & 27.78 & 28.67 & 29.56 & 30.44 & 31.33 & 32.22 & 33.11 & 34.00 & 34.89 & 35.78 & 36.67 \\
\hline A(11) & 25.04 & 25.92 & 26.80 & 27.68 & 28.56 & 29.56 & 30.31 & 31.39 & 32.07 & 32.94 & 33.82 & 34.70 & 35.58 & 36.46 & 37.33 \\
\hline A(12) & 25.87 & 26.73 & 27.60 & 28.47 & 29.33 & 30.20 & 31.07 & 31.93 & 32.80 & 33.67 & 34.53 & 35.40 & 36.27 & 37.13 & 38.00 \\
\hline A(13) & 26.69 & 27.54 & 28.40 & 29.26 & 30.11 & 30.97 & 31.82 & 32.68 & 33.53 & 34.39 & 35.24 & 36.10 & 36.96 & 37.81 & 38.67 \\
\hline A(14) & 27.51 & 28.36 & 29.20 & 30.04 & 30.89 & 31.73 & 32.58 & 33.42 & 34.27 & 35.11 & 35.96 & 36.80 & 37.64 & 38.49 & 39.33 \\
\hline A(15) & 28.33 & 29.17 & 30.00 & 30.83 & 31.67 & 32.50 & 33.33 & 34.17 & 35.00 & 35.83 & 36.67 & 37.50 & 38.33 & 39.17 & 40.00 \\
\hline A(16) & 29.16 & 29.98 & 30.80 & 31.62 & 32.44 & 33.27 & 34.09 & 34.91 & 35.73 & 36.56 & 37.38 & 38.20 & 39.02 & 39.84 & 40.67 \\
\hline A(17) & 29.98 & 30.79 & 31.60 & 32.41 & 32.22 & 34.03 & 34.84 & 35.66 & 36.47 & 37.28 & 38.09 & 38.90 & 39.71 & 40.52 & 41.33 \\
\hline A(18) & 30.80 & 31.60 & 32.40 & 32.20 & 34.00 & 34.80 & 35.60 & 36.40 & 37.20 & 38.00 & 38.80 & 39.60 & 40.40 & 41.20 & 42.00 \\
\hline A(19) & 31.62 & 32.41 & 33.20 & 33.99 & 34.78 & 35.57 & 36.36 & 37.14 & 37.93 & 38.72 & 39.51 & 40.30 & 41.09 & 41.88 & 42.67 \\
\hline A(20) & 32.44 & 33.22 & 34.00 & 34.78 & 35.56 & 36.33 & 37.11 & 37.89 & 38.67 & 39.44 & 40.22 & 41.00 & 41.78 & 42.56 & 43.33 \\
\hline A(21) & 33.27 & 34.03 & 34.80 & 35.57 & 36.33 & 37.10 & 37.87 & 38.63 & 39.40 & 40.17 & 40.93 & 41.70 & 42.47 & 43.23 & 44.00 \\
\hline A(22) & 34.09 & 34.84 & 35.60 & 36.36 & 37.11 & 37.87 & 38.62 & 39.38 & 40.13 & 40.89 & 41.64 & 42.40 & 43.16 & 43.91 & 44.67 \\
\hline A(23) & 34.91 & 35.66 & 36.40 & 37.14 & 37.89 & 38.63 & 39.38 & 40.12 & 40.87 & 41.61 & 42.36 & 43.10 & 43.84 & 44.59 & 45.33 \\
\hline A(24) & 35.73 & 36.47 & 37.20 & 37.93 & 38.67 & 39.40 & 40.13 & 40.87 & 41.60 & 42.33 & 43.07 & 43.80 & 44.53 & 45.27 & 46.00 \\
\hline A(25) & 36.56 & 37.28 & 38.00 & 38.72 & 39.44 & 40.17 & 40.89 & 41.61 & 42.33 & 43.06 & 43.78 & 44.50 & 45.22 & 45.94 & 46.67 \\
\hline A(26) & 37.38 & 38.09 & 38.80 & 39.51 & 40.22 & 40.93 & 41.64 & 42.36 & 43.07 & 43.78 & 44.49 & 45.20 & 45.91 & 46.62 & 47.33 \\
\hline A(27) & 38.20 & 38.90 & 39.60 & 40.30 & 41.00 & 41.70 & 42.40 & 43.10 & 43.80 & 44.50 & 45.20 & 45.90 & 46.60 & 47.30 & 48.00 \\
\hline A(28) & 39.02 & 39.71 & 40.40 & 41.09 & 41.78 & 42.47 & 43.16 & 43.84 & 44.53 & 45.22 & 45.91 & 46.60 & 47.29 & 47.98 & 48.67 \\
\hline A(29) & 39.84 & 40.52 & 41.20 & 41.88 & 42.56 & 43.23 & 43.91 & 44.59 & 45.27 & 45.94 & 46.62 & 47.30 & 47.98 & 48.66 & 49.33 \\
\hline A(30) & 40.67 & 41.33 & 42.00 & 42.67 & 43.33 & 44.00 & 44.67 & 45.33 & 46.00 & 46.67 & 47.33 & 48.00 & 48.67 & 49.33 & 50.00 \\
\hline A(31) & 41.49 & 42.14 & 42.80 & 43.46 & 44.11 & 44.77 & 45.42 & 46.08 & 46.73 & 47.39 & 48.04 & 48.70 & 49.36 & 50.01 & 50.67 \\
\hline A(32) & 42.31 & 42.96 & 43.60 & 44.24 & 44.89 & 45.23 & 46.18 & 46.82 & 47.47 & 48.11 & 48.76 & 49.40 & 50.04 & 50.69 & 51.33 \\
\hline A(33) & 43.13 & 43.77 & 44.40 & 45.03 & 45.67 & 46.30 & 46.93 & 47.57 & 48.20 & 48.83 & 49.47 & 50.10 & 50.73 & 51.37 & 52.00 \\
\hline A(34) & 43.96 & 44.58 & 45.20 & 45.82 & 46.44 & 47.07 & 47.69 & 48.31 & 48.93 & 49.56 & 50.18 & 50.80 & 51.42 & 52.04 & 52.67 \\
\hline A(35) & 44.78 & 45.39 & 46.00 & 46.61 & 47.22 & 47.83 & 48.4 & 49.06 & 49.67 & 50.28 & 50.89 & 51.50 & 52.11 & 52.72 & 53.33 \\
\hline A(36) & 45.60 & 46.20 & 46.80 & 47.40 & 48.00 & 48.60 & 49.20 & 49.80 & 50.40 & 51.00 & 51.60 & 52.20 & 52.80 & 53.40 & 54.00 \\
\hline A(37) & 46.42 & 47.01 & 47.60 & 48.19 & 48.78 & 49.37 & 49.96 & 50.54 & 51.13 & 51.72 & 52.31 & 52.90 & 53.40 & 54.08 & 54.67 \\
\hline A(38) & 47.24 & 47.82 & 48.40 & 48.98 & 49.56 & 50.13 & 50.71 & 51.29 & 51.87 & 52.44 & 53.02 & 53.60 & 54.18 & 54.76 & 55.33 \\
\hline A(39) & 48.07 & 48.63 & 49.20 & 49.77 & 50.33 & 50.90 & 51.47 & 52.03 & 52.60 & 53.17 & 53.73 & 54.30 & 54.87 & 55.43 & 56.00 \\
\hline A(40) & 48.89 & 49.44 & 50.00 & 50.56 & 51.11 & 51.67 & 52.22 & 52.78 & 53.33 & 53.89 & 54.44 & 55.00 & 55.56 & 56.11 & 56.67 \\
\hline A(41) & 49.71 & 50.26 & 50.80 & 51.34 & 51.89 & 52.43 & 52.98 & 53.52 & 54.07 & 54.61 & 55.16 & 55.70 & 56.24 & 56.79 & 57.33 \\
\hline A(42) & 50.53 & 51.07 & 51.60 & 52.13 & 52.67 & 53.20 & 53.73 & 54.27 & 54.80 & 55.33 & 55.87 & 56.40 & 56.93 & 57.47 & 58.00 \\
\hline A(43) & 51.36 & 51.88 & 52.40 & 52.92 & 53.44 & 23.97 & 54.49 & 55.01 & 55.53 & 56.06 & 56.58 & 57.10 & 57.62 & 58.14 & 58.67 \\
\hline A(44) & 52.18 & 52.69 & 53.20 & 53.71 & 54.22 & 54.73 & 55.24 & 55.76 & 56.27 & 56.78 & 57.29 & 57.80 & 58.31 & 58.82 & 59.33 \\
\hline A(45) & 53.00 & 53.50 & 54.00 & 54.50 & 55.00 & 55.50 & 56.00 & 56.50 & 57.00 & 57.50 & 58.00 & 58.50 & 59.00 & 59.50 & 60.00 \\
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\end{tabular}

\section*{READY RECKONER TABLE FOR A + B(90-A)} 90
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & B(16) & B(17) & B(18) & B(19) & B(20) & B(21) & B(22) & B(23) & B(24) & B(25) & B(26) & B(27) & B(28) & B(29) & B(30) \\
\hline A(46) & 53.82 & 54.31 & 54.80 & 55.29 & 55.78 & 56.27 & 56.76 & 57.24 & 57.73 & 58.22 & 58.71 & 59.20 & 59.69 & 60.18 & 60.67 \\
\hline A(47) & 54.64 & 55.12 & 55.60 & 56.08 & 56.56 & 57.03 & 57.51 & 57.99 & 58.47 & 58.94 & 59.42 & 59.90 & 60.38 & 60.86 & 61.33 \\
\hline A(48) & 55.47 & 55.93 & 56.40 & 56.87 & 57.33 & 57.80 & 58.27 & 58.73 & 59.20 & 59.67 & 60.13 & 60.60 & 61.07 & 61.53 & 62.00 \\
\hline A(49) & 56.29 & 56.74 & 57.20 & 57.66 & 58.11 & 58.57 & 59.02 & 59.48 & 59.93 & 60.39 & 60.84 & 61.30 & 61.76 & 62.21 & 62.67 \\
\hline A(50) & 57.11 & 57.56 & 58.00 & 58.44 & 58.89 & 59.33 & 59.78 & 60.22 & 60.67 & 61.11 & 61.56 & 62.00 & 62.44 & 62.89 & 63.33 \\
\hline A(51) & 57.93 & 58.37 & 58.80 & 59.23 & 59.67 & 60.10 & 60.55 & 60.97 & 61.40 & 61.83 & 62.27 & 62.70 & 63.13 & 63.57 & 64.00 \\
\hline A(52) & 58.76 & 59.18 & 59.60 & 60.02 & 60.44 & 60.87 & 61.29 & 61.71 & 62.13 & 62.56 & 62.98 & 63.40 & 63.82 & 64.26 & 64.67 \\
\hline A(53) & 59.58 & 59.99 & 60.40 & 60.81 & 61.22 & 61.63 & 62.04 & 62.46 & 62.87 & 63.28 & 63.69 & 64.10 & 64.51 & 64.92 & 65.33 \\
\hline A(54) & 60.40 & 60.80 & 61.20 & 61.60 & 62.00 & 62.40 & 62.80 & 63.20 & 63.60 & 64.00 & 64.40 & 64.80 & 65.20 & 65.60 & 66.00 \\
\hline A(55) & 61.22 & 61.61 & 62.00 & 62.39 & 62.78 & 63.17 & 63.56 & 63.94 & 64.33 & 64.72 & 65.11 & 65.50 & 65.89 & 66.28 & 66.67 \\
\hline A(56) & 62.04 & 62.42 & 62.80 & 63.18 & 63.56 & 63.93 & 64.31 & 64.69 & 65.07 & 65.44 & 65.82 & 66.20 & 66.58 & 66.96 & 67.33 \\
\hline A(57) & 62.87 & 63.23 & 63.60 & 63.97 & 64.33 & 64.70 & 65.07 & 65.43 & 65.80 & 66.17 & 66.53 & 66.90 & 67.27 & 67.63 & 68.00 \\
\hline A(58) & 63.69 & 64.04 & 64.40 & 64.76 & 65.11 & 65.47 & 65.82 & 66.18 & 66.53 & 66.89 & 67.24 & 67.60 & 67.96 & 68.31 & 68.67 \\
\hline A(59) & 64.51 & 64.86 & 65.20 & 65.54 & 65.89 & 66.23 & 66.58 & 66.92 & 67.27 & 67.61 & 67.96 & 68.30 & 68.64 & 68.99 & 69.33 \\
\hline A(60) & 65.33 & 65.67 & 66.00 & 66.33 & 66.67 & 67.00 & 67.33 & 67.67 & 68.00 & 68.33 & 68.67 & 69.00 & 69.33 & 69.67 & 70.00 \\
\hline A(61) & 66.16 & 66.48 & 66.80 & 67.12 & 67.44 & 67.77 & 68.09 & 68.41 & 68.73 & 69.06 & 69.38 & 69.70 & 70.02 & 70.34 & 70.67 \\
\hline A(62) & 66.98 & 67.29 & 67.60 & 67.91 & 68.22 & 68.53 & 68.84 & 69.16 & 69.47 & 69.78 & 70.09 & 70.40 & 70.71 & 71.02 & 71.33 \\
\hline A(63) & 67.80 & 68.10 & 68.40 & 68.70 & 69.00 & 69.30 & 69.60 & 69.90 & 70.20 & 70.50 & 70.80 & 71.10 & 71.40 & 71.70 & 72.00 \\
\hline A(64) & 68.62 & 68.91 & 69.20 & 69.49 & 69.78 & 70.07 & 70.36 & 70.64 & 70.93 & 71.22 & 71.51 & 71.80 & 72.09 & 72.38 & 72.67 \\
\hline A(65) & 69.44 & 69.72 & 70.00 & 70.28 & 70.56 & 70.83 & 71.11 & 71.39 & 71.67 & 71.94 & 72.22 & 72.50 & 72.78 & 73.06 & 73.33 \\
\hline A(66) & 70.27 & 70.53 & 70.80 & 71.07 & 71.33 & 71.60 & 71.87 & 72.13 & 72.40 & 72.67 & 72.93 & 73.20 & 73.47 & 73.73 & 74.00 \\
\hline A(67) & 71.09 & 71.34 & 71.60 & 71.86 & 72.11 & 72.37 & 72.62 & 72.88 & 73.13 & 73.39 & 73.64 & 73.90 & 74.16 & 74.41 & 74.67 \\
