



# UNION PUBLIC SERVICE COMMISSION

Examination Notice No.5/2016-ENGG.

Dated 27.02.2016

(LAST DATE FOR SUBMISSION OF APPLICATIONS : 25.03.2016)

**ENGINEERING SERVICES EXAMINATION, 2016**

**(COMMISSION'S WEBSITE - [www.upsc.gov.in](http://www.upsc.gov.in))**

## **IMPORTANT**

### **1. CANDIDATES TO ENSURE THEIR ELIGIBILITY FOR THE EXAMINATION:**

The candidates applying for the examination should ensure that they fulfil all eligibility conditions for admission to the Examination. Their admission at all the stages of the examination will be purely provisional subject to satisfying the prescribed eligibility conditions.

**Mere issue of e-Admission Certificate to the candidate will not imply that his/her candidature has been finally cleared by the Commission.** Commission take up verification of eligibility conditions with reference to original documents only after the candidate has qualified for Interview/Personality Test.

### **2. HOW TO APPLY**

**Candidates are required to apply Online only by using the website [www.upsconline.nic.in](http://www.upsconline.nic.in).** Brief instructions are given in Appendix-II. Detailed instructions for filling up online applications are available on the above mentioned website.

### **3. LAST DATE FOR SUBMISSION OF APPLICATIONS :**

The Online Applications can be filled upto **25<sup>th</sup> March, 2016 (25.03.2016)** till **11.59 PM** after which the link will be disabled.

**4. The eligible candidates shall be issued an e-Admission Certificate three weeks before the commencement of the examination. The e-Admission Certificate will be made available in the UPSC website [[www.upsc.gov.in](http://www.upsc.gov.in)] for downloading by candidates. No Admission Certificate will be sent by post. All the applicants are requested to provide valid & active e-mail i.d. while filling up online application form as the Commission may use electronic mode for contacting them.**

### **5. PENALTY FOR WRONG ANSWERS (in Objective Type Papers) :**

Candidates should note that there will be penalty (**Negative Marking**) for wrong answers marked by a candidate in the Objective Type Question Papers.

### **6. FACILITATION COUNTER AND WEBSITE FOR GUIDANCE OF CANDIDATES :**

In case of any guidance/information/clarification regarding their applications, candidature etc., candidates can contact UPSC's Facilitation Counter near Gate 'C' of its campus in person or over **Telephone Nos.011-23385271/011-23381125/011- 23098543** on working days between 10.00 hrs. and 17.00 hrs. The Commission also has Website at address: **[www.upsc.gov.in](http://www.upsc.gov.in)** over which the candidates can obtain details of the examination as well as information about registration of their applications, venue of the examination and results etc.

### **7. SPECIAL INSTRUCTIONS:**

Candidates are advised to read carefully "Special Instructions to the candidates for Conventional Type Tests and Objective Type Tests" (Appendix III Part A and Part B). For both writing and marking answers in the OMR sheet [Answer Sheet] in objective type papers, candidates must use black ball pen only. Pens with any other colours are prohibited. Do not use Pencil or ink pen.

Candidates should note that any omission/mistake/discrepancy in encoding/filling of details in the OMR answer sheet, especially with regard to Roll Number and Test Booklet Series code, will render the answer sheet liable for rejection.

Candidates in the Category of visually impaired are advised not to apply for this examination as no vacancies are earmarked/identified for them for the Services/Posts included in Engineering Services Examination, 2016.

### **8. MOBILE PHONES NOT PERMITTED :**

(a) Mobiles phones, pagers, bluetooth or any other communication devices are not allowed inside the premises where the examination is being conducted. Any infringement of these instructions shall entail disciplinary action including ban from future examinations.

(b) Candidates are advised in their own interest not to bring any of the banned items including mobile phones/pagers or any valuable/costly items to the venue of the examination, as arrangements for safekeeping cannot be assured. Commission will not be responsible for any loss in this regard.

**CANDIDATES ARE REQUIRED TO APPLY ONLY THROUGH ONLINE MODE**

**"Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply."**

**No.F. 2/7/2015-E.I(B):** A combined competitive examination for recruitment to the services/ posts mentioned in para 2 below will be held by the Union Public Service Commission at AGARTALA, AHMEDABAD, AIZAWL, ALIGARH, ALLAHABAD, BANGALORE, BAREILLY, BHOPAL, CHANDIGARH, CHENNAI, CUTTACK, DEHRADUN, DELHI, DHARWAD, DISPUR, GANGTOK, HYDERABAD, IMPHAL, ITANAGAR, JAIPUR, JAMMU, JORHAT, KOCHI (COCHIN), KOHIMA, KOLKATA, LUCKNOW, MADURAI, MUMBAI, NAGPUR, PANAJI (GOA), PATNA, PORT BLAIR, RAIPUR, RANCHI, SAMBALPUR, SHILLONG, SHIMLA, SRINAGAR, THIRUVANANTHAPURAM, TIRUPATI, UDAIPUR AND VISHAKHAPATNAM commencing on 27<sup>th</sup> May, 2016 in accordance with the Rules published by the Ministry of Railways (Railway Board) in the Gazette of India Extraordinary dated the 27<sup>th</sup> February, 2016.

THE CENTRES AND THE DATE OF HOLDING THE EXAMINATION AS MENTIONED ABOVE ARE LIABLE TO BE CHANGED AT THE DISCRETION OF THE COMMISSION.

Applicants should note that there will be a ceiling on the number of candidates allotted to each of the centres except Chennai, Delhi, Dispur, Kolkata and Nagpur. Allotment of Centres will be on the first-apply-first-allot basis and once the capacity of a particular centre is attained, the same will be frozen. Applicants, who cannot get a centre of their choice due to ceiling, will be required to choose a centre from the remaining ones. Applicants are, thus, advised that they may apply early so that they could get a Centre of their choice.

NB : Notwithstanding the aforesaid provision, Commission reserve the right to change the Centres at their discretion if the situation demands.

CANDIDATES ADMITTED TO THE EXAMINATION WILL BE INFORMED OF THE TIME TABLE AND PLACE OR PLACES OF EXAMINATION.

The candidates should note that no request for change of centre will be entertained.

**2. (A)** Recruitment on the results of this examination will be made to the Services/ Posts under the following categories:-

**Category I-Civil Engineering.**

**Category II-Mecahnical Engineering.**

**Category III-Electrical Engineering.**

**Category IV-Electronics & Telecommunication Engineering.**

The number of vacancies to be filled on the results of the examination is expected to be approximately **602** including **32** PH vacancies. The number of vacancies is liable to alteration.

Reservations will be made for candidates belonging to Scheduled Castes, Scheduled Tribes, Other Backward Classes and Physically Disabled Category in respect of vacancies as may be fixed by the Government of India.

#### **CATEGORY I – CIVIL ENGINEERING**

##### **Group-A Services/Posts**

- (i) Indian Railway Service of Engineers.
- (ii) Indian Railway Stores Service (Civil Engineering Posts).
- (iii) Central Engineering Service.
- (iv) Indian Ordnance Factories Service AWM/JTS (Civil Engineering Post)
- (v) Central Engineering Service (Roads), Gr 'A' (Civil Engineering Posts).
- (vi) Central Water Engineering Service Gr 'A' (Civil Engineering Posts)
- (vii) Survey of India Group 'A' Service.
- (viii) AEE(Civil Engg Posts)in Border Roads Engineering Service Gr 'A'.
- (ix) AEE(Civil) of P&T Building Works Gr 'A'.
- (x) Indian Defence Service of Engineers
- (xi) AEE(QS&C) in Military Engineer Service (MES)Surveyor Cadre.

