

### Medical Norms and Standards for Appointments in the Company

(For all categories of personnel except Security and Fire service)

1. Good mental and bodily health and a strong constitution.
2. Free from physical defect or abnormality, congenital or acquired, likely to interfere with the efficient performance of duties.
3. No evidence of mal-development-physical or mental.
4. Joints and loco-motor functions within normal limits.
5. No deformity from old fractures or depression of skull bones.
6. **Height and Weight**

For Height and Weight, Body Mass Index (BMI) of the candidate is to be taken into account. For calculating BMI, following formula is to be used for determining fitness of the candidate

$$\text{BMI} = \text{Weight in Kg} / (\text{height in meters})^2$$

The categories of fitness in terms of BMI are given below

BMI (kg/m <sup>2</sup> )	Fitness		Remarks
	Upto 35 yrs of age	Above 35 yrs of age	
Upto 25 (Normal Range)	Fit	Fit	-
25 to 29.99 (Over Weight)	Fit	Fit	if not having Diabetes Mellitus.
30 to 34 (Obese)	Unfit	Fit*	* if not with co-morbid conditions like Hypertension, Diabetes Mellitus and Cardiac Disorder.
>34 (Morbid Obesity)	Unfit	Unfit	-

The minimum height required for Drivers is 162 cms.

#### Notes:

- i) a) **Chest:** Acceptable chest measurements at full expiration will be 79 cms (relaxable by 5 cms.) and minimum expansion 5 cms. The range of expansion up to 4 cms. i.e. a deviation of 20% will be acceptable. This is not applicable to female candidates.
- b) **Measurement:** The candidate will stand with feet together and arms raised over the head. The tape will be taken around the chest horizontally with its upper edge touching the inferior angles of the shoulder blades. The arms will then be lowered to hang relaxed by the side of the body. The candidate will not be permitted to throw shoulders upwards or backwards so as to displace the tape. The candidate will be directed to take the breath several times without causing contraction of chest or wing out the shoulder blades. The chest measurement at minimum and maximum expansion will

be recorded in centimeters thus 7075, 78-84, etc. Fraction of cm below 0.5 will be ignored and over 0.5 taken as 1.

- ii) Height measurement will be taken in centimeters with the individual standing barefooted and weight thrown on both heels kept together. Tendency to stand on toes or raised heels will be strictly avoided. The candidate will stand erect with chin drawn in to bring the vertex of the head in level under the horizontal bar of the stand and heels, calves, buttocks and shoulders touching the vertical portion of the stand with body fully relaxed and spine straight but not strained.
- iii) A Staff Nurse or Ayah will be present when female candidates are examined.

## 7. Eye

Standards and procedures of examination in respect of visual acuity and colour perception are as follows :

The candidate's eyes will be tested and results of the test recorded in accordance with the following rules :

7.1 The candidate's eyes will be submitted to a general examination directed to the detection of any disease or abnormality. The candidate may be rejected if he suffers from morbid condition of the eyes, eyelids or contiguous structures of such nature as would render him/ her unfit for service at the time of appointment or at a future date.

7.2 Visual Acuity The examination for determining the acuity of vision includes two tests, one for distant, and the other for near vision. Each eye will be examined separately.

7.3 Standard of visual acuity for personnel of various categories with or without glasses will be as follows :

Category of Employees	Age	Distant Vision		Near Vision	
		Better Eye	Worse Eye	Better Eye	Worse Eye
For Employees in E1 & above and security and fire services personnel	Below 35 yrs.	6/9 6/6	6/9 6/12	Sn.0.6	Sn.0.6
	35 yrs. & above	6/12 6/9	6/12 6/18	Sn.0.8	Sn.0.8
Others	Below 35 yrs	6/9 6/18	6/24 6/18	Sn.0.6	Sn.0.8.
	35 yrs. & above	6/12 6/24	6/36 6/24	Sn.0.8	Sn.0.8

## 7.4 Fundus Examination

In every case of Myopia, Fundus examination should be carried out and the results recorded. In the event of a pathological condition being present which is likely to be progressive and affect the efficiency of the candidate, he/she should be declared unfit.

The total amount of Myopia ( including the cylinder ) shall not exceed - 6.00 D.