\hline A(68) & 71.91 & 72.16 & 72.40 & 72.64 & 72.89 & 73.13 & 73.38 & 73.62 & 73.87 & 74.11 & 74.36 & 74.60 & 74.84 & 75.09 & 75.33 \\
\hline A(69) & 72.73 & 72.97 & 73.20 & 73.43 & 73.67 & 73.90 & 74.13 & 74.37 & 74.60 & 74.83 & 75.07 & 75.30 & 75.53 & 75.77 & 76.00 \\
\hline A(70) & 73.56 & 73.78 & 74.00 & 74.22 & 74.44 & 74.67 & 74.89 & 75.11 & 75.33 & 75.56 & 75.78 & 76.00 & 76.22 & 76.44 & 76.67 \\
\hline A(71) & 74.38 & 74.59 & 74.80 & 75.01 & 75.22 & 75.43 & 75.64 & 75.86 & 76.07 & 76.28 & 76.49 & 76.70 & 76.91 & 77.12 & 77.33 \\
\hline A(72) & 75.20 & 75.40 & 75.60 & 75.80 & 76.00 & 76.20 & 76.40 & 76.60 & 76.80 & 77.00 & 77.20 & 77.40 & 77.60 & 77.80 & 78.00 \\
\hline A(73) & 76.02 & 76.21 & 76.40 & 76.59 & 76.78 & 76.97 & 77.16 & 77.34 & 77.53 & 77.72 & 77.91 & 78.10 & 78.29 & 78.48 & 78.67 \\
\hline A(74) & 76.84 & 77.02 & 77.20 & 77.38 & 77.56 & 77.73 & 77.91 & 78.09 & 78.27 & 78.44 & 78.62 & 78.80 & 78.98 & 79.16 & 79.33 \\
\hline A(75) & 77.67 & 77.83 & 78.00 & 78.17 & 78.33 & 78.50 & 78.67 & 78.83 & 79.00 & 79.17 & 79.33 & 79.50 & 79.67 & 79.83 & 80.00 \\
\hline A(76) & 78.49 & 78.64 & 78.80 & 78.96 & 79.11 & 79.27 & 79.42 & 79.58 & 79.73 & 79.89 & 80.04 & 80.20 & 80.36 & 80.51 & 80.67 \\
\hline A(77) & 79.31 & 79.46 & 79.60 & 79.74 & 79.89 & 80.03 & 80.18 & 80.32 & 80.47 & 80.61 & 80.76 & 80.90 & 81.04 & 81.19 & 81.33 \\
\hline A(78) & 80.13 & 80.27 & 80.27 & 80.40 & 80.67 & 80.80 & 80.93 & 81.07 & 81.20 & 81.33 & 81.47 & 81.60 & 81.73 & 81.87 & 82.00 \\
\hline A(79) & 80.96 & 81.08 & 81.20 & 81.32 & 81.44 & 81.57 & 81.69 & 81.81 & 81.93 & 82.06 & 82.18 & 82.30 & 82.42 & 82.54 & 82.67 \\
\hline A(80) & 81.76 & 81.89 & 82.00 & 82.11 & 82.22 & 82.33 & 82.44 & 82.56 & 82.67 & 82.78 & 82.89 & 83.00 & 83.11 & 83.22 & 83.33 \\
\hline A(81) & 82.60 & 82.70 & 82.80 & 82.90 & 83.00 & 83.10 & 83.20 & 83.30 & 83.40 & 83.50 & 83.60 & 83.70 & 83.80 & 83.90 & 84.00 \\
\hline A(82) & 83.42 & 83.51 & 83.60 & 83.69 & 83.78 & 83.87 & 83.96 & 84.04 & 84.13 & 84.22 & 84.31 & 81.40 & 84.90 & 84.58 & 84.67 \\
\hline A(83) & 84.24 & 84.24 & 84.40 & 84.48 & 84.56 & 84.63 & 84.71 & 84.79 & 84.87 & 84.89 & 85.02 & 85.10 & 85.18 & 85.26 & 85.33 \\
\hline A(84) & 85.07 & 85.07 & 85.20 & 85.27 & 85.33 & 85.40 & 85.47 & 85.53 & 85.60 & 85.67 & 85.73 & 85.80 & 85.87 & 85.93 & 86.00 \\
\hline A(85) & 85.89 & 85.89 & 86.00 & 86.06 & 86.11 & 86.17 & 86.22 & 86.28 & 86.33 & 86.39 & 86.44 & 86.50 & 86.56 & 86.61 & 86.67 \\
\hline A(86) & 86.71 & 86.76 & 86.80 & 86.84 & 86.89 & 86.89 & 86.98 & 87.02 & 87.07 & 87.11 & 87.16 & 87.20 & 87.24 & 87.29 & 87.33 \\
\hline A(87) & 87.53 & 87.57 & 87.57 & 87.60 & 87.63 & 87.67 & 87.73 & 87.77 & 87.80 & 87.83 & 87.87 & 87.90 & 87.93 & 87.97 & 88.00 \\
\hline A(88) & 88.36 & 88.38 & 88.38 & 88.40 & 88.42 & 88.44 & 88.49 & 88.51 & 88.53 & 88.56 & 88.59 & 88.60 & 88.62 & 88.64 & 88.67 \\
\hline A(89) & 89.18 & 89.13 & 89.19 & 89.20 & 89.21 & 89.23 & 89.24 & 89.26 & 89.27 & 89.28 & 89.29 & 89.30 & 89.31 & 89.32 & 89.33 \\
\hline A(90) & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 \\
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\section*{READY RECKONER TABLE FOR A+ B(90-A)} 90
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & B(31) & B(32) & B(33) & B(34) & B(35) & B(36) & B(37) & B(38) & B(39) & B(40) & B(41) & B(42) & B(43) & B(44) & B(45) \\
\hline A(1) & 31.66 & 32.64 & 33.63 & 34.62 & 35.61 & 36.60 & 37.59 & 38.58 & 39.57 & 40.56 & 41.54 & 42.53 & 42.52 & 44.51 & 45.50 \\
\hline A(2) & 32.31 & 33.29 & 34.27 & 35.24 & 36.22 & 37.20 & 38.18 & 39.16 & 40.13 & 41.11 & 42.09 & 43.07 & 44.04 & 45.02 & 46.00 \\
\hline A(3) & 32.97 & 33.93 & 34.90 & 35.87 & 36.83 & 37.80 & 38.77 & 39.73 & 40.70 & 47.67 & 42.63 & 43.60 & 44.57 & 45.53 & 46.50 \\
\hline A(4) & 33.62 & 34.58 & 35.53 & 36.49 & 37.44 & 38.40 & 39.36 & 40.31 & 41.27 & 42.22 & 43.18 & 44.13 & 45.09 & 46.04 & 47.00 \\
\hline A(5) & 34.28 & 35.22 & 36.17 & 37.11 & 38.06 & 39.00 & 39.94 & 40.89 & 41.83 & 42.78 & 43.72 & 44.67 & 45.61 & 46.56 & 47.50 \\
\hline A(6) & 34.93 & 35.87 & 36.80 & 37.73 & 38.67 & 39.60 & 40.53 & 41.74 & 42.40 & 43.33 & 44.27 & 45.20 & 46.13 & 47.07 & 48.00 \\
\hline A(7) & 35.59 & 36.51 & 37.43 & 38.36 & 39.28 & 40.20 & 41.12 & 42.04 & 42.97 & 43.89 & 44.81 & 45.73 & 46.66 & 47.58 & 48.50 \\
\hline A(8) & 36.24 & 37.16 & 38.07 & 38.98 & 39.89 & 40.80 & 41.71 & 42.62 & 43.53 & 44.44 & 45.36 & 46.27 & 47.18 & 48.09 & 49.00 \\
\hline A(9) & 36.90 & 37.80 & 38.70 & 39.60 & 40.50 & 41.40 & 42.30 & 43.20 & 44.10 & 45.00 & 45.90 & 46.80 & 47.70 & 48.60 & 49.50 \\
\hline A(10) & 37.56 & 38.44 & 38.33 & 40.22 & 41.11 & 42.00 & 42.89 & 43.78 & 44.67 & 45.56 & 46.44 & 47.33 & 48.22 & 49.11 & 50.00 \\
\hline A(11) & 38.21 & 39.09 & 39.97 & 40.84 & 41.72 & 42.60 & 43.48 & 44.36 & 45.23 & 46.11 & 46.99 & 47.87 & 48.74 & 49.62 & 50.50 \\
\hline A(12) & 38.87 & 39.73 & 40.60 & 41.47 & 42.33 & 43.20 & 44.07 & 44.93 & 45.80 & 46.67 & 47.53 & 48.40 & 49.27 & 50.13 & 51.00 \\
\hline A(13) & 39.52 & 40.38 & 41.23 & 42.94 & 43.80 & 44.66 & 45.51 & 46.37 & 47.22 & 48.08 & 48.93 & 49.79 & 50.64 & 50.64 & 51.50 \\
\hline A(15) & 40.83 & 41.67 & 42.50 & 43.33 & 44.17 & 45.00 & 45.83 & 46.67 & 47.50 & 48.33 & 49.17 & 50.00 & 50.83 & 51.67 & 52.50 \\
\hline A(16) & 41.49 & 42.31 & 43.13 & 43.96 & 44.78 & 45.60 & 46.42 & 47.24 & 48.07 & 48.89 & 49.71 & 50.53 & 51.36 & 52.18 & 53.00 \\
\hline A(17) & 42.14 & 42.96 & 43.77 & 44.58 & 45.39 & 46.20 & 47.01 & 47.82 & 48.63 & 49.44 & 50.26 & 51.07 & 51.88 & 52.69 & 53.50 \\
\hline A(18) & 42.80 & 43.60 & 44.40 & 45.20 & 46.00 & 46.80 & 47.80 & 47.60 & 48.40 & 49.20 & 50.00 & 51.60 & 52.40 & 53.20 & 54.00 \\
\hline A(19) & 43.46 & 44.24 & 45.03 & 45.82 & 46.61 & 47.40 & 48.19 & 48.98 & 49.77 & 50.56 & 51.34 & 52.13 & 52.92 & 53.71 & 54.50 \\
\hline A(20) & 44.11 & 44.89 & 45.67 & 46.44 & 47.22 & 48.00 & 48.78 & 49.56 & 50.33 & 51.11 & 51.89 & 52.67 & 53.44 & 54.22 & 55.00 \\
\hline A(21) & 44.77 & 45.53 & 46.30 & 47.07 & 47.83 & 48.60 & 49.37 & 50.13 & 50.90 & 51.67 & 52.43 & 53.20 & 53.97 & 54.73 & 55.50 \\
\hline A(22) & 45.42 & 46.18 & 46.93 & 47.69 & 48.44 & 49.20 & 49.96 & 50.71 & 51.47 & 52.22 & 52.98 & 53.73 & 54.49 & 55.24 & 56.00 \\
\hline A(23) & 46.08 & 46.82 & 47.57 & 58.31 & 49.06 & 49.80 & 50.54 & 51.29 & 52.03 & 52.78 & 53.52 & 54.27 & 55.01 & 55.76 & 56.50 \\
\hline A(24) & 46.73 & 47.47 & 48.20 & 48.93 & 49.67 & 50.40 & 51.13 & 51.87 & 52.60 & 53.33 & 54.07 & 54.80 & 55.53 & 56.27 & 57.00 \\
\hline A(25) & 47.39 & 48.11 & 48.83 & 49.56 & 50.28 & 51.00 & 51.72 & 52.44 & 53.17 & 53.89 & 54.61 & 55.33 & 56.06 & 56.78 & 57.50 \\
\hline A(26) & 48.04 & 48.76 & 49.47 & 50.18 & 50.89 & 51.60 & 52.31 & 53.02 & 53.73 & 54.44 & 55.16 & 55.87 & 56.58 & 57.29 & 58.00 \\
\hline A(27) & 48.70 & 49.40 & 50.10 & 50.80 & 51.50 & 52.20 & 52.90 & 53.50 & 54.30 & 55.00 & 55.70 & 56.40 & 57.10 & 57.80 & 58.50 \\
\hline A(28) & 49.36 & 50.04 & 50.73 & 51.42 & 52.11 & 52.80 & 53.49 & 54.18 & 54.87 & 55.56 & 56.24 & 56.93 & 57.62 & 58.31 & 59.00 \\
\hline A(29) & 50.01 & 50.60 & 51.37 & 52.04 & 52.72 & 53.40 & 54.08 & 54.76 & 55.43 & 56.11 & 56.79 & 57.47 & 58.14 & 58.82 & 59.50 \\
\hline A(30) & 50.67 & 51.33 & 52.00 & 53.67 & 53.33 & 54.00 & 54.67 & 55.33 & 56.00 & 56.67 & 57.33 & 58.00 & 58.67 & 59.33 & 60.00 \\
\hline A(31) & 51.32 & 51.98 & 52.63 & 53.29 & 53.94 & 54.60 & 55.26 & 55.91 & 56.57 & 57.22 & 57.88 & 58.53 & 59.19 & 59.84 & 60.50 \\
\hline A(32) & 51.98 & 52.62 & 53.27 & 53.91 & 54.56 & 55.20 & 55.84 & 57.13 & 57.13 & 57.78 & 58.42 & 59.07 & 59.71 & 60.36 & 61.00 \\
\hline A(33) & 52.63 & 53.27 & 53.90 & 54.53 & 55.17 & 55.80 & 56.43 & 57.07 & 57.70 & 58.33 & 58.97 & 59.60 & 60.23 & 60.87 & 61.50 \\
\hline A(34) & 53.29 & 53.91 & 54.53 & 55.16 & 55.78 & 56.40 & 57.02 & 57.64 & 58.27 & 58.89 & 59.51 & 60.13 & 60.76 & 61.38 & 62.00 \\
\hline A(35) & 53.94 & 54.56 & 55.17 & 55.78 & 56.39 & 57.00 & 57.61 & 58.22 & 58.83 & 59.44 & 60.06 & 60.67 & 61.28 & 61.89 & 62.50 \\
\hline A(36) & 54.60 & 55.20 & 55.80 & 56.40 & 57.00 & 57.60 & 58.20 & 58.80 & 59.40 & 60.00 & 60.60 & 61.20 & 61.80 & 62.40 & 63.00 \\