#### **CATEGORY II—MECHANICAL ENGINEERING**

##### **Group-A/B Services/Posts**

- (i) Indian Railway Service of Mechanical Engineers.
- (ii) Indian Railway Stores Service (Mechanical Engineering Posts).
- (iii) Indian Ordnance Factories Service AWM/JTS (Mechanical Engineering Posts).
- (iv) Central Electrical and Mechanical Engineering Service (Mechanical Engineering Posts).
- (v) Geological Survey of India Engineering Service Gr 'A'
- (vi) Central Engineering Service (Roads), Gr 'A' (Mechanical Engineering Posts).
- (vii) Central Water Engineering Service Gr 'A' (Mechanical Engineering Posts).
- (viii) AEE(Mech Engg Posts) in Border Roads Engineering Service Gr 'A'.
- (ix) Indian Naval Armament Service
- (x) Indian Defence Service of Engineers.
- (xi) Central Power Engineering Service Gr 'B' (Mechanical Engineering Posts).

#### **CATEGORY III—ELECTRICAL ENGINEERING**

##### **Group-A/B Services/Posts**

- (i) Indian Railway Service of Electrical Engineers.

- (ii) Indian Railway Stores Service (Electrical Engineering Posts).
- (iii) Central Electrical and Mechanical Engineering Service (Electrical Engineering Posts).
- (iv) Indian Ordnance Factories Service AWM/JTS (Electrical Engineering Posts).
- (v) Indian Inspection Service (Asstt. Dir. Grade I).
- (vi) Indian Supply Service Gr 'A'.
- (vii) AEE(Electrical) of P&T Building Works Gr 'A'.
- (viii) Indian Naval Armament Service.
- (ix) Indian Defence Service of Engineers
- (x) Central Power Engineering Service Gr 'B' (Electrical Engineering Posts).

#### **CATEGORY IV—ELECTRONICS AND TELECOMMUNICATION ENGINEERING**

##### **Group-A and B Services/Posts**

- (i) Indian Railway Service of Signal Engineers.
- (ii) Indian Railway Stores Service (Telecommunication/Electronics Engineering Posts).
- (iii) Indian Inspection Service (Asst. Dir. Grade-I)
- (iv) Indian Telecommunication Service, Group 'A'.
- (v) Indian Radio Regulatory Service Gr 'A'
- (vi) Indian Ordnance Factories Service AWM/JTS (Electronics and Telecommunication Engineering Posts).
- (vii) Indian Naval Armament Service
- (viii) Junior Telecom Officer (General Central Service Group 'B', Gazetted, Non-Ministerial).
- (ix) Central Power Engineering Service Group 'B' (Electronics and Telecommunication Engineering Posts).

**Note:-** Recruitment to the Services/Posts mentioned above will be made on the basis of the scheme(s) of examination prescribed in Appendix-I to the Notice. Candidates who are declared qualified on the result of written part of the examination will be required to indicate their preference for Services/Posts at the appropriate time in the Detailed Application Form.

**N.B. (i)** —DEPARTMENTAL CANDIDATES ARE THE CANDIDATES ADMITTED TO THE EXAMINATION UNDER AGE RELAXATION VIDE RULE 5(B). SUCH CANDIDATES MAY GIVE THEIR PREFERENCES FOR THE SERVICES/POSTS IN OTHER MINISTRIES/DEPARTMENTS ALSO.

**N.B. (ii)**—Candidates admitted to the examination under the proviso to para3(III) will be considered only for the posts mentioned in the said proviso and their preference for other Services and Posts, if any, will be ignored.

**N.B. (iii)**—The candidates will be allotted to various Services/Posts strictly in accordance with their merit position, preferences exercised by them and number of vacancies, subject to their medical fitness.

**2(B)** A candidate may apply for admission to the examination in respect of anyone of the categories of the Services/Posts mentioned in para 2 above viz. Civil Engineering or Mechanical Engineering or Electrical Engineering or Electronics & Telecommunication Engineering.

#### **3. ELIGIBILITY CONDITIONS**

(I) Nationality:

A candidate must be either:

- (a) a citizen of India, or
- (b) a subject of Nepal, or
- (c) a subject of Bhutan, or
- (d) a Tibetan refugee who came over to India before the 1<sup>st</sup> January, 1962 with the intention of permanently settling in India, or
- (e) a person of Indian origin who has migrated from Pakistan, Burma, Sri Lanka or East African countries of Kenya, Uganda, the United Republic of Tanzania, Zambia, Malawi, Zaire and Ethiopia or from Vietnam with the intention of permanently settling in India.

Provided that a candidate belonging to categories (b), (c), (d) and (e) above shall be a person in whose favour a certificate of eligibility has been issued by the Government of India.

A candidate in whose case a certificate of eligibility is necessary, may be admitted to the examination but the offer of appointment may be given only after the necessary eligibility certificate has been issued to him/her by the Government of India.

**(II) Age Limits:**

(a) A candidate for this examination must have attained the age of 21 years and must not have attained the age of 30 years on the 1st January, 2016 i.e., he/she must have been born not earlier than 2nd January, 1986 and not later than 1st January, 1995.

(b) The upper age-limit of 30 years will be relaxable upto 35 years in the case of Government servants of the following categories, if they are employed in a Department/ Office under the control of any of the authorities mentioned in column 1 below and apply for admission to the examination for all or any of the Service(s)/Post(s) mentioned in column 2, for which they are otherwise eligible.

(i) A candidate who holds substantively a permanent post in the particular Department/Office concerned. This relaxation will not be admissible to a probationer appointed against a permanent post in the Department/Office during the period of his probation. However, this relaxation will be admissible to a probationer so appointed provided he/she already retains a lien on

a permanent post in a Department/Office under the control of any of the authorities mentioned in column 1 below.

(ii) A candidate who has been continuously in a temporary service on a regular basis in the particular Department/Office for at least 3 years on the 1<sup>st</sup> January, 2016.

| Column 1  | Column 2  |
|---|---|
| Ministry of Railways (Railway Board)  | I.R.S.E.<br>I.R.S.M.E.<br>I.R.S.E.E.<br>I.R.S.S.E.<br>I.R.S.S.  |
| Central Public Works Department   | C.E.S. Group 'A'  |
| Directorate General Ordnance Factories  | I.O.F.S. Group 'A'  |
| Central Electricity Authority   | C.P.E. Service Gr 'B'   |
| Ministry of Road Transport and Highways   | Central Engineering Service Gr. 'A' (Roads)   |
| Ministry of Telecommunication and Information Technology, Deptt. of Telecommunication & Deptt. of Posts | AEE of P&T Building Works Gr 'A' Service,<br>Engineer in Indian Radio Regulatory Service Gr 'A'<br>Indian Telecommunication Service Group 'A',<br>J.T.O. (G.C.S. Gr. 'B') |
| Directorate General of Supplies and Disposals   | I.I.S. Gr 'A',<br>I.S.S. Gr 'A'   |
| Central Water Commission  | Central Water Engineering Service Gr 'A'  |
| Geological Survey of India  | Assistant Executive Engineer Gr 'A'   |
| Min of Science and Technology, Deptt. of Science and Technology   | Survey of India Gr 'A' Service  |
| Border Roads Organisation   | BRES Gr. 'A'  |
| Indian Navy   | Indian Naval Armament Service   |
| Military Engineer Services  | Indian Defence Service of Engineers (IDSE) Group 'A'<br>AEE(QS&C) in Military Engineer Service (MES) Surveyor Cadre   |

**Note.**— The period of apprenticeship if followed by appointment against a working post on the Railways may be treated as Railway Service for the purpose of age concession.