7.5 Fundus and Media should be healthy and within normal limits.

- 7.6 No degenerative signs of vitreous or chorioretinitis to be present suggesting progressive Myopia.
- 7.7 Should have good binocular vision, fusion faculty and full field of vision in both the eyes.
- 7.8 There should be no organic disease likely to cause exacerbations or deterioration.
- 7.9 The field of vision shall be tested by the confrontation method. Where such test gives unsatisfactory or doubtful results, the field of vision should be determined on the visual field screen /perimeter.
- 7.10 Ocular conditions other than visual acuity-Colour vision deficiency
- 7.10.1 The testing of colour vision shall be essential for all candidates. Colour vision shall be tested with Ishihara's Isochromatic plates only in good light.
- 7.10.2 Colour vision deficiency is a disqualification for the following :
1. Painter
  2. Electricians
  3. Technicians engaged in Laboratory work and Chemists.
  4. Crane Operators and Points men.
  5. Draughtsmen.
  6. Drivers of all categories.
  7. Scientific Assistants.
  8. Security Personnel.
  9. Doctors.
- Other occupations where perception of colours is considered essential - Such cases with colour deficiency will be referred to concerned GM for his opinion and if recommended by him that this colour vision deficiency will not adversely affect the performance of the candidate, then the candidate may be declared medically fit by Medical Department provided however, that he otherwise declared medically fit in all other aspects.
- 7.10.3 Whenever an employee suffering from colour blindness is posted or transferred into a category wherein colour perception is required, his eyes will be re-examined for the same along with the examination for visual acuity.
- 7.11 Night blindness need not be tested as a routine but only in special cases. No standard test for the testing of night blindness or dark adaptation is prescribed. The Medical Officer will have the discretion to improvise such rough test e.g. recording of visual acuity with reduced illumination or by making the candidate recognize various objects in a dark room after he/she has been there for 20 to 30 minutes. Candidates' own statements should not always be relied upon, but they should be given due consideration.
- 7.12 Any organic disease or a progressive refractive error which is likely to result in lowering of the visual acuity shall be considered as a disqualification.
- 7.13 For technical services/skilled jobs, squint in presence of normal binocular vision should not be considered a disqualification. For other services, the presence of squint should not be considered as a disqualification if the visual acuity of each eye is of the prescribed standard.
- 7.14 For regular service one eyed individual should be considered as unfit except for ministerial and allied jobs where a binocular vision is not considered essential. It will be ensured that the prognosis of the functioning eye is good and its vision is not likely to be endangered by the condition of the worse eye and the prescribed visual acuity standards are fully satisfied.
- 7.18 Correction with contact lenses is no bar for employment provided the prescribed standards are fulfilled.

## 8. Ear

The category of employees, who are covered under any applicable act prescribing certain standards of hearing should be examined by ENT specialist and should be submitted desirably for Audiometry examination.

9. Nose  
A candidate should be free from any active disease of nose.
10. Throat  
State of tonsils-Slight hypertrophy without evidence of repeated tonsillitis is not a cause for rejection. Enlarged tonsils cause temporary unfitness until treated with tonsillectomy. Throat, palate, gums, jaws temporo-mandibular joints and dentition should be within normal limits.
11. Blood Pressure (BP)
- 11.1.(a) BP recording of 140/90 mm Hg can be considered as the upper limit for fitness.  
- The measurement of BP should be accurate and has to be done both in lying and the sitting posture.
- (b) If any candidate has a BP reading of more than this level they be re-examined three times at different interval and if the reading continues to be 140/90 mm Hg or higher, then
- (i) For candidates 35 yrs. or less of age - this is Hypertension and the candidate is to be declared UNFIT.
- (ii) For candidates above 35 yrs. of age, this is Hypertension but candidate can be declared FIT, provided there is no end organ damage. Tests for end organ damage would remain the same as in the case with Diabetes Mellitus.
- During Medical Examination of new inductees who are above the age of 35 yrs., the following additional tests are to be conducted
- (c) - TMT  
- ECHO  
- Ultrasound whole abdomen
- TMT positive for reversible ischemia will render the candidate UNFIT for employment. However, if he gets Coronary Angiography done at his own cost at BHEL approved hospitals/AIIMS, and Coronary angiography is normal, then he can be considered FIT for employment.  
For any findings detected in ECHO or Ultrasound whole abdomen, appropriate decision will be taken by Company Medical Officer.
- 11.2 The blood pressure will be recorded in mm of mercury, with a sphygmomanometer after the candidate has rested in a quiet room on an examination couch for a minimum of 15 minutes.
- 11.3 Method of taking blood pressure  
The mercury manometer type of instrument should be used as a rule. The measurement should not be taken within 15 minutes of any exercise or excitement, provided the candidate and particularly the arm is relaxed either lying or sitting. The arm is supported comfortably at the side in a more or less horizontal position. The arm should be freed from clothes to the shoulder. The cuff completely deflated should be applied with the middle of the rubber over the inner side of the arm and its lower edge an inch or two above the bent of the elbow. The turns of cloth bandages should spread evenly over the bag to avoid bulging inflation. The cuff is again inflated to 30 to 40 mm above this reading (i.e. 140 mm Hg). The brachial artery is located by palpation at the bend of the elbow and the stethoscope is then applied snugly and centrally over it below but not in contact with the cuff. The cuff is inflated to the above mentioned level and deflated slowly. The level of