\hline A(37) & 55.26 & 55.84 & 56.43 & 57.02 & 57.61 & 58.20 & 58.79 & 59.38 & 59.97 & 60.56 & 61.14 & 61.73 & 62.32 & 62.91 & 63.50 \\
\hline A(38) & 55.91 & 56.49 & 57.07 & 57.64 & 58.22 & 58.80 & 59.38 & 59.96 & 60.53 & 61.11 & 61.69 & 62.27 & 62.84 & 63.42 & 64.00 \\
\hline A(39) & 56.57 & 57.13 & 57.70 & 58.27 & 58.83 & 59.40 & 59.97 & 60.53 & 61.10 & 61.67 & 62.23 & 62.80 & 63.37 & 63.93 & 64.50 \\
\hline A(40) & 57.22 & 57.78 & 58.33 & 58.89 & 59.44 & 60.00 & 60.56 & 61.11 & 61.67 & 62.22 & 62.78 & 63.33 & 63.89 & 64.44 & 65.00 \\
\hline A(41) & 57.88 & 58.42 & 58.97 & 59.51 & 60.06 & 60.60 & 61.14 & 61.69 & 62.27 & 62.78 & 63.32 & 63.87 & 64.41 & 64.96 & 65.50 \\
\hline A(42) & 58.53 & 59.07 & 59.60 & 60.13 & 60.67 & 61.20 & 61.73 & 62.27 & 62.80 & 63.33 & 63.87 & 64.40 & 64.93 & 65.47 & 66.00 \\
\hline A(43) & 59.19 & 59.71 & 60.23 & 60.76 & 61.28 & 61.80 & 62.32 & 63.84 & 63.37 & 63.89 & 64.41 & 64.93 & 65.46 & 65.98 & 66.50 \\
\hline A(44) & 59.84 & 60.36 & 60.87 & 61.38 & 61.89 & 62.40 & 62.91 & 63.42 & 63.93 & 64.44 & 64.96 & 65.47 & 65.98 & 66.49 & 67.00 \\
\hline A(45) & 60.50 & 61.00 & 61.50 & 62.00 & 62.50 & 63.00 & 63.50 & 64.00 & 64.50 & 65.00 & 65.50 & 65.50 & 65.50 & 67.00 & 67.50 \\
\hline
\end{tabular}

\section*{READY RECKONER TABLE FOR A + B(90-A) 90}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & B(31) & B(32) & B(33) & B(34) & B(35) & B(36) & B(37) & B(38) & B(39) & B(40) & B(41) & B(42) & B(43) & B(44) & B(45) \\
\hline A(46) & 61.16 & 61.64 & 62.13 & 62.62 & 63.13 & 63.60 & 64.09 & 64.58 & 65.07 & 65.56 & 66.04 & 66.53 & 67.02 & 67.51 & 68.00 \\
\hline A(47) & 61.81 & 62.29 & 62.77 & 63.24 & 63.72 & 64.20 & 64.68 & 65.16 & 65.63 & 66.11 & 66.59 & 67.07 & 67.54 & 68.02 & 68.50 \\
\hline A(48) & 62.47 & 62.93 & 63.40 & 63.87 & 64.33 & 64.80 & 65.27 & 65.73 & 66.20 & 66.67 & 67.13 & 67.60 & 68.07 & 68.53 & 69.00 \\
\hline A(49) & 63.12 & 63.58 & 64.03 & 64.49 & 64.94 & 65.40 & 65.86 & 66.3 & 66.77 & 67.22 & 67.68 & 68.13 & 68.59 & 69.04 & 69.50 \\
\hline A(50) & 63.78 & 64.22 & 64.67 & 65.11 & 65.56 & 66.00 & 66.44 & 66.89 & 67.33 & 67.78 & 68.22 & 68.67 & 69.11 & 69.56 & 70.00 \\
\hline A(51) & 64.43 & 64.87 & 65.30 & 65.73 & 66.17 & 66.60 & 67.03 & 67.47 & 67.90 & 68.33 & 68.77 & 69.20 & 69.63 & 70.07 & 70.50 \\
\hline A(52) & 65.09 & 65.51 & 65.93 & 66.33 & 66.78 & 67.20 & 67.62 & 68.40 & 68.47 & 68.89 & 69.31 & 69.73 & 70.16 & 70.58 & 71.00 \\
\hline A(53) & 65.74 & 66.16 & 66.57 & 66.98 & 67.39 & 67.80 & 68.21 & 68.62 & 69.03 & 69.44 & 69.86 & 70.27 & 70.68 & 71.09 & 71.50 \\
\hline A(54) & 66.40 & 66.80 & 67.20 & 67.60 & 68.00 & 68.40 & 68.80 & 68.20 & 69.60 & 70.00 & 70.40 & 70.80 & 71.20 & 71.60 & 72.00 \\
\hline A(55) & 67.06 & 67.44 & 67.83 & 68.22 & 68.61 & 69.00 & 69.39 & 69.78 & 70.17 & 70.56 & 70.94 & 71.33 & 71.72 & 72.11 & 72.50 \\
\hline A(56) & 67.71 & 68.09 & 68.47 & 68.84 & 69.22 & 69.60 & 69.98 & 70.36 & 70.73 & 71.11 & 71.49 & 74.87 & 72.24 & 72.62 & 73.00 \\
\hline A(57) & 68.37 & 68.73 & 69.10 & 69.47 & 69.83 & 70.20 & 70.57 & 70.93 & 71.30 & 71.67 & 72.03 & 72.40 & 72.77 & 73.13 & 73.50 \\
\hline A(58) & 69.02 & 69.38 & 69.79 & 70.09 & 70.44 & 70.80 & 71.16 & 71.51 & 71.87 & 72.22 & 72.58 & 72.93 & 73.29 & 73.64 & 74.00 \\
\hline A(59) & 69.68 & 70.02 & 70.37 & 70.71 & 71.06 & 71.40 & 71.74 & 72.09 & 72.43 & 72.78 & 73.12 & 73.47 & 73.81 & 74.16 & 74.50 \\
\hline A(60) & 70.33 & 70.67 & 71.00 & 71.33 & 71.57 & 72.00 & 72.33 & 72.67 & 73.00 & 73.33 & 73.67 & 74.00 & 74.33 & 74.67 & 75.00 \\
\hline A(61) & 70.99 & 71.31 & 71.63 & 71.96 & 72.28 & 72.60 & 72.92 & 73.24 & 73.57 & 73.89 & 74.21 & 74.53 & 74.86 & 75.18 & 75.50 \\
\hline A(62) & 71.64 & 71.96 & 72.27 & 72.58 & 72.89 & 73.20 & 73.51 & 73.82 & 74.13 & 74.44 & 74.76 & 75.07 & 75.38 & 75.69 & 76.00 \\
\hline A(63) & 72.30 & 72.60 & 72.90 & 73.20 & 73.50 & 73.80 & 74.10 & 74.40 & 74.70 & 75.00 & 75.30 & 75.60 & 75.90 & 76.20 & 76.50 \\
\hline A(64) & 72.96 & 73.24 & 73.53 & 73.82 & 74.11 & 74.40 & 74.69 & 74.98 & 75.27 & 75.56 & 75.84 & 76.13 & 76.42 & 76.71 & 77.00 \\
\hline A(65) & 73.61 & 73.89 & 74.17 & 74.44 & 74.72 & 75.00 & 75.28 & 75.56 & 75.83 & 76.11 & 76.39 & 76.67 & 76.94 & 77.22 & 77.50 \\
\hline A(66) & 74.27 & 74.53 & 74.80 & 75.07 & 75.33 & 75.60 & 75.87 & 76.13 & 76.40 & 76.67 & 76.93 & 77.20 & 77.47 & 77.73 & 78.00 \\
\hline A(67) & 74.92 & 75.18 & 75.43 & 75.69 & 75.94 & 76.20 & 76.46 & 76.71 & 76.97 & 77.22 & 77.48 & 77.73 & 77.99 & 78.24 & 78.50 \\
\hline A(68) & 75.58 & 75.82 & 76.07 & 76.31 & 76.56 & 76.80 & 77.04 & 77.29 & 77.53 & 77.78 & 78.02 & 78.27 & 78.51 & 78.76 & 79.00 \\
\hline A(69) & 76.23 & 76.47 & 76.70 & 76.93 & 77.17 & 77.40 & 77.63 & 77.87 & 78.10 & 78.33 & 78.57 & 78.80 & 79.03 & 79.27 & 79.50 \\
\hline A(70) & 76.89 & 77.11 & 77.33 & 77.56 & 77.78 & 78.00 & 78.22 & 78.44 & 78.67 & 78.89 & 79.11 & 79.33 & 79.56 & 79.78 & 80.00 \\
\hline A(71) & 77.54 & 77.76 & 77.97 & 78.18 & 78.39 & 78.60 & 78.81 & 79.02 & 79.23 & 79.44 & 79.66 & 79.87 & 80.08 & 80.29 & 80.50 \\
\hline A(72) & 78.20 & 78.40 & 78.60 & 78.80 & 79.00 & 79.20 & 79.40 & 79.60 & 79.80 & 80.00 & 80.20 & 80.40 & 80.60 & 80.80 & 81.00 \\
\hline A(73) & 78.86 & 79.04 & 79.23 & 79.42 & 79.61 & 79.80 & 79.99 & 80.18 & 80.37 & 80.56 & 80.74 & 80.93 & 81.12 & 81.31 & 81.50 \\
\hline A(74) & 79.51 & 79.69 & 79.87 & 80.04 & 80.22 & 80.40 & 80.58 & 80.76 & 80.93 & 81.11 & 81.29 & 81.47 & 81.64 & 81.82 & 82.00 \\
\hline A(75) & 80.17 & 80.33 & 80.50 & 80.67 & 80.83 & 81.00 & 81.17 & 81.33 & 81.50 & 81.67 & 81.83 & 82.00 & 82.17 & 82.33 & 82.50 \\
\hline A(76) & 80.82 & 80.98 & 81.13 & 81.29 & 81.44 & 81.60 & 81.76 & 81.91 & 82.07 & 82.22 & 82.38 & 82.53 & 82.69 & 82.84 & 83.00 \\
\hline A(77) & 81.48 & 81.62 & 81.77 & 81.91 & 82.06 & 82.20 & 82.34 & 82.49 & 82.63 & 82.78 & 82.92 & 83.07 & 83.21 & 83.36 & 83.50 \\
\hline A(78) & 82.13 & 82.27 & 82.40 & 82.53 & 82.67 & 82.80 & 82.93 & 83.07 & 83.20 & 83.33 & 83.47 & 83.60 & 83.73 & 83.87 & 84.00 \\
\hline A(79) & 82.79 & 82.91 & 83.03 & 83.16 & 83.28 & 83.40 & 83.52 & 83.64 & 83.77 & 83.89 & 84.01 & 84.13 & 84.26 & 84.38 & 84.50 \\
\hline A(80) & 83.44 & 83.56 & 83.67 & 83.78 & 86.89 & 84.00 & 84.11 & 84.22 & 84.33 & 84.44 & 84.56 & 84.67 & 84.78 & 78.89 & 85.00 \\
\hline A(81) & 84.10 & 84.20 & 84.30 & 84.40 & 84.50 & 84.60 & 84.70 & 84.80 & 84.90 & 85.00 & 85.10 & 85.20 & 85.30 & 85.40 & 85.50 \\
\hline A(82) & 84.76 & 84.84 & 84.93 & 85.02 & 85.11 & 85.20 & 85.29 & 85.38 & 85.47 & 85.56 & 85.64 & 85.73 & 85.82 & 85.91 & 86.00 \\
\hline A(83) & 85.41 & 85.49 & 85.57 & 85.64 & 85.72 & 85.80 & 85.88 & 85.96 & 87.03 & 86.11 & 86.19 & 86.27 & 86.34 & 86.42 & 86.50 \\
\hline A(84) & 86.07 & 86.13 & 86.20 & 86.27 & 86.53 & 86.40 & 86.47 & 86.53 & 87.60 & 86.67 & 86.73 & 86.80 & 86.87 & 86.93 & 87.00 \\
\hline A(85) & 86.72 & 86.78 & 86.83 & 86.89 & 87.94 & 87.00 & 87.06 & 87.11 & 88.17 & 87.22 & 87.28 & 87.33 & 87.39 & 87.44 & 87.50 \\
\hline A(86) & 87.38 & 87.42 & 87.47 & 87.51 & 88.56 & 87.60 & 87.64 & 87.69 & 88.73 & 87.78 & 87.82 & 87.87 & 87.91 & 87.96 & 88.00 \\
\hline A(87) & 88.03 & 88.07 & 88.10 & 88.13 & 88.17 & 88.20 & 88.23 & 88.27 & 88.30 & 88.33 & 88.37 & 88.40 & 88.43 & 88.47 & 88.50 \\
\hline A(88) & 88.69 & 88.71 & 88.73 & 88.76 & 89.78 & 88.80 & 88.82 & 88.84 & 88.87 & 88.89 & 88.91 & 88.93 & 88.96 & 88.98 & 89.00 \\
\hline A(89) & 89.34 & 89.36 & 89.37 & 89.38 & 89.39 & 89.40 & 89.41 & 89.24 & 89.43 & 89.44 & 89.46 & 89.44 & 89.46 & 89.49 & 89.50 \\
\hline A(90) & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 \\
\hline
\end{tabular}

\section*{READY RECKONER TABLE FOR A + B(90-A)}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & B(46) & B(47) & B(48) & B(49) & B(50) & B(51) & B(52) & B(53) & B(54) & B(55) & B(56) & B(57) & B(58) & B(59) & B(60) \\
\hline A(1) & 46.49 & 47.48 & 48.47 & 49.46 & 50.44 & 51.43 & 52.42 & 53.41 & 54.40 & 55.39 & 56.38 & 57.37 & 58.36 & 59.34 & 60.33 \\
\hline A(2) & 46.98 & 47.96 & 48.93 & 49.91 & 50.89 & 51.87 & 52.84 & 53.82 & 54.80 & 55.78 & 56.76 & 57.73 & 58.71 & 59.69 & 60.67 \\
\hline A(3) & 47.47 & 48.43 & 49.40 & 50.37 & 51.33 & 52.30 & 53.27 & 54.23 & 55.20 & 56.17 & 57.12 & 58.10 & 59.07 & 60.03 & 61.00 \\