(c) The upper age-limit prescribed above will be further relaxable :

- (i) Up to maximum of five years if a candidate belongs to a Scheduled Caste or a Scheduled Tribe.
- (ii) Up to maximum of three years in the case of candidates belonging to Other Backward Classes who are eligible to avail of reservation applicable to such candidates. The closing date fixed for the receipt of the application will be treated as the date for determining the OBC status (including that of creamy layer) of the candidates.
- (iii) Up to maximum of five years if a candidate had ordinarily been domiciled in the State of Jammu and Kashmir during the period from the 1st January, 1980 to the 31st day of December, 1989.
- (iv) Up to maximum of three years, in the case of Defence Services personnel, disabled in operations during hostilities with any foreign country or in a disturbed area, and released as a consequence thereof.
- (v) Up to maximum of five years in the case of Ex-servicemen including Commissioned Officers and ECOs/SSCOs, who have rendered at least five years Military Service as on 1<sup>st</sup> January, 2016 and have been released (i) on completion of assignment (including those whose assignment is due) to be completed within one year from 1<sup>st</sup> January, 2016 otherwise than by way of dismissal or discharge on account of misconduct or inefficiency, or (ii) on account of physical disability attributable to Military Service, or (iii) on invalidment.
- (vi) Up to maximum of five years in the case of ECOs/SSCOs who have completed an initial period of assignment of five years of Military Service as on 1<sup>st</sup> January, 2016 and whose assignment has been extended beyond five years and in whose case the Ministry of Defence issues a certificate that they can apply for civil employment and they will be released on three months notice on selection from the date of receipt of offer of appointment.
- (vii) Up to a maximum of 10 years in the case of deaf-mute and Orthopaedically handicapped persons.

**Note I :** Candidates belonging to the Scheduled Castes and the Scheduled Tribes and Other Backward Classes who are also covered under any other clauses of Para 3(II)(c) above, viz., those coming under the category of Ex-servicemen, persons domiciled in the State of J&K, deaf-mute and orthopaedically handicapped etc. will be eligible for grant of cumulative

relaxation under both the categories.

**Note II :** The term ex-servicemen will apply to the persons who are defined as Ex-servicemen in the Ex-servicemen (Re-employment in Civil Services and Posts) Rules, 1979, as amended from time to time.

**Note III :** The age concession under Para 3(ii)(c)(v) and (vi) will not be admissible to Ex-Servicemen and Commissioned Officers including ECOs/SSCOs, who are released on own request.

**Note IV :** Notwithstanding the provision of age relaxation under Para 3(ii)(c)(vii) above, a physically handicapped candidate will be considered to be eligible for appointment only if he/she (after such physical examination as the Government or appointing authority, as the case may be, may prescribe) is found to satisfy the requirements of physical and medical standards for the concerned Service/ Posts to be allocated to the physically handicapped candidate by the Government.

**Note V :** A candidate will be eligible to get the benefit of community reservation only in case the particular caste to which the candidates belong is included in the list of reserved communities issued by the Central Government. If a candidate indicates in his/her application form for Engineering Services Examination that he/she belongs to General category but subsequently writes to the Commission to change his/her category to a reserved one, such request shall not be entertained by the Commission.

**Candidates seeking reservation/relaxation benefits available for SC/ST/OBC/PH/Ex-Servicemen must ensure that they are entitled to such reservation/relaxation as per eligibility prescribed in the Rules/Notice. They should be in possession of all the requisite certificates in the prescribed format in support of their claim as stipulated in the Rules/Notice for such benefits, and these certificates should be dated earlier than the due date (closing date) of the application (Prescribed Format of Disability Certificate should be submitted by Physically Handicapped candidates as per Form IV of Department of Personnel & Training's Office Memorandum No. 36035/1/2012-Estt.(Res.) dated 29.11.2013 as at Annexure-III).**

While the above principle will be followed in general, there may be a few cases where there was a little gap (say 2-3 months) between the issuance of a Government Notifications enlisting a particular community in the list of any of the reserved communities and the date of submission of the application by the candidate. In such cases the request of change of community from General to Reserved may be considered by the Commission on merit.

**N.B.—**The candidature of a person who is admitted to the examination under the age concession mentioned in Para 3(II)(b) above shall be cancelled if, after submitting his/her application he/she resigns from service or his/her services are terminated by his/her department/office either before or after taking the examination. He/she will, however, continue to be eligible if he/she is retrenched from the service or post after submitting his/her application. A candidate who after submitting his/her application to the department is transferred to other department/office will be eligible to compete under departmental age concession.

SAVE AS PROVIDED ABOVE THE AGE LIMITS PRESCRIBED CAN IN NO CASE BE RELAXED.

The date of birth accepted by the Commission is that entered in the Matriculation or Secondary School Leaving Certificate or in a certificate recognised by an Indian University as equivalent to Matriculation or in an extract from a Register of matriculates maintained by a University, and that extract must be certified by the proper authority of the University or in the Higher Secondary or an equivalent examination certificate. These certificates are required to be submitted along with the Detailed Application Forms which will be required to be submitted by the candidates who qualify on the result of the written part of the examination.

No other document relating to age like horoscopes, affidavits, birth extracts from Municipal Corporation, service records and the like will be accepted. The expression Matriculation/Secondary Examination Certificate in this part of the instruction includes the alternative certificates mentioned above.

**NOTE 1 :** CANDIDATES SHOULD NOTE THAT ONLY THE DATE OF BIRTH AS RECORDED IN THE MATRICULATION/SECONDARY EXAMINATION CERTIFICATE OR AN EQUIVALENT CERTIFICATE ON THE DATE OF SUBMISSION OF APPLICATION WILL BE ACCEPTED BY THE COMMISSION AND NO SUBSEQUENT REQUEST FOR ITS CHANGE WILL BE CONSIDERED OR GRANTED.

**NOTE 2 :** CANDIDATE SHOULD ALSO NOTE THAT ONCE A DATE OF BIRTH HAS BEEN CLAIMED BY THEM AND ENTERED IN THE RECORDS OF THE COMMISSION FOR THE PURPOSE OF ADMISSION TO AN EXAMINATION, NO CHANGE WILL BE ALLOWED SUBSEQUENTLY (OR AT ANY OTHER EXAMINATION OF THE COMMISSION) ON ANY GROUND WHATSOEVER.

**NOTE 3:-** CANDIDATES SHOULD EXERCISE DUE CARE WHILE ENTERING THEIR DATE OF BIRTH IN THE RESPECTIVE COLUMN OF THE APPLICATION FORM. IF ON VERIFICATION AT ANY SUBSEQUENT STAGE, ANY VARIATION IS FOUND IN THEIR DATE OF BIRTH FROM THE ONE ENTERED IN THEIR MATRICULATION OR EQUIVALENT EXAMINATION CERTIFICATE, DISCIPLINARY ACTION WILL BE TAKEN AGAINST THEM BY THE COMMISSION UNDER THE RULES.

### **(III) Minimum Educational Qualification:**

For admission to the examination, a candidate must have –

- (a) obtained a degree in Engineering from a University incorporated by an Act of the Central or State Legislature in India or other Educational Institutions established by an Act of Parliament or declared to be deemed as Universities under Section 3 of the University Grants Commission Act, 1956; or
- (b) passed Sections A and B of the Institution Examinations of the Institution of Engineers (India); or
- (c) obtained a degree/diploma in Engineering from such foreign University/College/Institution and under such conditions as may be recognised by the Government for the purpose from time to time, or
- (d) passed Graduate Membership Examination of the Institution of Electronics and Telecommunication Engineers (India); or
- (e) passed Associate Membership Examination Parts II and III/Sections A and B of the Aeronautical Society of India; or

(f) passed Graduate Membership Examination of the Institution of Electronics and Radio Engineers, London held after November, 1959

Provided that a candidate for the post of Indian Naval Armament Service (Electronics Engineering Posts) and Indian Radio Regulatory Service Gr 'A' may possess any of the above qualifications or the qualification mentioned below namely:-

M.Sc. degree or its equivalent with Wireless Communication, Electronics, Radio Physics or Radio Engineering as a special subject.

**NOTE-1** A candidate who has appeared at an examination the passing of which would render him/her educationally qualified for this examination, but has not been informed of the result, may apply for admission to the examination. A candidate who intends to appear at such a qualifying examination may also apply. Such candidates will be admitted to the examination, if otherwise eligible, but their admission would be deemed to be provisional and subject to cancellation, if they do not produce proof of having passed the requisite qualifying examination along with the Detailed Application Form which will be required to be submitted by the candidates who qualify on the result of written part of the examination.

**NOTE-2** In exceptional cases, the Commission may treat a candidate, who has not any of the qualifications prescribed in this rule, as educationally qualified provided that he/she has passed examinations conducted by other institutions the standard of which in the opinion of the Commission justifies his/her admission to the examination.