the mercury column when soft successive sounds appear represents the systolic pressure. When more air is allowed to escape, the sounds will be heard to increase in intensity. The level of the column at which the well heard sounds change to soft muffled fading sounds, represents the diastolic pressure. The measurements should be taken in a fairly brief time as prolonged pressure of the cuff is irritating to the individual and will vitiate the readings. Rechecking, if necessary should be done only a few minutes after complete deflation of the cuff.

## 12. Glands

Thyroid should be normal with no evidence of hypo or hyper thyroidism or generalised enlargement of lymph glands. Scars if any, of the previous removal of tubercular glands should be normal and there must not have been any active disease in the last five years.

## 13. Urine

**A** "Non orthostatic albuminuria will be a cause of rejection. If sugar is detected during routine chemical tests, further laboratory tests such as standard blood sugar tolerance test will be undertaken by a Medical Specialist before determining the fitness".

### **B Diabetes Mellitus**

- To investigate the presence of Diabetes Mellitus, three blood tests should be conducted for all candidates inducted in the Company viz., (1) fasting Blood Sugar, (2) post-prandial Blood Sugar and (3) Glycosylated Haemoglobin (Hb A1C).

#### **Upto 35 yrs. of Age**

If there is no History of Diabetes and results of the above mentioned tests are within permissible limits, the candidate will be declared FIT. For all other cases, a candidate is to be declared as Unfit.

#### **Above 35 yrs. of Age**

- A candidate with a BMI of less than or equal to 25, may be declared FIT, even if suffering from Diabetes Mellitus (to be ascertained as per the above three tests), provided there is no End Organ Damage\*.

*\*End Organ Damage pertains to Heart, Brain, Kidney, Eye & Peripheral Vascular System. Following tests to be conducted to determine end organ damage: i) Eye - Fundus Examination and FFA.*

*ii) Kidney - Micro Albuminuria, Serum Creatinine, Blood Urea.*

*iii) Heart - Echo, TMT, ECG*

If for a candidate TMT result is positive, then no more tests are to be conducted and the candidate is to be declared **UNFIT**.

- If (a) BMI is >25, (b) age is above 35 years and (c) candidate is also suffering from Diabetes Mellitus, then no end organ tests are to be conducted and the candidate is to be declared **UNFIT**.

### **Diagnostic Criteria**

- FPG (Fasting Plasma Glucose)  $\geq 126$  mg% or  $\geq 7.0$  m.mol/ L

**OR**

- RBS (Random Blood Sugar)  $\geq 200$  mg%  
or  $\geq 11.1$  m.mol/ L / 2 Hr. Plasma Glucose during an Oral GTT (Glucose Tolerance Test)  $\geq 200$  mg% or  $\geq 11.1$  m.mol/ L

**OR**

- (Hb A1C) > 6.5%

All the three above tests are to be done and if the result of even one test is positive, the candidate will be diagnosed as having Diabetes.

**14. Radiological Examination**

Skiagram chest of all fresh entrants will be taken. Mass miniature radiography will be utilised, wherever available. Cases diagnosed as suffering from pulmonary tuberculosis will be declared temporarily unfit for a period of 3 months. On completion of this period, the candidate will be reexamined with regard to medical fitness.

**15. Venereal Diseases**

Candidates who have suffered or are suffering from venereal diseases will not be declared fit unless detailed examination of urethral smear and serological test proves negative.

**16. Skin Diseases** Candidates suffering from leprosy or chronic skin conditions will be declared unfit. Vitiligo cases are acceptable.

**17. Fits**

Candidates suffering from epilepsy will be declared unfit in certain occupations like drivers, crane operators, machinists, fire brigade , security duties and shop floor jobs where moving machinery may cause risk to life if they suffer from a fit in the vicinity.

**18. Miscellaneous**

Sign of mental retardation, incontinence of urine or enureses at the time of pre-employment medical examination will render a candidate unfit.

**19. Pregnancy**

If at the time of medical examination, a candidate is pregnant of 12 weeks or more she shall be declared temporarily unfit until she has completed 6 weeks after confinement. After confinement the candidate shall be required to produce a medical certificate of fitness from a registered medical practitioner before being called for a final medical examination.

**20. Defects**

Congenital or acquired physical defects if any noticed will be recorded on the medical examination form with a clear opinion as to whether it is likely to interfere with the efficient performance of the duties for which the candidate is under consideration for employment.