\hline A(4) & 47.96 & 48.91 & 49.87 & 50.82 & 51.78 & 52.73 & 53.69 & 54.64 & 55.60 & 56.56 & 57.51 & 58.47 & 59.42 & 60.38 & 61.33 \\
\hline A(5) & 48.44 & 49.39 & 50.33 & 51.28 & 52.22 & 53.17 & 54.11 & 55.06 & 56.00 & 56.94 & 57.89 & 58.83 & 59.78 & 60.72 & 61.67 \\
\hline A(6) & 48.93 & 49.87 & 50.80 & 51.73 & 52.67 & 53.60 & 54.53 & 55.47 & 56.40 & 57.33 & 58.27 & 59.20 & 60.13 & 61.07 & 62.00 \\
\hline A(7) & 49.42 & 50.34 & 51.27 & 52.19 & 53.11 & 54.03 & 54.96 & 55.88 & 56.80 & 57.72 & 58.64 & 59.57 & 60.49 & 61.41 & 62.33 \\
\hline A(8) & 49.91 & 50.82 & 51.73 & 52.64 & 53.56 & 54.47 & 55.38 & 56.20 & 57.20 & 58.11 & 59.02 & 59.93 & 60.84 & 61.76 & 62.67 \\
\hline A(9) & 50.40 & 51.30 & 52.20 & 53.10 & 54.00 & 54.90 & 55.80 & 56.70 & 57.60 & 58.50 & 59.40 & 60.30 & 61.20 & 62.10 & 63.00 \\
\hline A(10) & 50.89 & 51.78 & 52.67 & 53.56 & 54.44 & 55.33 & 56.22 & 57.11 & 58.00 & 58.89 & 59.78 & 60.67 & 61.56 & 62.44 & 63.33 \\
\hline A(11) & 51.38 & 52.26 & 53.13 & 54.01 & 54.83 & 55.7 & 56.6 & 57.52 & 58.40 & 59.28 & 60.16 & 61.03 & 61.91 & 62.79 & 63.67 \\
\hline A(12) & 51.87 & 52.73 & 53.60 & 54.4 & 55.33 & 56.20 & 57.07 & 57.9 & 58.80 & 59.6 & 60.53 & 61.40 & 62.27 & 63.13 & 64.00 \\
\hline A(13) & 52.36 & 53.21 & 54.07 & 54.92 & 55.78 & 56.63 & 57.49 & 58.34 & 59.20 & 60.0 & 60.91 & 61.77 & 62.62 & 63.48 & 64.33 \\
\hline A(14) & 52.84 & 53.69 & 54.5 & 55.38 & 56.22 & 57.07 & 57.19 & 58.76 & 59.6 & 60. & 61 & 62.13 & 62.98 & 63.82 & , 6 \\
\hline A(15) & 53.33 & 54.17 & 55.00 & 55.83 & 56.67 & 57.50 & 58.33 & 59.17 & 60.00 & 60.8 & 61 & 62.50 & 63.33 & 64.17 & 5.00 \\
\hline A(16) & 53.82 & 54.64 & 55.47 & 56.29 & 57.11 & 57.93 & 58.76 & 59.58 & 60.4 & 61.2 & 62 & 62.87 & 63.69 & 64.51 & 65.33 \\
\hline A(17) & 54.31 & 55.12 & 55.93 & 56.74 & 57.56 & 58.37 & 59.18 & 59.99 & 60.80 & 61.61 & 62.42 & 63.23 & 64.04 & 64.86 & 65.67 \\
\hline A(18) & 54.80 & 55.60 & 56.40 & 57.20 & 58.00 & 58.80 & 59.60 & 60.40 & 61.20 & 62.00 & 62.80 & 63.60 & 64.40 & 65.20 & 66.00 \\
\hline A(19) & 55.29 & 56.08 & 56.87 & 57.66 & 58.44 & 59.23 & 60.02 & 60.81 & 61.60 & 62.39 & 63.18 & 63.97 & 64.54 & 65.54 & 66.33 \\
\hline A(20) & 55.78 & 56.56 & 57.33 & 58.11 & 58.89 & 59.67 & 60.44 & 61.22 & 62.00 & 62. & 63.56 & 64.33 & 65.11 & 65.89 & 66.67 \\
\hline A(21) & 56.27 & 57.03 & 57.80 & 58.57 & 59.33 & 60.10 & 60.87 & 61.63 & 62.40 & 63.17 & 63.93 & 64.70 & 65.47 & 66.23 & 67.00 \\
\hline A(22) & 56.76 & 57.51 & 58.27 & 59.02 & 59.78 & 60.53 & 61.29 & 62.04 & 62.80 & 63.56 & 64.31 & 65.07 & 65.82 & 66.58 & 67.33 \\
\hline A(23) & 57.24 & 57.99 & 58.73 & 59.48 & 60.22 & 60.97 & 61.71 & 62.46 & 63.20 & 63.94 & 64.69 & 65.43 & 66.18 & 66.92 & 67.67 \\
\hline A(24) & 57.73 & 58.47 & 59.20 & 59.93 & 60.67 & 61.40 & 62.13 & 62.87 & 63.60 & 64.3 & 65.07 & 65.80 & 66.53 & 67.27 & 68.00 \\
\hline A(25) & 58.22 & 58.94 & 59.6 & 60.39 & 61.11 & 61.83 & 62.56 & 63.28 & 64.00 & 64.7 & 65.44 & 66.17 & 66.89 & 67.61 & 68.33 \\
\hline A(26) & 58.71 & 59.42 & 60.13 & 60.84 & 61.56 & 62.27 & 62.98 & 63.69 & 64.40 & 65.11 & 65.82 & 66.53 & 67.24 & 67.96 & 68.67 \\
\hline A(27) & 59.20 & 59.90 & 60.6 & 61.3 & 62.00 & 62.70 & 63.40 & 64.10 & 64.80 & 65.5 & 66.20 & 66.90 & 67.60 & 68.30 & 69.00 \\
\hline A(28) & 59.69 & 60.38 & 61 & 61 & 62 & 63.13 & 63 & 64.5 & 65.2 & 65.8 & 66 & 67.27 & 67.96 & 68.64 & 69.33 \\
\hline A(29) & 60.18 & 60.8 & 61 & 62 & 62 & 63 & 64 & 64 & 65. & 66.2 & 66 & 67.63 & 68.31 & 68.99 & 69.67 \\
\hline A(30) & 60.67 & 61.3 & 62.0 & 62. & 63.33 & 64.0 & 64.67 & 65.3 & 66.00 & 66.6 & 67.33 & 68.00 & 68.67 & 69.33 & 70.00 \\
\hline A(31) & 61.16 & 61.8 & 62 & 63.12 & 63 & 64 & 65 & 65. & 66.4 & 67.06 & 67.71 & 68.37 & 69.02 & 69.68 & 70.33 \\
\hline A(32) & 61. & 62.29 & 62.9 & 63. & 64.22 & 64.8 & 65 & 66.1 & 66.8 & 67. & 68.09 & 68.73 & 69.38 & 0.02 & 70.67 \\
\hline A(33) & 62.13 & 62.77 & 63.4 & 64.03 & 64.67 & 65.30 & 65.93 & 66.57 & 67.20 & 67.8 & 68.47 & 69.10 & 69.73 & 70.37 & . 00 \\
\hline A(34) & 62.62 & 63.24 & 63.87 & 64.49 & 65.11 & 65.73 & 66.36 & 33.98 & 67.60 & 68.22 & 68.84 & 69.47 & 70.09 & 70.71 & 71.33 \\
\hline A(35) & 63.11 & 63.72 & 64.33 & 64.94 & 65.56 & 66.17 & 66.78 & 67.39 & 68.00 & 68.61 & 69.22 & 69.83 & 70.44 & 71.06 & 71.67 \\
\hline A(36) & 63.90 & 64.20 & 64.80 & 65.40 & 66.00 & 66.60 & 67.20 & 67.80 & 68.00 & 68.61 & 69.22 & 70.20 & 70.80 & 71.40 & 72.00 \\
\hline A(37) & 64.09 & 64.68 & 65.2 & 65.86 & 66.44 & 67.03 & 67.62 & 68.04 & 68.40 & 69.00 & 69.60 & 70.57 & 71.16 & 71.74 & 72.33 \\
\hline A(38) & 64.58 & 65.16 & 65.73 & 66.31 & 66.89 & 67.47 & 68.04 & 68.47 & 68.80 & 69.39 & 69.98 & 70.93 & 71.51 & 72.09 & 72.33 \\
\hline A(39) & 65.07 & 65.63 & 66.20 & 66.27 & 67.33 & 67.90 & 68.47 & 69.03 & 69.60 & 70.17 & 70.73 & 71.30 & 71.87 & 72.43 & 73.00 \\
\hline A(40) & 65.56 & 66.11 & 66.67 & 67.22 & 67.78 & 68.33 & 68.89 & 69.44 & 70.00 & 70.56 & 71.11 & 71.67 & 72.22 & 72.78 & 73.33 \\
\hline A(41) & 66.04 & 66.59 & 67.13 & 67.68 & 68.22 & 68.77 & 69.31 & 69.86 & 70.40 & 70.94 & 71.49 & 72.03 & 72.58 & 73.12 & 73.67 \\
\hline A(42) & 66.53 & 67.07 & 67.60 & 68.13 & 68.67 & 69.20 & 69.73 & 70.27 & 70.80 & 71.33 & 71.87 & 72.40 & 72.93 & 73.47 & 74.00 \\
\hline A(43) & 67.02 & 67.54 & 68.07 & 68.59 & 69.11 & 69.63 & 70.16 & 70.68 & 71.20 & 71.72 & 72.24 & 72.77 & 73.29 & 73.81 & 74.33 \\
\hline A(44) & 67.51 & 68.02 & 68.53 & 69.04 & 69.56 & 70.07 & 70.58 & 71.09 & 71.60 & 72.11 & 72.62 & 73.13 & 73.64 & 74.16 & 74.67 \\
\hline A(45) & 68.00 & 68.50 & 69.00 & 69.50 & 70.00 & 70.50 & 71.00 & 71.50 & 72.00 & 72.50 & 73.00 & 73.50 & 74.00 & 74.50 & 75.00 \\
\hline
\end{tabular}

\section*{READY RECKONER TABLE FOR A + B(90-A)} 90
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & B(46) & B(47) & B(48) & B(49) & B(50) & B(51) & B(52) & B(53) & B(54) & B(55) & B(56) & B(57) & B(58) & B(59) & B(60) \\
\hline A(46) & 68.49 & 68.98 & 69.47 & 69.96 & 70.44 & 70.93 & 71.42 & 71.91 & 72.40 & 72.89 & 73.38 & 73.87 & 74.36 & 74.84 & 75.33 \\
\hline A(47) & 68.98 & 69.46 & 69.93 & 70.41 & 70.89 & 71.37 & 71.84 & 72.32 & 72.80 & 73.28 & 73.76 & 74.23 & 74.71 & 75.19 & 75.67 \\
\hline A(48) & 69.47 & 69.93 & 70.40 & 70.87 & 71.33 & 71.80 & 72.27 & 72.73 & 73.20 & 73.67 & 74.13 & 74.60 & 75.07 & 75.53 & 76.00 \\
\hline A(49) & 69.96 & 70.41 & 70.87 & 71.32 & 71.78 & 72.23 & 72.69 & 73.14 & 73.60 & 74.06 & 74.51 & 74.97 & 75.42 & 75.88 & 76.33 \\
\hline A(50) & 70.44 & 70.89 & 71.33 & 71.78 & 72.22 & 72.67 & 73.11 & 73.56 & 74.00 & 74.44 & 74.89 & 75.33 & 75.78 & 76.22 & 76.67 \\
\hline A(51) & 70.93 & 71.37 & 71.80 & 72.23 & 72.67 & 73.10 & 73.53 & 73.97 & 74.40 & 74.83 & 75.27 & 75.70 & 76.13 & 76.57 & 77.00 \\
\hline A(52) & 71.42 & 71.84 & 72.27 & 72.69 & 73.11 & 73.53 & 73.96 & 74.38 & 74.80 & 75.22 & 75.64 & 76.07 & 76.49 & 76.91 & 77.33 \\
\hline A(53) & 71.91 & 72.32 & 72.73 & 73.14 & 73.56 & 73.97 & 74.38 & 74.79 & 75.20 & 75.61 & 76.02 & 76.43 & 73.84 & 77.26 & 77.67 \\
\hline A(54) & 72.40 & 72.80 & 73.20 & 73.60 & 74.00 & 74.40 & 74.80 & 75.20 & 75.60 & 76.00 & 76.40 & 76.80 & 77.20 & 77.60 & 78.00 \\
\hline A(55) & 72.89 & 73.28 & 73.67 & 74.06 & 74.44 & 74.83 & 75.22 & 75.61 & 76.00 & 76.39 & 76.78 & 77.17 & 77.56 & 77.94 & 8.33 \\
\hline A(56) & 73.38 & 73.76 & 74.13 & 74. & 74.89 & 75 & 75.6 & 76.02 & 76.40 & 76.78 & 77.14 & 77.53 & 77.91 & 78.29 & 78.67 \\
\hline A(57) & 73.87 & 74.23 & 74.60 & 74.97 & 75.33 & 75.70 & 76.07 & 76.43 & 76.80 & 77.17 & 77.53 & 77.90 & 78.27 & 78.63 & 79.00 \\
\hline A(58) & 74.36 & 74.71 & 75.07 & 75. & 75.78 & 76.13 & 76.49 & 76.84 & 77.20 & 77.56 & 77.91 & 78.27 & 78.62 & 78.98 & 79.33 \\
\hline A(59) & 74.84 & 75.19 & 77.5 & 75. & 76.22 & 76.57 & 76 & 77. & 77.60 & 77. & 78.29 & 78.63 & 78.98 & 79.32 & 79.67 \\
\hline A(60) & 75.33 & 75.67 & 76.00 & 76. & 76.67 & 77.00 & 77.33 & 77.67 & 78.00 & 78.33 & 78.67 & 79.00 & 79.33 & 79.67 & 0.00 \\
\hline A(61) & 75.82 & 76.14 & 76.4 & 76.79 & 7.11 & 77.43 & 77.76 & 78.08 & 78.40 & 78.72 & 79.04 & 79.37 & 79.69 & 80.01 & 0.33 \\
\hline A(62) & 76.31 & 76.62 & 76.93 & 77.24 & 77.56 & 77.87 & 78.18 & 78.40 & 78.80 & 79.11 & 79.42 & 79.73 & 80.04 & 80.36 & 80.67 \\