**NOTE-3** A candidate who is otherwise qualified but who has taken a degree from a foreign University which is not recognised by Government, may also apply to the Commission and may be admitted to the examination at the discretion of the Commission.

#### **(IV) Medical Examination**

**Candidates finally recommended** by the Commission on the basis of Engineering Services Examination, 2016 shall be required to undergo medical examination.

(a) Every candidate, on being finally recommended by Commission will be required to undergo medical examination as and when so decided by the Ministry of Railways (Railway Board) irrespective of the fact that he/she has appeared for such medical examination in the past and found fit/unfit on the basis of earlier examination.

(b) The medical examination will be conducted at various Railway Hospitals under Ministry of Railways (Railway Board). Other additional instructions for candidates are listed at Annexure-II. The findings of the Railways Medical Board will be taken as final and binding for all allotment purposes.

#### **(V) Physical standards**

Candidates must be physically fit according to physical standards for admission to **Engineering Services Examination, 2016** as per guidelines given in Appendix-II of the Rules for the **Engineering Services Examination, 2016** published in the Gazette of India Extraordinary dated **27.02.2016**.

#### **4. FEE:**

Candidates (excepting Female/SC/ST/ PH who are exempted from payment of fee) are required to pay a fee of Rs.200/- (Rupees Two hundred only) either by depositing the money in any Branch of SBI by cash or by using net banking facility of State Bank of India/State Bank of Bikaner & Jaipur/State Bank of Hyderabad/State Bank of Mysore/State Bank of Patiala/State Bank of Travancore or by using Visa/Master Credit/Debit card.

**Note : 1** Applicants who opt for "Pay by cash" mode should print the system generated Pay-in slip during Part-II registration and deposit the fee at the counter of SBI Branch on the next working day only. **"Pay by cash" mode option will be deactivated at 23.59 hours of 24.03.2016 i.e. one day before the closing date**; however, applicants who have generated their Pay-in-slip before it is de-activated may pay at the counter of SBI Branch during banking hours on the closing date. Such applicants who are unable to pay by cash on the closing date i.e. during banking hours to SBI Branch, for reason whatsoever, even if holding a valid Pay-in-slip, will have no other offline option but to opt for online Debit/Credit Card or Internet Banking Payment mode **on the closing date i.e. till 23.59 hours of 25.03.2016**.

**Note : 2** Candidates should note that payment of examination fee can be made only through the modes prescribed above. Payment of fee through any other mode is neither valid nor acceptable. Applications submitted without the prescribed fee/mode (unless remission of fee is claimed) shall be summarily rejected.

**Note : 3** Fee once paid shall not be refunded under any circumstances nor can the fee be held in reserve for any other examination or selection.

**Note : 4** For the applicants in whose case payments details have not been received from the bank, they will be treated as fictitious payment cases and their applications will be rejected in the first instance. A list of all such applicants shall be made available on the Commission website within two weeks after the last day of submission of online application. The applicants shall be required to submit the proof of their fee payment within 10 days from the date of such communication either by hand or by speed post to the Commission. On receipt of documentary proof, genuine fee payment cases will be considered and their applications will be revived, if they are otherwise eligible.

ALL FEMALE CANDIDATES AND CANDIDATES BELONGING TO SCHEDULED CASTES/SCHEDULED TRIBES/PHYSICALLY HANDICAPPED CATEGORIES ARE EXEMPTED FROM PAYMENT OF FEE. NO FEE EXEMPTION IS, HOWEVER, AVAILABLE TO OBC CANDIDATES AND THEY ARE REQUIRED TO PAY THE PRESCRIBED FEE IN FULL.

Physically handicapped persons are exempted from the payment of fee provided they are otherwise eligible for appointment to the Services/Posts to be filled on the results of this examination on the basis of the standards of medical fitness for these Services/Posts (including any concessions specifically extended to the physically handicapped). A physically handicapped candidate claiming age relaxation/fee concession will be required by the Commission to submit along with their Detailed

Application Form, a certified copy of the certificate from a Government hospital/Medical Board in support of his claim for being physically handicapped.

**NOTE:** Notwithstanding the aforesaid provision for age relaxation/fee exemption, a physically handicapped candidate will be considered to be eligible for appointment only if he/she (after such physical examination as the Government or the appointing authority, as the case may be, may prescribe) is found to satisfy the requirements of physical and medical standards for the concerned Services/Posts to be allocated to Physically Handicapped candidates by the Government.

**NOTE :** Applications without the pre- scribed fee (unless remission of fee is claimed) shall be summarily rejected.

#### **5. HOW TO APPLY:**

(a) Candidates are required to apply Online using the link **www.upsc online.nic.in**. Detailed instructions for filling up online applications are available on the above mentioned website.

(b) The applicants are advised to submit only single application; however, if due to any unavoidable situation, if he/she submits another/multiple applications, then he/ she must ensure that application with the higher RID is complete in all respects like applicants' details, examination centre, photograph, signature, fee etc. The applicants who are submitting multiple applications should note that only the applications with higher RID (Registration ID) shall be entertained by the Commission and fee paid against one RID shall not be adjusted against any other RID.

(c) All candidates, whether already in Government Service, or in Government owned industrial undertakings or other similar organisations or in private employment, should apply online direct to the Commission.

Persons, already in Government service whether in a permanent or temporary capacity or as work-charged employees other than casual or daily rated employees or those serving under public enterprises are, however, required to inform their Head of Office/Department that they have applied for the Examination. Candidates should note that in case communication is received from their employer by the Commission withholding permission to the candidates applying for/appearing at the Examination, their application will be liable to be rejected/ candidature will be liable to be cancelled.

**NOTE 1 : WHILE FILLING IN HIS/HER APPLICATION FORM, THE CANDIDATE SHOULD CAREFULLY DECIDE ABOUT HIS/HER CHOICE FOR THE CENTRE AND ENGINEERING DISCIPLINE FOR THE EXAMINATION.**

**IF ANY CANDIDATE APPEARS AT A CENTRE/ENGINEERING DISCIPLINE OTHER THAN THE ONE INDICATED BY THE COMMISSION IN HIS/HER E- ADMISSION CERTIFICATE PAPERS OF SUCH A CANDIDATE WILL NOT BE VALUED AND HIS/HER CANDIDATURE WILL BE LIABLE TO CANCELLATION.**

**NOTE 2: SUITABLE PROVISIONS FOR INFORMATION REGARDING USE OF SCRIBES BY THE BLIND CANDIDATES AND CANDIDATES WITH LOCOMOTOR DISABILITY AND CEREBRAL PALSY WHERE DOMINANT (WRITING) EXTREMITY IS AFFECTED TO THE EXTENT OF SLOWING THE PERFORMANCE OF FUNCTION (MINIMUM OF 40% IMPAIRMENT) HAVE BEEN MADE IN THE ONLINE APPLICATION.**

**NOTE 3: INCOMPLETE OR DEFECTIVE APPLICATIONS SHALL BE SUMMARILY REJECTED. NO REPRESENTATION OR CORRESPONDENCE REGARDING SUCH REJECTION SHALL BE ENTERTAINED UNDER ANY CIRCUMSTANCES.**

**CANDIDATES ARE NOT REQUIRED TO SUBMIT HARD COPY/PRINT OUT OF THEIR APPLICATION TO THE COMMISSION AT THIS STAGE.**

The candidates applying for the Examination should ensure that they fulfil all the eligibility conditions for admission to the Examination. Their admission at all the stages of examination for which they are admitted by the Commission viz. Written Examination and Interview Test will be purely provisional, subject to their satisfying the prescribed eligibility conditions. If on verification at any time before or after the written examination or Interview Test, it is found that they do not fulfil any of the eligibility conditions, their candidature of the Examination will be cancelled by the Commission. Candidates are requested to keep ready the attested copies of the following documents for submission to the Commission soon after the declaration of the results of the written Examination which is likely to be declared in the month of **December, 2016**.

1. Certificate of Age.
2. Certificate of Educational Qualification.
3. Certificate in support of claim to belong to Scheduled Castes, Scheduled Tribes and Other Backward Classes, wherever applicable.
4. Certificate in support of claim for age/ fee concession, wherever applicable.

Immediately after the declaration of the written results successful candidates will be intimated by the Commission electronically and they shall be asked to submit Detailed Application Form (DAF) online. The successful candidates have to send the printout of this DAF with each page duly signed along with the attested copies of the above mentioned certificates to the Commission at that time. Originals will have to be produced at the time of interview. The interview letter to the candidates may also be issued electronically.

If any of their claims is found to be incorrect, they may render themselves liable to disciplinary action by the Commission in terms of Rule 11 of the Rules for **Engineering Services Examination, 2016 notified in the Gazette of India Extraordinary dated 27<sup>th</sup> February, 2016 and also reproduce below:**

A Candidate who is or has been declared by the Commission to be guilty of :—

- (i) obtaining support for his candidatures by any means; or
- (ii) impersonating; or
- (iii) procuring impersonation by any person; or
- (iv) submitting fabricated documents or documents which have been tampered with; or

- (v) making statements which are incorrect or false or suppressing material information; or
- (vi) resorting to any other irregular or improper means in connection with his candidature for the examination; or
- (vii) using unfair means during the examination; or
- (viii) writing irrelevant matter including obscene language or pornographic matter in the script(s); or
- (ix) misbehaving in any other manner in the examination hall; or
- (x) harassing or doing bodily harm to the staff employed by the Commission for the conduct of their examination; or
- (xi) being in possession of or using any cellular/mobile phone/pager/bluetooth or any electronic equipment or device or any, other equipment capable of being used as a communication device during the examination; or
- (xii) violating any of the instructions issued to candidates alongwith their admission certificate permitting them to take the examination; or
- (xiii) attempting to commit or as the case may be abetting the commission of all or any of the acts specified in the foregoing clauses.

May in addition to rendering himself liable to criminal prosecution be liable—

- (a) to be disqualified by the Commission from the examination for which he is a candidate; and/or
- (b) to be debarred either permanently or for a specified period—
  - (i) by the Commission from any examination or selection held by them;
  - (ii) by the Central Government, from any employment under them; and
- (c) if he is already in service under the Government, to disciplinary action under the appropriate rules :

Provided that no penalty under this rule shall be imposed except after—

- (i) giving the candidate an opportunity of making such representation in writing as he may wish to make in that behalf; and
- (ii) taking the representation if any submitted by the candidate, within the period allowed to him, into consideration.

#### **6. LAST DATE FOR SUBMISSION OF APPLICATIONS:**

The Online Applications can be filled upto **25<sup>th</sup> March, 2016 till 11.59 PM** after which the link will be disabled.

#### **7. CORRESPONDENCE WITH COMMISSION:**

The Commission will not enter into any correspondence with the candidates about their candidature except in the following cases :

(i) The eligible candidates shall be issued an e-Admission Certificate three weeks before the commencement of the examination. The e-Admission Certificate will be made available in the UPSC website [www.upsc.gov.in] for downlading by candidates. No Admission Certificate will be sent by post. For downloading the e- Admission Certificate/ e- Admit Card the Candidate must have his/her vital parameters like RID & Date of Birth or Roll No. (if received & date of birth or father's name) available with him/her .

(ii) If a candidate does not receive his/her e-admit card or any other communication regarding his/her candidature for the examination two week before the commencement of the examination, he/she should at once contact the Commission. Information in this regard can also be obtained from the Facilitation Counter located in the Commission's Office either in person or over phone Nos. 011-23381125/011-23385271/011-23098543. **In case no communication is received in the Commission's Office from the candidate regarding non-receipt of his/her e-Admission Certificate at least one week before the examination, he/she himself/herself will be solely responsible for non-receipt of his/her e-Admission certificate.**

No candidate will ordinarily be allowed to take the examination unless he/she holds e-Admission Certificate for the examination. On receipt of e-Admission Certificate, check it carefully and bring discrepancies/error, if any, to the notice of UPSC immediately.

The candidates should note that their admission to the examination will be purely provisional based on the information given by them in the Application Form. This will be subject to verification of all the eligibility conditions by the UPSC.

(iii) The mere fact that an e- Admission Certificate of admission to the Examination has been issued to a candidate will not imply that his/her candidature has been finally cleared by the Commission, or that the entries made by the candidate in his/her application for the Examination have been accepted by the Commission as true and correct. Candidates may note that the Commission takes up the verification of eligibility conditions of a candidate, with reference to original documents, only after the candidate has qualified for Interview or Personality Test on the result of the written part of the examination. Unless candidature is formally confirmed by the Commission, it continues to be provisional.

The decision of the Commission as to the acceptance of the application of a candidate and his/her eligibility or otherwise for admission to the Examination shall be final. Candidates should note that the name in the Admission Certificate, in some cases may be abbreviated due to technical reasons.

(iv) If a candidate receives an e- Admission Certificate in respect of some other candidate on account of handling error, the same should be immediately brought to the notice of Commission with a request to issue the correct e- Admission Certificate. Candidates may note that they will not be allowed to take the examination on the strength of an e- Admission Certificate issued in respect of another candidate.

**(v) Candidates must ensure that their e-mail ids given in their applications are valid and active.**

**IMPORTANT:** ALL COMMUNICATIONS TO THE COMMISSION SHOULD INVARIABLY CONTAIN THE FOLLOWING PARTICULARS:

1. NAME AND YEAR OF THE EXAMINATION.



2. REGISTRATION ID (RID).
3. ROLL NO. (IF RECEIVED).
4. NAME OF CANDIDATE IN FULL AND IN BLOCK LETTERS.
5. VALID AND ACTIVE E-MAIL ADDRESS
6. COMPLETE POSTAL ADDRESS AS GIVEN IN THE APPLICATION.

**N.B. (i) COMMUNICATIONS NOT CONTAINING THE ABOVE PARTICULARS MAY NOT BE ATTENDED TO.**

**N.B.(ii) IF A LETTER/COMMUNICATION IS RECEIVED FROM A CANDIDATE AFTER AN EXAMINATION HAS BEEN HELD AND IT DOES NOT GIVE HIS/HER FULL NAME AND ROLL NUMBER, IT WILL BE IGNORED AND NO ACTION WILL BE TAKEN THEREON.**

**8. Details of the categories/sub categories of disabilities (functional classification and Physical Requirements) identified for the various Services/posts:-**

“For being considered against the vacancies reserved for them, the physically disabled persons should have disability of forty per cent (40%) or more. The functional classification in their case shall be consistent with the requirements of the concerned services/posts as detailed in Annexure-I. However, such candidates shall be required to meet the physical requirements/abilities as detailed in **Annexure-I** and to submit Disability Certificate in the prescribed format as detailed in **Annexure-III**..