\hline A(63) & 76.80 & 77.10 & 77.40 & 77.70 & 78.00 & 78.30 & 78.60 & 78.90 & 79.20 & 79.50 & 79.80 & 80.10 & 80.40 & 80.70 & 81.00 \\
\hline A(64) & 77.29 & 77.58 & 77.87 & 78.16 & 78.44 & 78.73 & 79.02 & 79.31 & 79.60 & 79.89 & 80.18 & 80.47 & 80.76 & 81.04 & 81.33 \\
\hline A(65) & 77.78 & 78.06 & 78.33 & 78.61 & 78.89 & 79.17 & 79.44 & 79.72 & 80.00 & 80.28 & 80.56 & 80.83 & 81.11 & 81.39 & 81.67 \\
\hline A(66) & 78.27 & 78.53 & 78.80 & 79.07 & 79.33 & 79.60 & 79.87 & 80.13 & 80.40 & 80.67 & 80.93 & 81.20 & 81.47 & 81.73 & 82.00 \\
\hline A(67) & 78.76 & 79.01 & 79.27 & 79.52 & 79.78 & 80.03 & 80.29 & 80.54 & 80.80 & 81.06 & 81.31 & 81.57 & 81.82 & 82.08 & 82.33 \\
\hline A(68) & 79.24 & 79.49 & 79.73 & 79.98 & 80.22 & 80.47 & 80.71 & 80.96 & 81.20 & 81.44 & 81.69 & 81.93 & 82.18 & 82.42 & 82.67 \\
\hline A(69) & 79.73 & 79.97 & 80.20 & 80.43 & 80.67 & 80.90 & 81.13 & 81.37 & 81.60 & 81.83 & 82.07 & 82.30 & 82.53 & 82.77 & 83.00 \\
\hline A(70) & 80.22 & 80.44 & 80.67 & 80.89 & 81.11 & 81.33 & 81.56 & 81.78 & 82.00 & 82.22 & 82.44 & 82.67 & 82.89 & 83.11 & 83.33 \\
\hline A(71) & 80.71 & 80.92 & 81.13 & 81.34 & 81.56 & 81.77 & 81.98 & 82.19 & 82.40 & 82.61 & 82.82 & 83.03 & 83.24 & 83.46 & 83.67 \\
\hline A(72) & 81.20 & 81.40 & 81.6 & 81.8 & 82.00 & 82.20 & 82.40 & 82.60 & 82.80 & 83.00 & 83.20 & 83.40 & 83.60 & 83.80 & 84.00 \\
\hline A(73) & 81.69 & 81.88 & 82 & 82 & 82 & 82 & 82.82 & 33. & 83.20 & 83.3 & 83.58 & 83.77 & 83.96 & 84.14 & 84.33 \\
\hline A(74) & 82.18 & 82 & 82 & 82 & 82.89 & 83 & 83 & 83 & 83.60 & 83.7 & 83 & 84.13 & 84.31 & 84.49 & 84.67 \\
\hline A(75) & 82.67 & 82.83 & 83.0 & 83.17 & 83.33 & 83.50 & 83.67 & 83.83 & 84.00 & 84.17 & 84.33 & 84.50 & 84.67 & 84.83 & 85.00 \\
\hline A(76) & 83.16 & 83 & 83 & 83.62 & 83 & 83 & 84.09 & 84.24 & 84.40 & 84.5 & 84.71 & 84.87 & 85.02 & 85.18 & 85.33 \\
\hline A(77) & 83.64 & 83. & 83. & 84. & 84.22 & 84 & 84.51 & 84.66 & 84.8 & 84.9 & 85.09 & 85.23 & 85.38 & 85.52 & 5.67 \\
\hline A(78) & 84.13 & 84.27 & 84.40 & 84.53 & 84.67 & 84.80 & 84.93 & 85.0 & 85.20 & 85.33 & 85.47 & 85.60 & 85.73 & 85.87 & 86.00 \\
\hline A(79) & 84.62 & 84.74 & 84.87 & 84.99 & 85.11 & 85.23 & 85.36 & 85.48 & 85.60 & 85.72 & 85.84 & 85.97 & 86.09 & 86.21 & 86.33 \\
\hline A(80) & 85.11 & 85.22 & 85.33 & 85.44 & 85.56 & 85.67 & 85.78 & 85.89 & 86.00 & 86.11 & 86.22 & 86.33 & 86.44 & 86.56 & 86.67 \\
\hline A(81) & 85.60 & 85.70 & 85.80 & 85.90 & 86.00 & 86.10 & 86.20 & 86.30 & 86.40 & 86.50 & 86.60 & 86.70 & 86.80 & 86.90 & 87.00 \\
\hline A(82) & 86.09 & 86.18 & 86.27 & 86.36 & 86.44 & 86.53 & 86.62 & 86.71 & 86.80 & 86.89 & 86.98 & 87.07 & 87.16 & 87.24 & 87.33 \\
\hline A(83) & 86.58 & 86.66 & 86.73 & 86.81 & 86.89 & 86.97 & 87.04 & 87.12 & 87.20 & 87.28 & 87.36 & 87.43 & 87.51 & 87.59 & 87.67 \\
\hline A(84) & 87.07 & 87.13 & 87.20 & 87.27 & 87.33 & 87.40 & 87.47 & 87.53 & 87.60 & 87.67 & 87.73 & 87.80 & 87.87 & 87.93 & 88.00 \\
\hline A(85) & 87.56 & 87.61 & 87.67 & 87.72 & 87.78 & 87.83 & 87.89 & 87.94 & 88.00 & 88.06 & 88.11 & 88.17 & 88.22 & 88.28 & 88.33 \\
\hline A(86) & 88.04 & 88.09 & 88.13 & 88.18 & 88.22 & 88.27 & 88.31 & 88.36 & 88.40 & 88.44 & 88.49 & 88.53 & 88.58 & 88.62 & 88.67 \\
\hline A(87) & 88.53 & 88.57 & 88.60 & 88.63 & 88.67 & 88.70 & 88.73 & 88.77 & 88.80 & 88.83 & 88.87 & 88.90 & 88.93 & 88.97 & 89.00 \\
\hline A(88) & 89.02 & 89.04 & 89.07 & 89.09 & 89.11 & 89.13 & 89.16 & 89.18 & 89.20 & 89.22 & 89.24 & 89.27 & 89.29 & 89.31 & 89.33 \\
\hline A(89) & 89.51 & 89.52 & 89.53 & 89.54 & 89.56 & 89.57 & 89.58 & 89.59 & 89.60 & 89.61 & 89.62 & 89.63 & 89.64 & 89.66 & 89.67 \\
\hline A(90) & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 \\
\hline
\end{tabular}

READY RECKONER TABLE FOR A+B (90-A)

90
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & B(61) & B(62) & B(63) & B(64) & B(65) & B(66) & B(67) & B(68) & B(69) & B(70) & B(71) & B(72) & B(73) & B(74) & B(75) \\
\hline A(1) & 61.32 & 62.31 & 63.30 & 64.29 & 65.28 & 66.27 & 67.26 & 68.24 & 69.23 & 70.22 & 71.21 & 72.20 & 73.19 & 74.18 & 75.17 \\
\hline A(2) & 61.64 & 62.62 & 63.60 & 64.58 & 65.56 & 66.53 & 67.51 & 68.49 & 69.47 & 70.44 & 71.42 & 72.40 & 73.38 & 74.36 & 75.33 \\
\hline A(3) & 61.97 & 62.93 & 63.90 & 64.87 & 65.83 & 66.80 & 67.77 & 68.73 & 69.70 & 70.67 & 71.63 & 72.60 & 73.57 & 74.53 & 75.50 \\
\hline A(4) & 62.29 & 63.24 & 64.20 & 65.16 & 66.11 & 67.07 & 68.02 & 68.98 & 69.93 & 70.89 & 71.84 & 72.80 & 73.76 & 74.71 & 75.67 \\
\hline A(5) & 62.61 & 63.56 & 64.50 & 65.44 & 66.39 & 67.33 & 68.28 & 69.22 & 70.17 & 71.11 & 72.06 & 73.00 & 73.94 & 74.89 & 75.83 \\
\hline A(6) & 62.93 & 63.87 & 64.80 & 65.73 & 66.67 & 67.60 & 68.53 & 69.47 & 70.40 & 71.33 & 72.27 & 73.20 & 74.13 & 75.07 & 76.00 \\
\hline A(7) & 63.26 & 64.18 & 65.10 & 66.02 & 66.94 & 67.87 & 68.79 & 69.71 & 70.63 & 71.56 & 72.48 & 73.40 & 74.32 & 75.24 & 76.17 \\
\hline A(8) & 63.58 & 64.49 & 65.40 & 66.31 & 67.22 & 68.13 & 69.04 & 69.96 & 70.87 & 71.78 & 72.69 & 73.60 & 74.51 & 75.42 & 76.33 \\
\hline A(9) & 63.90 & 64.80 & 65.70 & 66.60 & 67.50 & 68.40 & 69.30 & 70.20 & 72.10 & 72.00 & 72.90 & 73.80 & 74.70 & 75.60 & 76.50 \\
\hline A(10) & 64.22 & 65.11 & 66.00 & 66.89 & 67.78 & 68.67 & 69.56 & 70.44 & 71.33 & 72.22 & 73.11 & 74.00 & 74.89 & 75.78 & 76.67 \\
\hline A(11) & 64.54 & 65.42 & 66.30 & 67.18 & 68.06 & 68.93 & 69.81 & 70.69 & 71.57 & 72.44 & 73.32 & 74.20 & 75.08 & 75.96 & 76.83 \\
\hline A(12) & 64.87 & 65.73 & 66.60 & 67.47 & 68.33 & 69.20 & 70.07 & 70.93 & 71.80 & 72.67 & 73.53 & 74.40 & 75.27 & 76.13 & 77.17 \\
\hline A(13) & 65.19 & 66.04 & 66.90 & 67.78 & 68.61 & 69.47 & 70.32 & 71.18 & 72.03 & 72.89 & 73.74 & 74.60 & 75.46 & 76.49 & 77.33 \\
\hline A(14) & 65.51 & 66.36 & 67.20 & 68.04 & 68.89 & 69.73 & 70.58 & 71.42 & 72.27 & 73.11 & 73.96 & 74.80 & 75.83 & 76.67 & 77.50 \\
\hline A(15) & 65.83 & 66.67 & 67.50 & 68.33 & 69.17 & 70.00 & 70.83 & 71.67 & 72.50 & 73.33 & 74.17 & 75.00 & 76.02 & 76.84 & 77.67 \\
\hline A(16) & 66.16 & 66.98 & 67.80 & 68.62 & 69.44 & 70.27 & 71.09 & 71.91 & 72.73 & 73.56 & 74.38 & 75.20 & 76.21 & 77.02 & 77.83 \\
\hline A(17) & 66.68 & 67.29 & 68.10 & 68.91 & 69.72 & 70.53 & 71.34 & 72.16 & 72.97 & 73.78 & 74.59 & 75.40 & 76.40 & 77.20 & 78.00 \\
\hline A(18) & 66.80 & 67.60 & 68.40 & 69.20 & 70.00 & 70.80 & 71.60 & 72.40 & 73.20 & 74.00 & 74.80 & 75.60 & 76.59 & 77.36 & 78.17 \\
\hline A(19) & 67.12 & 67.91 & 68.70 & 69.49 & 70.28 & 71.07 & 71.86 & 72.64 & 73.43 & 74.22 & 75.01 & 75.80 & 76.78 & 77.56 & 78.33 \\
\hline A(20) & 67.44 & 68.22 & 69.00 & 69.78 & 70.56 & 71.33 & 72.11 & 72.89 & 73.67 & 74.44 & 75.22 & 76.00 & 76.78 & 77.56 & 78.33 \\
\hline A(21) & 67.77 & 68.53 & 69.30 & 70.07 & 70.80 & 71.60 & 72.37 & 73.13 & 73.90 & 74.67 & 75.43 & 76.20 & 76.97 & 77.73 & 78.50 \\
\hline A(22) & 68.09 & 68.84 & 69.60 & 70.36 & 71.11 & 71.87 & 72.62 & 73.38 & 74.13 & 74.89 & 75.64 & 76.40 & 77.16 & 77.91 & 78.67 \\
\hline A(23) & 68.14 & 69.10 & 69.90 & 70.64 & 71.39 & 72.13 & 72.88 & 73.62 & 74.37 & 75.11 & 75.86 & 76.60 & 77.34 & 78.09 & 78.83 \\
\hline A(24) & 68.73 & 69.47 & 70.20 & 70.93 & 71.67 & 72.40 & 73.13 & 73.87 & 74.60 & 75.33 & 76.07 & 76.80 & 77.53 & 78.27 & 79.00 \\
\hline A(25) & 69.06 & 69.78 & 70.50 & 71.22 & 71.94 & 72.67 & 73.39 & 74.11 & 74.83 & 75.56 & 76.28 & 77.00 & 77.72 & 78.44 & 79.17 \\
\hline A(26) & 69.38 & 70.00 & 70.80 & 71.51 & 72.22 & 72.93 & 73.64 & 74.36 & 75.07 & 75.78 & 76.49 & 77.20 & 77.91 & 78.62 & 79.33 \\
\hline A(27) & 69.07 & 75.40 & 71.10 & 71.80 & 72.50 & 73.20 & 73.90 & 74.60 & 75.30 & 76.00 & 76.70 & 77.40 & 78.10 & 78.80 & 79.50 \\
\hline A(28) & 70.02 & 70.71 & 71.40 & 72.09 & 72.78 & 73.47 & 74.16 & 74.84 & 75.53 & 76.22 & 76.91 & 76.60 & 78.29 & 78.98 & 79.67 \\
\hline A(29) & 70.34 & 71.02 & 71.70 & 72.38 & 73.06 & 73.73 & 74.41 & 75.09 & 75.77 & 76.44 & 77.12 & 77.80 & 78.48 & 79.6 & 79.83 \\
\hline A(30) & 70.67 & 71.33 & 72.00 & 72.67 & 73.33 & 74.00 & 74.67 & 75.33 & 76.00 & 76.67 & 77.33 & 78.00 & 78.67 & 79.33 & 80.00 \\
\hline A(31) & 70.99 & 71.64 & 72.30 & 72.96 & 73.61 & 74.27 & 74.92 & 75.58 & 76.23 & 76.89 & 77.54 & 78.20 & 78.86 & 79.51 & 80.17 \\