**Annexure-I**

**A List of Services/Posts identified suitable for Physically Disabled Category along with the physical requirements and functional classifications\*.**

| Sl. No.                                    | Name of Services   | Functional Classification | Physical Requirements        |
|--|--|---------------------------|------------------------------|
| <b>Category I-Civil Engineering</b>        |  |                           |                              |
| 1.   | Indian Railway Service of Engineers  | OA or OL or HI            | S,ST,BN,W,SE,MF,C,R,W&RW     |
| 2.   | Indian Railway Stores Service  | OA or OL or HI            | S,ST,BN,W,SE,MF,C,R,W&RW     |
| 3.   | Central Engineering Service  | OA or OL or HI            | As per MOSJ & E instructions |
| 4.   | Indian Defence Service of Engineers (Civil Engg.)  | PD or OA                  | B,S,ST,W,SE,H&RW             |
| 5.   | Indian Ordnance Factories Service(Civil Engg. Br.)   | OA or PD                  | B,S,ST,W,SE&H                |
| 6.   | Central Water Engineering Service Gr 'A'   | OA or OL                  | S,ST,BN,W,SE,MF,C,R,W&RW     |
| 7.   | Central Engineering Service (Roads) Gr. A  | OA or OL or PD/HI         | B,S,ST,W,SE,H,RW,D,&W        |
| 8.   | AEE in P & T Build. Works Gr. A  | OA                        | MF,PP,L,KC,BN,S,ST,W,SE,H&RW |
| 9.   | AEE (Civil) in Border Roads Organization   | OA                        | B,S,ST,W,SE,H&RW             |
| 10.  | AEE (QS&C) in Military Engineer Service(MES) Surveyor Cadre  | PD or OA                  | B,S,ST,W,SE,H&RW             |
| <b>Category II-Mechanical Engineering</b>  |  |                           |                              |
| 1.   | Indian Railway Service of Mechanical Engineers   | OA or OL                  | S,ST,BN,W,SE,MF,C,R,W&RW     |
| 2.   | Indian Railway Store Service   | OA or OL or HI            | S,ST,BN,W,SE,MF,C,R,W&RW     |
| 3.   | Central Water Engineering Service Gr 'A'   | OA or OL                  | S,ST,BN,W,SE,MF,C,R,W&RW     |
| 4.   | Central Power Engg. Service Gr. A&B (Mech. Engg. Posts)  | OL                        | ST,S,SE,MF,BN,KC,H&C         |
| 5.   | Indian Ordnance Factories Service (Mech. Engg. Branch)   | HI(PD) or OA or OL        | B,SE,H&W                     |
| 6.   | Indian Naval Armament Service  | OL                        | S,SE,H&RW                    |
| 7.   | Assistant Executive Engr. in the corps of EME  | PD                        | F,PP,L,KC,B,S,ST,W,SE&RW     |
| 8.   | Asstt. Naval Store Officer in Indian Navy  | OL                        | S,SE,H&RW                    |
| 9.   | Central Electrical & Mechanical Engineering Service  | OL or HI                  | As per MOSJ&E instructions   |
| 10.  | Geological Survey of India Engineering Service Gr 'A'  | PD                        | KC                           |
| 11.  | Indian Supply Service Gr 'A' (Mech. Engg.)   | OA or OL                  | MF,PP,L,KC,BN,S,ST,W,RW&C    |
| 12.  | Indian Defence Service of Engineers (Mech. Engg.)  | PD or OA                  | B,S,ST,B,W,SE,H&RW           |
| 13.  | Central Engineering Service (Roads) Group 'A' (Mechanical Engg. Post)  | OA or OL or PD/HI         | B,S,ST,W,SE,H,RW,D,&W        |
| 14.  | Assistant Executive Engineer Group 'A' (Electrical & Mechanical) (Mechanical Engineering Post) in Border Roads Engineering Service Gr. 'A' | OA                        | B,S,ST,W,SE,H&RW             |
| <b>Category III-Electrical Engineering</b> |  |                           |                              |
| 1.   | Indian Railway Service of Electrical Engineers   | OA or OL or HI            | S,ST,BN,W,SE,MF,C,R,W        |
| 2.   | Indian Railway Store Service   | OA or OL or HI            | S,ST,BN,W,SE,MF,C,R,W&RW     |
| 3.   | Central Elect. & Mech. Engg. Service (Elect. Engg.)  | OL or HI                  | As per MOSJ&E instructions   |
| 4.   | Indian Naval Armament Service  | OL                        | S,SE,H&RW                    |

|  |  |                |                               |
|--|--|----------------|-------------------------------|
| 5.   | Indian Ordnance Factories Service (Elect.)                     | OL or PD       | B,ST,W&SE                     |
| 6.   | Central Power Engg. Service Gr. A&B<br>(Elect. Engg. Posts)    | OL, HI         | S,ST,BN,SE,W,MF,PP,L,KC,C&RW  |
| 7.   | Indian Defence Service of Engineers (Elect. Engg.)             | PD or OA       | B,S,ST,W,SE,H&RW              |
| 8.   | Asstt. Naval Store Officer in Indian Navy                      | OL             | S,SE,H&RW                     |
| 9.   | Indian Supply Service Gr 'A' (Elect. Engg.)                    | OA or OL       | MF,PP,L,KC,BN,S,ST,W,RW&C     |
| 10.  | AEE Gr 'A'(Elect. Engg.) in Corps of EME, Min of Defence.      | PD or OA       | S,ST,B,W,SE                   |
| 11.  | AEE in P&T Bldg. works Gr. 'A'                                 | OA             | MF,PP,L,K,C,BN,S,ST,W,SE,H&RW |
| <b>Category IV-Electronics &amp; Telecommunication Engineering</b> |  |                |                               |
| 1.   | Indian Railway Service of Signal Engineers                     | OA or OL       | S,ST,BN,W,SE,ME,C,R,W&RW      |
| 2.   | Indian Railway Store Service                                   | OA or OL or HI | S,ST,BN,W,SE,ME,C,R,W&RW      |
| 3.   | Indian Ordnance Factories Service (Engg. Branch)               | OL or PD       | B,ST,W&SE                     |
| 4.   | Indian Naval Armament Service                                  | OL             | S,SE,H&RW                     |
| 5.   | Asstt. Exe. Engineer in the Corps of EME                       | PD or OA       | S,ST,B,W,SE                   |
| 6.   | Indian Radio Regulatory Service Gr 'A'                         | OA or OL       | S,H&RW/Speaking               |
| 7.   | Asstt. Naval Store Officer Gr. I                               | OL             | S,SE,H&RW                     |
| 8.   | Indian Supply Service (Group A) (Elec. & Telecom)              | OA or OL       | ME,PP,L,KC,BN,S,ST,W,RW&C     |
| 9.   | Indian Telecom Service, Group A                                | OL or OA or MW | F,S,ST,W,SE,H&RW              |
| 10.  | Junior Telecom Officer Group B in ITS                          | OL or OA or MW | F,S,ST,W,SE,H&RW              |
| 11.  | Central Power Engineering Service Gr. A&B<br>(Elec. & Telecom) | OL, HI         | S,ST,BN,SE,W,MF,PP,L,KC,C&RW  |

\*The list is subject to revision.

The abbreviations used (indicated as below) are as per the specification in Ministry of Social Justice and Empowerment's Notification No. 16-70/2004-DDIII dated 18-1-2007

OA=One Arm affected, OL=One Leg affected, HI=hearing Impaired, PD=partially Deaf, MW=Muscular Weakness S=Sitting, BN=Bending, SE=Seeing, RW=Reading & Writing, C=Communication, MF=Manipulation by Fingers, PP=Pulling & Pushing, L=Lifting, KC=Kneeling & Crouching, ST=Standing, W=Walking, H=Hearing.

OH=Orthopaedically Handicapped, LD=Locomotor Disability, CP=Cerebral Palsy.

NOTE (I): To avoid inconvenience later PH candidates should ensure that their sub-category of disabilities is identified for providing reservation.

NOTE (II) : Also please note that Temporary Disability Certificate does not confer upon the candidates, the benefit of being considered against the vacancies reserved under PH quota.

NOTE (III) : Please ensure submission of Disability Certificate in the prescribed format as detailed at Annexure-III.

#### Annexure-II

##### Details of Zonal Railway Hospitals

| <u>Zone Full</u>            | <u>Name of Hospital</u> | <u>Hospital Address</u>  | <u>Tele. Nos.</u> |
|-----------------------------|-------------------------|--|-------------------|
| CENTRAL RAILWAYS            | B.A.M. HOSPITAL         | DR. BABA SAHAB AMBEDKAR RAILWAY HOSPITAL, BYCULLA, MUMBAI-400027 |                   |
| EASTERN RAILWAY             | B.R. SINGH HOSPITAL     | B.R. SINGH HOSPITAL, SEALDAH, KOLKATA – 700001                   |                   |
| EAST CENTRAL RAILWAY        | CENTRAL HOSPITAL        | EC RAILWAY, KARBIGAHIYA, PATNA – 803118                          |                   |
| EAST COAST RAILWAY          | CENTRAL HOSPITAL        | MANCHESWAR, BHUBANESWAR-751017                                   |                   |
| NORTHERN RAILWAY            | CENTRAL HOSPITAL        | BASANT LANE, CHELMSFORD ROAD, CONNAUGHT PLACE, DELHI – 110001    |                   |
| NORTH CENTRAL RAILWAY       | CENTRAL HOSPITAL        | ALLAHABAD – 211001   |                   |
| NORTH EASTERN RAILWAY       | LNMR HOSPITAL           | LALIT NARAYAN MISHRA HOSPITAL, GORAKHPUR-273012                  |                   |
| NORTH EAST FRONTIER RAILWAY | CENTRAL HOSPITAL        | MALIGAON, GUWAHATI – 781011                                      |                   |
| NORTH WESTERN RAILWAY       | CENTRAL HOSPITAL        | GANPATI NAGAR, NEAR JAIPUR RAILWAY STATION, JAIPUR- 302006       |                   |
| SOUTHERN RAILWAY            | CENTRAL HOSPITAL        | CONSTABLE ROAD, AYANAVARAM, PERAMBUR, CHENNAI – 600209           |                   |
| SOUTH CENTRAL RAILWAY       | CENTRAL HOSPITAL        | LALAGUDA RAILWAY COLONY, SECUNDERABAD-500003                     |                   |

|                            |                  |   |  |
|----------------------------|------------------|---|--|
| SOUTH EASTERN RAILWAY      | CENTRAL HOSPITAL | GARDEN REACH ROAD, KOLKATA – 700043   |  |
| SOUTH EAST CENTRAL RAILWAY | CENTRAL HOSPITAL | BILASPUR – 495004   |  |
| SOUTH WESTERN RAILWAY      | CENTRAL HOSPITAL | GADAG ROAD, HUBLI – 580023  |  |
| WESTERN RAILWAY            | J.R.H. HOSPITAL  | JAGJIVAN RAM HOSPITAL, MARATHA MANDIR MARG, MUMBAI CENTRAL, MUMBAI – 400001 |  |
| WEST CENTRAL RAILWAY       | CENTRAL HOSPITAL | INDIRA MARKET, JABALPUR - 482001  |  |

Other additional instructions to the candidates for medical examination are as under:-

(i) Medical Examination Schedules/Venue and the final medical status (Fit/Unfit/partially Unfit/Temporarily Unfit) will be uploaded on the official website of the Indian Railways ([www.indianrailways.gov.in](http://www.indianrailways.gov.in)). No separate written communication will be sent to the candidates regarding these uploads.

(ii) The candidates will have to carry three sets of Form for Medical Board Report-2016 to be downloaded from the Ministry of Railways official website i.e. [www.indianrailway.gov.in](http://www.indianrailway.gov.in)>>Ministry of Railways>>Railway Board>>News and Recruitment>>Engineering Services Updates.

(iii) The candidates should carry Government issued Photo ID card and three passport size photographs with them. Candidates recommended against Persons with Disabilities (PwD) vacancies should carry their Disability Certificate in original as per the format prescribed along with additional photocopy of the same.

**Annexure-III**

**Form - IV**

**DISABILITY CERTIFICATE**

**(In cases other than those mentioned in Forms II and III)**

**(NAME AND ADDRESS OF THE MEDICAL AUTHORITY ISSUING THE CERTIFICATE)**

**(See Rule 4)**

|   |
|---|
| Recent PP size self attested Photograph (Showing face only) of the person with disability |
|---|

Certificate No. \_\_\_\_\_

Date : \_\_\_\_\_

This is to certify that I have carefully examined Shri/Smt./Kum. \_\_\_\_\_

Son/wife/daughter of Shri \_\_\_\_\_

Date of Birth \_\_\_\_\_ Age \_\_\_\_\_ years, male/female \_\_\_\_\_

(DD/MM/YY)

Registration No. \_\_\_\_\_ permanent resident of House No. \_\_\_\_\_ Ward/Village/

\_\_\_\_\_ Street \_\_\_\_\_ Post Office \_\_\_\_\_ District \_\_\_\_\_

State \_\_\_\_\_, whose photograph is affixed above, and am satisfied that he/She is a case of

\_\_\_\_\_ **Disability**. His/her extent of percentage physical impairment /disability has been evaluated as per guidelines (to be specified) and is shown against the relevant disability in the table below:

| S. No. | Disability           | Affected Part of Body | Diagnosis | Permanent physical impairment/mental disability (in %) |
|--------|----------------------|-----------------------|-----------|--|
| 1.     | Locomotor disability | @                     |           |  |
| 2.     | Low vision           | #                     |           |  |
| 3.     | Blindness            | Both Eyes             |           |  |
| 4.     | Hearing Impairment   | \$                    |           |  |

|    |                    |   |  |  |
|----|--------------------|---|--|--|
|    |                    |   |  |  |
| 5. | Mental retardation | X |  |  |
| 6. | Mental-illness     | X |  |  |

(Please strike out the disabilities which are not applicable.)

2. The above condition is progressive/non-progressive/likely to improve/not likely to improve.

3. Reassessment of disability is :

(i) not necessary,

**Or**

(ii) is recommended/after \_\_\_\_\_ years \_\_\_\_\_ months, and therefore this certificate shall be Valid till \_\_\_\_\_  
 (DD) (MM) (YY)

@ e.g. Left/Right/both arms legs

# Single eye/both eyes

\$ Left/Right/both ears

4. The applicant has submitted the following document as proof of residence:-

| Nature of Document | Date of Issue | Details of authority issuing certificate |
|--------------------|---------------|--|
|                    |               |  |

(Authorized Signatory of notified Medical Authority)  
 (Name and Seal)

Signature/Thumb impression of the person in whose favour disability certificate is issued.

Countersigned

{Countersignature and seal of the CMO/Medical Superintendent/Head of Government Hospital, in case the certificate is issued By a medical authority who is not a government servant (with seal)}

Note : In case this certificate is issued by a medical authority who is not a government servant, it shall be valid only if countersigned by the Chief Medical Officer of the District.”

Note : The principal rules were published in the Gazette of India vide notification number S.O. 908(E), dated 31<sup>st</sup> December, 1996.

**9. WITHDRAWAL OF APPLICATIONS:** NO REQUEST FOR WITHDRAWAL OF CANDIDATURE RECEIVED FROM A CANDIDATE AFTER HE/SHE HAS SUBMITTED HIS/HER APPLICATION WILL BE ENTERTAINED UNDER ANY CIRCUMSTANCES.

**APPENDIX I**  
**PLAN OF EXAMINATION**

1. The examination shall be conducted according to the following plan :—

**Part I.**—The written examination will comprise two sections—Section I consisting only of objective type of questions and Section II of conventional papers. Both Sections will cover the entire syllabus of the relevant engineering disciplines viz. Civil Engineering, Mechanical Engineering, Electrical Engineering and Electronics and Telecommunications Engineering. The Standard and syllabi prescribed for these papers are given in Schedule to the Appendix. The details of the written examination i.e. subject are given in para 2 below.

**Part II.**—Personality test carrying a maximum of 200 marks of such of the candidates who qualify on the basis of the written examination.