\hline A(32) & 71.31 & 71.96 & 72.60 & 73.24 & 73.89 & 74.53 & 75.82 & 75.18 & 76.47 & 77.11 & 77.76 & 78.40 & 79.04 & 79.69 & 80.33 \\
\hline A(33) & 71.69 & 72.27 & 72.90 & 73.53 & 74.17 & 74.80 & 75.43 & 76.07 & 76.70 & 77.33 & 77.97 & 78.60 & 79.23 & 79.87 & 80.50 \\
\hline A(34) & 71.96 & 72.58 & 73.20 & 73.82 & 74.44 & 75.07 & 75.69 & 76.31 & 76.93 & 77.56 & 78.18 & 78.80 & 79.42 & 80.04 & 80.67 \\
\hline A(35) & 72.28 & 72.89 & 73.50 & 74.11 & 74.72 & 75.33 & 75.94 & 76.56 & 77.17 & 77.78 & 78.39 & 79.00 & 79.61 & 80.22 & 80.83 \\
\hline A(36) & 72.60 & 73.20 & 73.80 & 74.40 & 75.00 & 75.60 & 76.20 & 76.80 & 77.40 & 78.00 & 78.60 & 78.20 & 79.80 & 80.40 & 81.00 \\
\hline A(37) & 72.92 & 73.51 & 74.10 & 70.69 & 75.28 & 75.87 & 76.46 & 77.04 & 77.63 & 78.22 & 78.81 & 79.40 & 79.99 & 80.58 & 81.17 \\
\hline A(38) & 73.24 & 73.82 & 74.40 & 74.99 & 75.56 & 76.13 & 76.71 & 77.29 & 77.87 & 78.44 & 79.02 & 79.60 & 80.18 & 80.76 & 81.33 \\
\hline A(39) & 73.57 & 74.13 & 74.70 & 75.27 & 75.83 & 76.40 & 76.97 & 77.53 & 78.10 & 78.67 & 79.23 & 79.80 & 80.37 & 80.93 & 81.50 \\
\hline A(40) & 73.89 & 74.44 & 75.00 & 75.56 & 76.11 & 76.67 & 77.22 & 77.78 & 78.33 & 78.89 & 79.44 & 80.00 & 80.56 & 81.11 & 81.67 \\
\hline A(41) & 74.21 & 74.76 & 75.30 & 75.84 & 76.39 & 76.93 & 77.48 & 78.02 & 78.57 & 79.11 & 79.66 & 80.20 & 80.74 & 81.29 & 81.83 \\
\hline A(42) & 74.43 & 75.07 & 75.60 & 76.13 & 76.67 & 77.20 & 77.73 & 78.27 & 78.80 & 79.33 & 79.87 & 80.40 & 80.93 & 81.47 & 82.00 \\
\hline A(43) & 74.86 & 75.38 & 75.90 & 76.42 & 76.94 & 77.47 & 77.99 & 78.51 & 79.03 & 79.56 & 80.08 & 80.60 & 81.12 & 81.64 & 82.17 \\
\hline A(44) & 75.18 & 75.69 & 76.20 & 76.71 & 77.22 & 77.73 & 78.24 & 78.76 & 79.27 & 79.78 & 80.29 & 80.80 & 81.31 & 81.82 & 82.33 \\
\hline A(45) & 75.50 & 76.00 & 76.50 & 77.00 & 75.50 & 78.00 & 78.50 & 79.00 & 79.50 & 80.00 & 80.50 & 81.00 & 81.50 & 82.00 & 82.50 \\
\hline
\end{tabular}

90
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & B(61) & B(62) & B(63) & B(64) & B(65) & B(66) & B(67) & B(68) & B(69) & B(70) & B(71) & B(72) & B(73) & B(74) & B(75) \\
\hline A(46) & 75.82 & 76.31 & 76.80 & 77.29 & 77.78 & 78.27 & 78.76 & 79.24 & 79.73 & 80.22 & 80.71 & 81.20 & 81.69 & 82.18 & 82.67 \\
\hline A(47) & 76.14 & 76.62 & 77.10 & 77.58 & 78.06 & 78.53 & 79.01 & 79.49 & 79.97 & 80.44 & 80.92 & 81.40 & 81.88 & 82.36 & 82.83 \\
\hline A(48) & 76.47 & 76.93 & 77.40 & 77.87 & 78.33 & 78.80 & 79.27 & 79.73 & 80.20 & 80.67 & 81.13 & 81.60 & 82.07 & 82.53 & 83.00 \\
\hline A(49) & 76.79 & 77.24 & 77.70 & 78.16 & 78.61 & 79.07 & 79.52 & 79.98 & 80.43 & 80.89 & 81.34 & 81.80 & 82.26 & 82.71 & 83.17 \\
\hline A(50) & 77.11 & 77.56 & 78.00 & 78.44 & 78.89 & 79.33 & 79.78 & 80.22 & 80.67 & 81.11 & 81.56 & 82.00 & 82.44 & 82.89 & 83.33 \\
\hline A(51) & 77.43 & 77.87 & 78.30 & 78.73 & 79.17 & 79.60 & 80.03 & 80.47 & 80.90 & 81.33 & 81.77 & 82.20 & 82.63 & 83.07 & 83.50 \\
\hline A(52) & 77.76 & 78.18 & 78.60 & 79.02 & 79.44 & 79.87 & 80.29 & 80.71 & 81.13 & 81.56 & 81.98 & 82.40 & 82.82 & 83.24 & 83.67 \\
\hline A(53) & 78.08 & 78.49 & 78.90 & 79.31 & 79.72 & 80.13 & 80.54 & 80.96 & 81.37 & 81.78 & 82.19 & 82.60 & 83.01 & 83.42 & 83.83 \\
\hline A(54) & 78.40 & 78.80 & 79.20 & 79.60 & 80.00 & 80.40 & 80.80 & 81.20 & 81.60 & 82.00 & 82.40 & 82.80 & 83.20 & 83.60 & 84.00 \\
\hline A(55) & 78.72 & 79.11 & 79.50 & 79.60 & 80.28 & 80.67 & 81.06 & 81.44 & 81.83 & 82.22 & 82.61 & 83.00 & 83.39 & 83.78 & 84.17 \\
\hline A(56) & 79.04 & 79.42 & 79.80 & 80.18 & 80.56 & 80.93 & 81.33 & 81.69 & 82.07 & 82.44 & 82.82 & 83.20 & 83.58 & 83.96 & 84.33 \\
\hline A(57) & 79.37 & 79.73 & 80.10 & 80.47 & 80.83 & 81.20 & 81.57 & 81.93 & 82.30 & 82.67 & 83.03 & 83.40 & 83.77 & 84.13 & 84.50 \\
\hline A(58) & 79.69 & 80.04 & 80.40 & 80.76 & 81.11 & 81.47 & 81.82 & 82.18 & 82.53 & 82.89 & 83.24 & 83.60 & 83.96 & 84.31 & 84.67 \\
\hline A(59) & 80.01 & 80.36 & 80.70 & 81.04 & 81.39 & 81.73 & 82.08 & 82.42 & 82.77 & 83.11 & 83.46 & 83.80 & 84.14 & 84.49 & 84.83 \\
\hline A(60) & 80.33 & 80.67 & 81.00 & 81.33 & 81.67 & 82.00 & 82.33 & 82.67 & 83.00 & 83.33 & 83.67 & 84.00 & 84.33 & 84.67 & 85.00 \\
\hline A(61) & 80.66 & 80.98 & 81.30 & 81.62 & 81.94 & 82.27 & 82.59 & 82.91 & 83.23 & 83.56 & 83.88 & 84.20 & 84.52 & 84.84 & 85.17 \\
\hline A(62) & 80.98 & 81.29 & 81.60 & 81.91 & 82.22 & 82.53 & 82.84 & 83.16 & 83.47 & 83.78 & 84.09 & 84.40 & 84.71 & 85.02 & 85.33 \\
\hline A(63) & 81.30 & 81.60 & 81.90 & 82.20 & 82.50 & 82.80 & 83.10 & 82.40 & 83.70 & 84.00 & 84.30 & 84.60 & 84.90 & 85.20 & 85.50 \\
\hline A(64) & 81.62 & 81.91 & 82.20 & 82.49 & 82.78 & 83.07 & 83.36 & 83.64 & 83.93 & 84.22 & 84.51 & 84.80 & 85.09 & 85.38 & 85.67 \\
\hline A(65) & 81.94 & 82.22 & 82.50 & 82.78 & 83.06 & 83.33 & 83.61 & 83.89 & 84.17 & 84.44 & 84.72 & 85.00 & 85.28 & 85.56 & 85.83 \\
\hline A(66) & 82.27 & 82.53 & 82.80 & 83.07 & 83.33 & 83.60 & 83.87 & 84.13 & 84.40 & 84.67 & 84.93 & 85.20 & 85.47 & 85.73 & 86.00 \\
\hline A(67) & 82.59 & 82.84 & 83.10 & 83.36 & 83.61 & 83.87 & 84.12 & 84.38 & 84.63 & 84.89 & 85.14 & 85.40 & 85.66 & 85.91 & 86.17 \\
\hline A(68) & 82.91 & 83.16 & 83.40 & 83.64 & 83.89 & 84.13 & 84.38 & 84.62 & 84.87 & 85.11 & 85.36 & 85.60 & 85.84 & 86.09 & 86.33 \\
\hline A(69) & 83.73 & 83.47 & 83.70 & 83.93 & 84.17 & 84.40 & 84.63 & 84.87 & 85.10 & 85.33 & 85.57 & 85.80 & 86.03 & 86.27 & 86.50 \\
\hline A(70) & 73.56 & 83.78 & 84.00 & 84.22 & 84.44 & 84.67 & 84.89 & 85.11 & 85.33 & 85.56 & 85.78 & 86.00 & 86.22 & 86.44 & 86.67 \\
\hline A(71) & 83.88 & 84.09 & 84.30 & 84.51 & 84.72 & 84.93 & 85.14 & 85.36 & 85.57 & 85.78 & 85.99 & 86.20 & 86.41 & 86.62 & 86.83 \\
\hline A(72) & 84.20 & 84.40 & 84.60 & 84.80 & 85.00 & 85.20 & 85.40 & 85.60 & 85.80 & 86.00 & 86.20 & 86.40 & 86.60 & 86.80 & 87.00 \\
\hline A(73) & 84.52 & 84.71 & 84.90 & 85.09 & 85.28 & 85.47 & 85.66 & 85.84 & 86.03 & 86.22 & 86.41 & 86.60 & 86.79 & 86.98 & 87.17 \\
\hline A(74) & 84.84 & 85.02 & 85.20 & 85.38 & 85.56 & 85.73 & 85.91 & 86.09 & 86.27 & 86.44 & 86.62 & 86.80 & 86.98 & 87.16 & 87.33 \\
\hline A(75) & 85.17 & 85.33 & 85.50 & 85.67 & 85.83 & 86.00 & 86.17 & 86.33 & 86.50 & 86.67 & 86.83 & 87.00 & 87.17 & 87.33 & 87.50 \\
\hline A(76) & 85.49 & 85.64 & 85.80 & 85.96 & 86.11 & 86.27 & 86.42 & 86.58 & 86.73 & 86.89 & 87.04 & 87.20 & 87.36 & 87.51 & 87.67 \\
\hline A(77) & 85.81 & 85.96 & 86.10 & 86.24 & 86.39 & 86.53 & 86.68 & 86.82 & 86.97 & 87.11 & 87.26 & 87.04 & 87.54 & 87.69 & 87.83 \\
\hline A(78) & 86.13 & 86.27 & 86.40 & 86.53 & 86.67 & 86.80 & 86.93 & 87.07 & 87.20 & 87.33 & 87.47 & 87.60 & 87.43 & 87.87 & 88.00 \\
\hline A(79) & 86.16 & 86.58 & 86.70 & 86.82 & 86.94 & 87.07 & 87.19 & 87.31 & 87.73 & 87.56 & 87.68 & 87.80 & 87.92 & 88.04 & 88.17 \\
\hline A(80) & 86.78 & 86.89 & 87.00 & 87.11 & 87.22 & 87.33 & 87.44 & 87.56 & 87.67 & 87.78 & 87.89 & 88.00 & 88.11 & 88.22 & 88.33 \\
\hline A(81) & 87.10 & 87.20 & 87.30 & 87.40 & 87.50 & 87.60 & 87.70 & 87.80 & 87.90 & 88.00 & 88.10 & 88.20 & 88.30 & 88.40 & 88.50 \\
\hline A(82) & 87.42 & 87.51 & 87.60 & 87.69 & 87.78 & 87.87 & 87.96 & 88.04 & 88.13 & 88.22 & 88.31 & 88.40 & 88.49 & 88.58 & 88.67 \\
\hline A(83) & 87.74 & 87.82 & 87.90 & 87.98 & 88.06 & 88.13 & 88.21 & 88.29 & 88.37 & 88.44 & 88.52 & 88.60 & 88.68 & 88.76 & 88.83 \\
\hline A(84) & 88.07 & 88.13 & 88.20 & 88.27 & 88.33 & 88.40 & 88.47 & 88.53 & 88.60 & 88.67 & 88.73 & 88.80 & 88.87 & 88.93 & 89.00 \\
\hline A(85) & 88.39 & 88.44 & 88.50 & 88.56 & 88.61 & 88.67 & 88.72 & 88.78 & 88.83 & 88.89 & 88.94 & 89.00 & 89.06 & 89.11 & 89.17 \\
\hline A(86) & 88.71 & 88.76 & 88.80 & 88.84 & 88.89 & 88.93 & 88.98 & 89.02 & 89.07 & 89.11 & 89.16 & 89.20 & 89.24 & 89.29 & 89.33 \\
\hline A(87) & 89.03 & 89.07 & 89.10 & 89.13 & 89.17 & 89.20 & 89.23 & 89.27 & 89.30 & 89.33 & 89.37 & 89.40 & 89.43 & 89.47 & 89.50 \\
\hline A(88) & 89.36 & 89.38 & 89.40 & 89.42 & 89.44 & 89.47 & 89.49 & 89.51 & 89.53 & 89.56 & 89.58 & 89.60 & 89.62 & 89.64 & 89.67 \\
\hline A(89) & 89.68 & 89.69 & 89.70 & 89.71 & 89.72 & 89.73 & 89.74 & 89.76 & 89.77 & 89.78 & 89.79 & 89.80 & 89.81 & 89.82 & 89.83 \\
\hline A(90) & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 \\
\hline
\end{tabular}

\section*{READY RECKONER TABLE FOR}

\section*{\(\frac{A+B(90-A)}{90}\)}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & B(76) & B(77) & B(78) & B(79) & B(80) & B(81) & B(82) & B(83) & B(84) & B(85) & B(86) & B(87) & B(88) & B(89) & B(90) \\
\hline A(1) & 76.16 & 77.14 & 78.13 & 79.12 & 80.11 & 81.10 & 82.09 & 83.08 & 84.07 & 85.06 & 86.04 & 87.03 & 88.02 & 89.01 & 90.00 \\
\hline A(2) & 76.31 & 77.29 & 78.27 & 79.24 & 80.22 & 81.20 & 82.18 & 83.16 & 84.13 & 85.11 & 86.09 & 87.07 & 88.04 & 89.02 & 90.00 \\
\hline A(3) & 76.47 & 77.43 & 78.40 & 79.37 & 80.33 & 81.30 & 82.27 & 83.23 & 84.20 & 85.17 & 86.13 & 87.10 & 88.07 & 89.03 & 90.00 \\
\hline A(4) & 76.62 & 77.58 & 78.53 & 79.49 & 80.44 & 81.40 & 82.36 & 83.31 & 84.27 & 85.22 & 86.18 & 87.13 & 88.09 & 89.04 & 90.00 \\
\hline A(5) & 76.78 & 77.72 & 78.67 & 79.61 & 80.56 & 81.50 & 82.44 & 83.39 & 84.33 & 85.28 & 86.22 & 87.17 & 88.11 & 89.06 & 90.00 \\
\hline (6) & 76.93 & 77.87 & 78.80 & 79.73 & 80.67 & 81.60 & 82.53 & 83.47 & 84.40 & 85.33 & 86.27 & 87.20 & 88.13 & 89.07 & 90.00 \\
\hline A(7) & 77.09 & 78.01 & 78.93 & 79.86 & 80.78 & 81.70 & 82.62 & 83.54 & 84.47 & 85.39 & 86.31 & 87.23 & 88.16 & 89.09 & 90.00 \\
\hline A(8) & 77.24 & 78.16 & 79.07 & 79.98 & 80.89 & 81.80 & 82.71 & 83.62 & 84.53 & 85.44 & 86.36 & 87.27 & 88.18 & 89.09 & 90.00 \\
\hline A(9) & 77.40 & 78.30 & 79.20 & 80.10 & 81.00 & 81.90 & 82.80 & 83.70 & 84.60 & 85.50 & 86.40 & 87.30 & 88.20 & 89.10 & 90.00 \\
\hline A(10) & 77.56 & 78.44 & 79.33 & 80.22 & 81.11 & 82.00 & 82.89 & 83.78 & 84.67 & 85.56 & 86.44 & 87.33 & 88.22 & 89.11 & 90.00 \\
\hline A(11) & 77.71 & 78.59 & 79.47 & 80.34 & 81.22 & 82.10 & 82.98 & 83.86 & 84.73 & 85.61 & 86.49 & 87.37 & 88.24 & 89.12 & 90.00 \\
\hline A(12) & 77.87 & 78.73 & 79.60 & 80.47 & 81.33 & 82.20 & 83.07 & 83.93 & 84.80 & 85.67 & 86.53 & 87.40 & 88.27 & 89.13 & 90.00 \\
\hline A(13) & 78.02 & 78.88 & 79.73 & 80.59 & 81.44 & 82.30 & 83.16 & 84.01 & 84.87 & 85.72 & 86.18 & 87.43 & 88.29 & 89.16 & 90.00 \\
\hline A(14) & 78.18 & 79.02 & 79.87 & 80.71 & 81.56 & 82.40 & 83.24 & 84.09 & 84.93 & 85.78 & 86.02 & 87.47 & 88.31 & 89.16 & 90.00 \\
\hline A(15) & 78.33 & 79.17 & 80.00 & 80.83 & 81.67 & 82.50 & 83.33 & 84.17 & 85.00 & 85.83 & 86.61 & 87.50 & 88.33 & 89.17 & 90.00 \\
\hline A(16) & 78.49 & 79.31 & 80.13 & 80.96 & 81.78 & 82.60 & 83.42 & 84.24 & 85.07 & 85.89 & 86.71 & 87.53 & 88.36 & 89.81 & 90.00 \\
\hline A(17) & 78.64 & 79.46 & 80.27 & 81.08 & 81.89 & 82.70 & 83.51 & 84.32 & 85.13 & 85.94 & 86.76 & 87.57 & 88.38 & 89.19 & 90.00 \\
\hline A(18) & 78.80 & 79.60 & 80.40 & 81.20 & 82.00 & 82.80 & 83.60 & 84.40 & 85.20 & 86.00 & 86.80 & 87.60 & 88.40 & 89.20 & 90.00 \\
\hline A(19) & 78.96 & 79.74 & 80.53 & 81.3 & 82.71 & 82.90 & 83.69 & 84.48 & 85.27 & 86.06 & 86.8 & 87.63 & 88.42 & 89.21 & 90.00 \\
\hline A(20) & 79.11 & 79.89 & 80.67 & 81.4 & 82.22 & 83.00 & 83.78 & 84.56 & 85.33 & 86.1 & 86.8 & 87.67 & 88.44 & 89.22 & 90.00 \\
\hline A(21) & 79.27 & 80.03 & 80.80 & 81.57 & 82.33 & 83.10 & 83.87 & 84.63 & 85.40 & 86.17 & 86.9 & 87.70 & 88.47 & 89.23 & 90.00 \\
\hline A(22) & 79.42 & 80.18 & 81.93 & 81.69 & 82.44 & 83.20 & 83.96 & 84.71 & 85.47 & 86.22 & 86.98 & 87.73 & 88.49 & 89.24 & 90.00 \\
\hline A(23) & 79.58 & 80.32 & 81.07 & 81.81 & 82.56 & 83.30 & 84.04 & 84.79 & 85.53 & 86.28 & 87.02 & 87.77 & 88.51 & 89.26 & 90.00 \\
\hline A(24) & 79.73 & 80.47 & 81.20 & 81.93 & 82.67 & 83.40 & 84.13 & 84.87 & 85.60 & 86.33 & 87.0 & 87.80 & 88.53 & 89.27 & 90.00 \\
\hline A(25) & 79.89 & 80.61 & 81.33 & 82.06 & 82.78 & 83.50 & 84.22 & 84.94 & 85.67 & 86.39 & 87.11 & 87.80 & 88.56 & 89.28 & 90.00 \\
\hline A(26) & 80.04 & 80.76 & 81.47 & 82.18 & 82.89 & 83.60 & 84.31 & 85.02 & 85.73 & 86.44 & 87.16 & 87.89 & 88.58 & 89.29 & 90.00 \\
\hline A(27) & 80.20 & 80.90 & 81.60 & 82.30 & 83.00 & 83.70 & 84.40 & 85.10 & 85.80 & 86.50 & 87.20 & 87.90 & 88.60 & 89.30 & 90.00 \\
\hline A(28) & 80.36 & 81.04 & 81.73 & 82.42 & 83.11 & 83.80 & 84.49 & 85.18 & 58.87 & 86.56 & 87.24 & 87.93 & 88.62 & 89.31 & 90.00 \\
\hline A(29) & 80.51 & 81.19 & 81.87 & 82.54 & 83.22 & 83.90 & 84.58 & 85.26 & 85.93 & 86.61 & 87.29 & 87.97 & 88.64 & 89.32 & 90.00 \\
\hline A(30) & 80.67 & 81.33 & 82.00 & 82.67 & 83.33 & 84.00 & 84.67 & 85.33 & 86.00 & 86.67 & 87.33 & 88.00 & 88.67 & 89.33 & 90.00 \\
\hline A(31) & 80.82 & 81.48 & 82.13 & 82.79 & 83.44 & 84.10 & 84.76 & 85.41 & 86.07 & 86.72 & 87.38 & 88.03 & 88.69 & 89.34 & 90.00 \\
\hline A(32) & 80.98 & 81.62 & 82. & 82. & 83.56 & 84.20 & 84.84 & 85.49 & 86.13 & 86.78 & 87.42 & 88.07 & 88.70 & 89.36 & 90.00 \\
\hline A(33) & 81. & 81 & 82.4 & 83 & 83 & 84.30 & 84.93 & 85 & 86.2 & 86.8 & 87.47 & 88.10 & 88.73 & 89.37 & 90.00 \\
\hline A(34) & 81.29 & 81.91 & 82.5 & 83.16 & 83.78 & 84.40 & 85.02 & 85 & 86.27 & 86.89 & 87.51 & 88.13 & 88.67 & 89.38 & 90.00 \\
\hline A(35) & 81.44 & 82.06 & 82.6 & 83.28 & 83.89 & 84.50 & 85.11 & 85.72 & 86.33 & 86.94 & 87.56 & 88.17 & 88.78 & 89.39 & 90.00 \\
\hline A(36) & 81.60 & 82.20 & 82.80 & 83.40 & 84.00 & 84.60 & 85.20 & 85.80 & 86.40 & 87.00 & 87.60 & 88.20 & 88.80 & 89.40 & 90.00 \\
\hline A(37) & 81.76 & 82.34 & 82.93 & 83.53 & 84.11 & 84.70 & 85.29 & 85.88 & 86.47 & 87.0 & 87. & 88.23 & 88.82 & 89.41 & 90.00 \\
\hline A(38) & 81.91 & 82.49 & 83.07 & 83.6 & 84.22 & 84.80 & 85.38 & 85.96 & 86.53 & 87.11 & 87.69 & 88.27 & 88.84 & 89.42 & 90.00 \\
\hline A(39) & 82.07 & 82.63 & 83.20 & 83.77 & 84.33 & 84.90 & 85.47 & 86.03 & 86.60 & 87.17 & 87.73 & 88.30 & 88.87 & 89.43 & 90.00 \\
\hline A(40) & 82.22 & 82.78 & 83.33 & 83.89 & 84.44 & 85.00 & 85.56 & 86.11 & 86.67 & 87.22 & 87.78 & 88.33 & 88.89 & 89.44 & 90.00 \\
\hline A(41) & 82.38 & 82.92 & 83.47 & 84.01 & 84.56 & 85.10 & 85.64 & 86.19 & 86.73 & 87.82 & 87.28 & 87.82 & 88.37 & 88.91 & 90.00 \\
\hline A(42) & 82.53 & 83.07 & 83.60 & 84.13 & 84.67 & 85.20 & 85.73 & 86.27 & 86.80 & 87.33 & 87.87 & 88.40 & 88.93 & 89.46 & 90.00 \\
\hline A(43) & 83.69 & 83.21 & 83.73 & 84.26 & 84.78 & 85.30 & 85.82 & 86.34 & 86.87 & 87.39 & 87.91 & 88.43 & 88.96 & 89.67 & 90.00 \\
\hline A(44) & 82.84 & 83.36 & 83.87 & 84.38 & 84.89 & 85.40 & 85.91 & 86.42 & 86.93 & 87.44 & 87.96 & 88.47 & 88.98 & 89.84 & 90.00 \\
\hline A(45) & 83.00 & 83.50 & 84.00 & 84.50 & 85.00 & 85.50 & 86.00 & 86.50 & 87.00 & 87.50 & 88.00 & 88.50 & 89.00 & 89.50 & 90.00 \\
\hline
\end{tabular}

\section*{READY RECKONER TABLE FOR}
\(A+B(90-A)\)
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & B(76) & B(77) & B(78) & B(79) & B(80) & B(81) & B(82) & B(83) & B(84) & B(85) & B(86) & B(87) & B(88) & B(89) & B(90) \\
\hline A(46) & 83.16 & 83.64 & 84.13 & 84.62 & 85.11 & 85.60 & 86.09 & 86.58 & 87.07 & 87.56 & 88.04 & 88.53 & 89.02 & 89.51 & 90.00 \\
\hline A(47) & 83.31 & 83.79 & 84.27 & 84.74 & 85.22 & 85.70 & 86.18 & 86.66 & 87.13 & 87.61 & 88.09 & 88.57 & 89.04 & 89.52 & 90.00 \\
\hline A(48) & 83.47 & 83.93 & 84.40 & 84.87 & 85.33 & 85.80 & 86.27 & 86.73 & 87.20 & 87.67 & 88.13 & 88.60 & 89.07 & 89.53 & 90.00 \\
\hline A(49) & 83.62 & 84.08 & 84.53 & 84.99 & 85.44 & 85.90 & 86.36 & 86.81 & 87.27 & 87.72 & 88.18 & 88.63 & 89.09 & 89.54 & 90.00 \\
\hline A(50) & 83.78 & 84.22 & 84.67 & 85.11 & 85.56 & 86.00 & 86.44 & 86.89 & 87.33 & 87.78 & 88.22 & 87.67 & 89.11 & 89.56 & 90.00 \\
\hline A(51) & 83.93 & 84.37 & 84.80 & 85.23 & 85.67 & 86.10 & 86.53 & 86.97 & 87.40 & 87.83 & 88.27 & 88.70 & 89.13 & 89.57 & 90.00 \\
\hline A(52) & 84.09 & 84.66 & 84.93 & 85.36 & 85.78 & 86.20 & 86.62 & 87.04 & 87.47 & 87.89 & 88.31 & 88.73 & 89.16 & 89.58 & 90.00 \\
\hline A(53) & 84.24 & 84.66 & 85.07 & 85.48 & 85.89 & 86.30 & 86.71 & 87.12 & 87.53 & 87.94 & 88.36 & 88.77 & 89.18 & 89.59 & 90.00 \\
\hline A(54) & 84.40 & 84.80 & 85.20 & 85.60 & 86.00 & 86.40 & 86.80 & 87.20 & 87.60 & 88.00 & 88.40 & 88.80 & 89.20 & 89.60 & 90.00 \\
\hline A(55) & 84.56 & 84.94 & 85.33 & 85.72 & 86.11 & 86.50 & 86.89 & 87.28 & 87.67 & 88.06 & 88.44 & 88.83 & 89.22 & 89.61 & 90.00 \\
\hline A(56) & 84.71 & 85.09 & 85.47 & 85.84 & 86.2 & 86. & 86.98 & 87.3 & 87.73 & 88.11 & 88.49 & 88.87 & 89.24 & 89.62 & 90.00 \\
\hline A(57) & 84.87 & 85.23 & 85.60 & 85.97 & 86.33 & 86 & 87.0 & 87.43 & 87.80 & 88.17 & 88.53 & 88.90 & 89.27 & 89.63 & 90.00 \\
\hline A(58) & 85.02 & 85.38 & 85.7 & 86.09 & 86.44 & 86.80 & 87 & 87.51 & 87.87 & 88.22 & 88.58 & 88.93 & 88.29 & 89.64 & 90.00 \\
\hline A(59) & 85.18 & 85.52 & 85.8 & 86.21 & 86.56 & 86 & 87 & 87.59 & 87.93 & 88.28 & 88.62 & 88.97 & 89.31 & 89.66 & 0.00 \\
\hline A(60) & 85.33 & 85.67 & 86.00 & 86. & 86.6 & 87 & 87 & 87.67 & 88.0 & 88. & 88.67 & 89.00 & 89.67 & 89.67 & 00 \\
\hline A(61) & 85.49 & 85.81 & 86.1 & 86.4 & 86.78 & 87 & 87 & 87.74 & 88.07 & 88.39 & 88.71 & 89.03 & 89.36 & 89.68 & . 00 \\
\hline A(62) & 85.64 & 85.96 & 86.27 & 86.58 & 86.89 & 87. & 87.51 & 87.82 & 88.13 & 88.44 & 88.76 & 89.07 & 89.38 & 89.69 & 90.00 \\
\hline A(63) & 85.80 & 86.10 & 86.40 & 86.70 & 87.00 & 87.30 & 87.60 & 87.90 & 88.20 & 88.50 & 88.80 & 89.10 & 89.40 & 89.70 & 90.00 \\
\hline A(64) & 85.96 & 86.24 & 86.5 & 86.82 & 87.11 & 87.40 & 87 & 87.9 & 88.2 & 88.56 & 88.84 & 89.13 & 89.42 & 89.71 & 90.00 \\
\hline A(65) & 86.11 & 86.39 & 86.6 & 86.94 & 87.22 & 87.50 & 87.78 & 88.06 & 88.33 & 88.61 & 88.89 & 89.17 & 89.44 & 89.72 & 90.00 \\
\hline A(66) & 86.27 & 86.53 & 86.80 & 87.07 & 87.33 & 87.60 & 87.87 & 88.13 & 88.40 & 88.67 & 88.93 & 89.20 & 89.47 & 89.73 & 90.00 \\
\hline A(67) & 86.42 & 86.68 & 86.93 & 87.19 & 87.44 & 87.70 & 87.96 & 88.21 & 88.47 & 88.72 & 88.98 & 89.23 & 89.49 & 89.74 & 90.00 \\
\hline A(68) & 86.58 & 86.87 & 87.07 & 87.31 & 87.56 & 87.80 & 88.04 & 88.29 & 88.53 & 88.78 & 89.02 & 89.27 & 89.51 & 89.76 & 90.00 \\
\hline A(69) & 86.73 & 86.97 & 87.20 & 87.43 & 87.67 & 87.90 & 88.13 & 88.37 & 88.60 & 88.83 & 89.07 & 89.30 & 89.53 & 89.77 & 90.00 \\
\hline A(70) & 86.89 & 87.41 & 87.33 & 87.56 & 87.78 & 88.00 & 88.22 & 88.44 & 88.67 & 88.89 & 89.11 & 89.33 & 89.56 & 89.78 & 90.00 \\
\hline A(71) & 87.04 & 87.18 & 87.47 & 87.68 & 87.89 & 88.10 & 88.31 & 88.52 & 88.73 & 88.94 & 89.16 & 89.37 & 89.58 & 89.79 & 90.00 \\
\hline A(72) & 87.20 & 87.40 & 87.6 & 87.80 & 88.00 & 88.20 & 88.40 & 88.60 & 88.80 & 89.00 & 89.20 & 89.40 & 89.60 & 89.80 & 90.00 \\
\hline A(73) & 87.36 & 87. & 87 & 87 & 88.11 & 88.30 & 88.49 & 88 & 88.8 & 89. & 89 & 89.43 & 89.62 & 89.81 & 90.00 \\
\hline A(74) & 87. & 87 & 87 & 88 & 88 & 88.33 & 88 & 88.67 & 88.9 & 89 & 89 & 89.47 & 89.64 & 89.82 & 90.00 \\
\hline A(75) & 87.67 & 87.83 & 88.00 & 88.1 & 88.33 & 88.50 & 88 & 88.83 & 89.00 & 89.1 & 89.33 & 89.50 & 89.67 & 89.83 & 90.00 \\
\hline A(76) & 87.82 & 87 & 88.1 & 88. & 88 & 88 & 88 & 88.91 & 89.0 & 89.2 & 89.38 & 89.53 & 89.69 & 89.84 & 90.00 \\
\hline A(77) & 87.98 & 88.12 & 88.2 & 88.41 & 88.56 & 88.70 & 84 & 88.99 & 89.13 & 89.28 & 89.42 & 89.57 & 89.71 & 89.86 & 90.00 \\
\hline A(78) & 88.13 & 88.27 & 88.4 & 88.53 & 88.67 & 88.80 & 93 & 39.07 & 89.2 & 89.33 & 89.47 & 89.60 & 89.73 & 89.87 & 90.00 \\
\hline A(79) & 89.29 & 88.41 & 88.53 & 88.66 & 88.78 & 88.90 & 89.02 & 89.14 & 89.27 & 89.39 & 89.51 & 89.63 & 89.76 & 89.88 & 90.00 \\
\hline A(80) & 88.45 & 88.56 & 88.67 & 88.78 & 88.89 & 89.00 & 89.11 & 89.22 & 89.33 & 89.44 & 89.56 & 89.67 & 89.78 & 89.89 & 90.00 \\
\hline A(81) & 88.60 & 88.70 & 88.80 & 88.90 & 89.00 & 89.10 & 89.20 & 89.30 & 89.40 & 89.50 & 89.60 & 89.70 & 89.80 & 89.90 & 90.00 \\
\hline A(82) & 88.76 & 88.84 & 88.93 & 89.02 & 89.11 & 89.20 & 89.29 & 89.38 & 89.47 & 89.56 & 89.64 & 89.73 & 89.82 & 89.91 & 90.00 \\
\hline A(83) & 88.91 & 88.99 & 89.07 & 89.14 & 89.22 & 89.30 & 89.38 & 89.46 & 89.53 & 89.61 & 89.69 & 89.77 & 89.84 & 89.92 & 90.00 \\
\hline A(84) & 89.07 & 89.13 & 89.20 & 89.27 & 89.33 & 89.40 & 89.47 & 89.53 & 89.60 & 89.67 & 89.73 & 89.80 & 89.87 & 89.93 & 90.00 \\
\hline A(85) & 89.22 & 89.28 & 89.33 & 89.39 & 89.44 & 89.50 & 89.56 & 89.61 & 89.67 & 89.72 & 89.78 & 89.83 & 89.89 & 89.94 & 90.00 \\
\hline A(86) & 89.38 & 89.42 & 89.47 & 89.51 & 89.56 & 89.60 & 89.64 & 89.69 & 89.73 & 89.78 & 89.82 & 89.87 & 89.91 & 89.96 & 90.00 \\
\hline A(87) & 89.53 & 89.57 & 89.60 & 89.63 & 89.67 & 89.70 & 89.73 & 89.77 & 89.80 & 89.83 & 89.87 & 89.90 & 89.93 & 89.97 & 90.00 \\
\hline A(88) & 89.69 & 89.71 & 89.73 & 89.76 & 89.78 & 89.80 & 89.82 & 89.84 & 89.87 & 89.89 & 89.91 & 89.93 & 89.96 & 89.98 & 90.00 \\
\hline A(89) & 89.47 & 89.86 & 89.87 & 89.88 & 89.89 & 89.90 & 89.91 & 89.92 & 89.93 & 89.94 & 89.96 & 89.97 & 89.98 & 89.99 & 90.00 \\
\hline A(90) & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 & 90.00 \\
\hline
\end{tabular}

Appendix - III of Annexure. A

STANDING HEIGHTS FOR INDIAN POPULATION (IN INCHES) MEAN AND STANDARD DEVIATIONS
\begin{tabular}{|l|l|l|l|l|l|l|}
\hline \multicolumn{1}{|c|}{ Age } & \multicolumn{1}{|c|}{ Mean } & \multicolumn{1}{c|}{ S.D. } & \multicolumn{1}{c|}{-2S.D. } & \multicolumn{1}{c|}{ Mean } & S.D. & -2S.D. \\
\hline \begin{tabular}{l} 
Less than \\
3 months
\end{tabular} & 22.13 & 2.32 & 17.49 & 21.65 & 2.13 & 17.39 \\
\hline 3 months + & 24.68 & 1.58 & 21.52 & 23.98 & 2.40 & 21.80 \\
\hline 6 months + & 25.55 & 3.19 & 19.17 & 25.35 & 1.43 & 22.49 \\
\hline 9 months + & 27.36 & 1.77 & 23.82 & 26.26 & 1.52 & 23.22 \\
\hline 1 year + & 29.09 & 2.07 & 24.95 & 28.54 & 2.04 & 24.46 \\
\hline 2 year + & 32.13 & 2.10 & 27.93 & 31.53 & 2.28 & 26.97 \\
\hline 3 year + & 34.96 & 2.58 & 29.80 & 34.33 & 2.50 & 29.33 \\
\hline 4 year + & 37.80 & 2.65 & 32.50 & 37.20 & 2.50 & 32.20 \\
\hline 5 year + & 40.19 & 3.16 & 33.84 & 39.92 & 2.90 & 34.12 \\
\hline 6 year + & 42.71 & 2.81 & 37.09 & 42.28 & 3.41 & 35.46 \\
\hline 7 year + & 44.84 & 3.41 & 38.02 & 44.04 & 3.34 & 37.72 \\
\hline 8 year + & 46.96 & 2.89 & 41.18 & 46.53 & 3.03 & 40.47 \\
\hline 9 year + & 48.70 & 3.65 & 41.40 & 48.38 & 2.96 & 42.46 \\
\hline 10 year + & 48.97 & 3.93 & 41.11 & 50.55 & 3.15 & 44.25 \\
\hline 11 year + & 52.51 & 3.83 & 44.86 & 52.60 & 3.73 & 45.14 \\
\hline 12 year + & 54.45 & 3.99 & 46.47 & 54.80 & 4.03 & 46.74 \\
\hline 13 year + & 56.93 & 3.84 & 49.25 & 56.65 & 3.63 & 49.39 \\
\hline 14 year + & 59.10 & 3.95 & 51.20 & 58.07 & 3.82 & 50.43 \\
\hline 15 year + & 61.22 & 3.94 & 53.34 & 58.89 & 3.27 & 52.35 \\
\hline 16 year + & 62.79 & 3.84 & 55.11 & 59.44 & 2.80 & 53.84 \\
\hline 17 year + & 63.54 & 4.11 & 55.32 & 59.64 & 2.95 & 53.74 \\
\hline 18 year + & 64.21 & 3.76 & 56.69 & 59.72 & 2.31 & 55.10 \\
\hline 19 year + & 64.37 & 3.79 & 56.79 & 59.72 & 2.31 & 55.10 \\
\hline 20 year + & 64.60 & 2.75 & 59.10 & 59.72 & 2.32 & 55.08 \\
\hline 21 year + & 64.64 & 2.40 & 59.84 & 60.24 & 2.24 & 55.76 \\
\hline
\end{tabular}
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ANNEXURE - B
CERTI FI CATE OF MENTAL RETARDATI ON FOR GOVERNMENT BENEFITS

```

This is to certify that Shri/Smt./Kum \(\qquad\)

Son/ Daughter of of Village/Town/City
\(\qquad\) with particulars given below:-
a) Age
b) Sex
c) Signature/Thumb impression

CATEGORISATION OF MENTAL RETARDATION

Mild/Moderate/Server/Profound

Validity of the Certificate : Permanent

Signature of the Government
Doctor/Hospital with seal
Chairperson Mental Retardation
Certification Board

Recent Attested Photograph Showing the disability affixed Here.

Dated:

Place:

\section*{ANNEXURE - B}

\section*{STANDARD FORMAT OF THE CERTIFICATE}

Certificate No.
Date \(\qquad\)

\section*{CERTIFICATE FOR THE PERSONS WITH DISABILITIES}
 per cent) permanent (physical impairment/visual impairment/speech \& hearing impairment) in relation to his/her \(\qquad\)
Note:-
1. This condition is progressive/non-progressive/likely to improve/not likely to improve.* 2. Re-assessment is not recommended/is recommended after a period of \(\qquad\) ___-___-____-__-_months/years.*
*Strike out which is not applicable.
Sd/- Sd/- Sd/-
(DOCTOR) (DOCTOR) (DOCTOR)
Seal Seal Seal
Signature/Thumb impression
Of the patient.
Countersigned by the
Medial Superintendent/CMO/Head of
Hospital (with seal)
Recent Attested Photograph Showing the disability affixed Here."
No. 11012/2/2008-PCR(Desk)\}
(SANJ EEV KUMAR)
J oint Secretary to Government of I ndia

Note: The principal rules were published in the Gazette of India, Extraordinary, vide notification number G.S.R. 316(E), dated the 31 \({ }^{\text {st }}\) March, 1995.```