2. The following will be the subjects for the written examination :—

| Subject  | Duration | Maximum Marks |
|--|----------|---------------|
| (1)  | (2)      | (3)           |
| <b>Category-I CIVIL ENGINEERING</b>  |          |               |
| <b>Section I.—Objective Papers</b>   |          |               |
| General Ability Test<br>(Part A : General English)<br>(Part B : General Studies) | 2 hrs.   | 200           |
| Civil Engineering Paper-I  | 2 hrs.   | 200           |
| Civil Engineering Paper-II   | 2 hrs.   | 200           |
| <b>Section II—Conventional Papers</b>  |          |               |
| Civil Engineering Paper-I  | 3 hrs.   | 200           |
| Civil Engineering Paper-II   | 3 hrs.   | 200           |
| TOTAL  |          | 1000          |

|  |        |      |
|--|--------|------|
| <b>Category-II MECHANICAL ENGINEERING</b>  |        |      |
| <b>Section I.—Objective Papers</b>   |        |      |
| General Ability Test<br>(Part A : General English)<br>(Part B : General Studies) | 2 hrs. | 200  |
| Mechanical Engineering<br>Paper-I  | 2 hrs. | 200  |
| Mechanical Engineering<br>Paper-II   | 2 hrs. | 200  |
| <b>Section II—Conventional Papers</b>  |        |      |
| Mechanical Engineering<br>Paper-I  | 3 hrs. | 200  |
| Mechanical Engineering<br>Paper-II   | 3 hrs. | 200  |
| TOTAL  |        | 1000 |

**Category-III ELECTRICAL ENGINEERING**

**Section I—Objective Papers**

|                                 |        |     |
|---------------------------------|--------|-----|
| General Ability Test            | 2 hrs. | 200 |
| (Part A : General English)      |        |     |
| (Part B : General Studies)      |        |     |
| Electrical Engineering Paper-I  | 2 hrs. | 200 |
| Electrical Engineering Paper-II | 2 hrs. | 200 |

**Section II—Conventional Papers**

|                                 |        |     |
|---------------------------------|--------|-----|
| Electrical Engineering Paper-I  | 3 hrs. | 200 |
| Electrical Engineering Paper-II | 3 hrs. | 200 |

---

|       |  |      |
|-------|--|------|
| TOTAL |  | 1000 |
|-------|--|------|

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## Category-IV ELECTRONICS AND TELECOMMUNICATION ENGINEERING

**Section I—Objective Papers** 2 hrs. 200

General Ability Test

(Part A : General English)

(Part B : General Studies)

|  |        |     |
|--|--------|-----|
| Electronics and Telecom-<br>munication | 2 hrs. | 200 |
|--|--------|-----|

Engineering Paper-I

|  |        |     |
|--|--------|-----|
| Electronics and Telecom-<br>munication | 2 hrs. | 200 |
|--|--------|-----|

Engineering Paper-II

**Section II—Conventional Papers**

|  |        |     |
|--|--------|-----|
| Electronics and Telecom-<br>munication | 3 hrs. | 200 |
|--|--------|-----|

Engineering Paper-I

|  |  |  |
|--|--|--|
| Electronics and Telecom-<br>munication |  |  |
|--|--|--|

|                      |        |     |
|----------------------|--------|-----|
| Engineering Paper-II | 3 hrs. | 200 |
|----------------------|--------|-----|

---

|       |  |      |
|-------|--|------|
| TOTAL |  | 1000 |
|-------|--|------|

---

**Note.**— Candidates are advised to read carefully special instructions to candidates for conventional type tests and objective type tests given in Appendix-III (Part A and Part B) including the procedure regarding filing in the Answer Sheet of objective type tests in the Examination Hall.

3. In the Personality Test special attention will be paid to assessing the candidate's capacity for leadership, initiative and intellectual curiosity, tact and other social qualities, mental and physical energy, powers of practical application and integrity of character.

4. Conventional papers must be answered in English. Question paper will be set in English only.

5. Candidates must write the papers in their own hand. In no circumstance they will be allowed the help of scribe to write answers for them. However, blind candidates and candidates with locomotor disability and cerebral palsy where dominant (writing) extremity is affected to the extent of slowing the performance of function (minimum of 40% impairment) will be allowed to write Engineering Services Examination with the help of a scribe.

Compensatory time of twenty minutes per hour shall be permitted for the blind candidates and the candidates with locomotor disability and cerebral palsy where dominant (writing extremity is affected to the extent of slowing the performance of function (minimum of 40% impairment) will also be allowed in the Engineering Services Examination.

6. The Commission have discretion to fix minimum qualifying marks in any or all the papers of the examination. The Objective Type papers as contained in Section-I of the Plan of the Examination will be evaluated first and evaluation of the Conventional Type papers contained in Section-II of the Plan of Examination will be done only of those candidates who obtain the minimum qualifying marks in Objective Types papers, as fixed by the Commission.

7. Marks will not be allotted for mere superficial knowledge.

8. Deduction upto five per cent of the maximum marks for the written papers will be made for illegible handwriting.

9. Credit will be given for orderly, effective and exact expression combined with due economy of words in the conventional papers of the examination.

10. In the question papers, wherever required, SI units will be used.

**Note.**—Candidates will be supplied with standard tables/charts in SI units in the Examination Hall for reference purpose, wherever considered necessary.

11. Candidates are permitted to bring and use battery operated pocket calculators for conventional (essay) type papers only. Loaning or inter-changing of calculators in the Examination Hall is not permitted.

It is also important to note that candidates are not permitted to use calculators for answering objective type papers (Test booklets). They should not therefore, bring the same inside the Examination Hall.

12. Candidates should use only International form of Indian numerals (e.g., 1, 2, 3, 4, 5 etc.) while answering question papers.

## SCHEDULE TO APPENDIX I.

### Standard and Syllabi

The standard of paper in General Ability Test will be such as may be expected of an Engineering/Science Graduate. The standard of papers in other subjects will approximately be that of an Engineering Degree Examination of an Indian University. There will be no practical examination in any of the subjects.

### General Ability Test

**Part A : General English :** The question paper in General English will be designed to test the candidate's understanding of English and workman like use of words.

**Part B : General Studies :** The paper in General Studies will include knowledge of current events and of such matters of everyday observation and experience in their scientific aspects as may be expected of an educated person. The paper will also include questions on History of India and Geography of a nature which candidates should be able to answer without special study.

**CIVIL ENGINEERING** (for both objective and conventional type papers)

### PAPER I

#### 1. Building Materials

Timber : Different types and species of structural timber, density-moisture relationship, strength in different directions, defects, influence of defects on permissible stress, preservation, dry and wet rots, codal provisions for designs. Plywood.

Bricks : Types, Indian Standards classification, absorption, saturation factor, strength in masonry, influence of mortar strength on masonry strength.

Cement : Compounds of, different types, setting times strength.

Cement Mortar : Ingredients, proportions, water demand, mortars for plastering and masonry.

Concrete : Importance of W/C Ratio, strength ingredients including admixtures, workability, testing for strength elasticity, non-destructive testing, mix design methods.

#### 2. Solid Mechanics

Elastic constants, stress, plane stress, Mohr's circle of stress, strains, plane strain, Mohr's circle of strain combined stress; Elastic theories of failure; Simple bending, shear; Torsion of circular and rectangular sections and simple members.

#### 3. Structural Analysis

Analysis of determinate structures—different methods including graphical methods.

Analysis of indeterminate skeletal frames—moment distribution, slope-deflection, stiffness and force methods, energy methods. Muller-Breslaie principle and application.

Plastic analysis of indeterminate beams and simple frames—shape factors.

#### 4. Design of Steel Structures

Principles of working stress method/Design of connections, simple members, Built-up sections and frames. Design of Industrial roofs. Principles of ultimate load design. Design of simple members and frames.

#### 5. Design of Concrete and Masonry Structures

Limit state design for bending, shear, axial compression and combined forces. Codal provisions for slabs, beams walls and footings. Working stress method of design of R.C. members.

Principles of prestressed concrete design, materials, methods of prestressing, losses. Designs of simple members and determinate structures. Introduction of prestressing of indeterminate structures.

Design of brick masonry as per I.S. Codes.

#### 6. Construction Practice, Planning and Management

Concreting Equipment :

Weight Batcher, mixer vibrator, batching plant, concrete pump.

Cranes, hoists, lifting equipment. Earthwork Equipment :

Power shovel, hoe, dozer, dumper, trailers and tractor, rollers, sheep foot rollers pumps.

Construction, Planning and Management :

Bar chart, linked bar chart, work-break down structures. Activity-on-arrow diagrams; Critical path, probabilistic activity durations. Event-based networks, PERT network; Time-cost study, crashing; resource allocation.

## **PAPER II**

### **1. (a) Fluid Mechanics, Open Channel, Flow, Pipe Flow**

Fluid Properties, Pressure, Thrust, Buoyancy; Flow kinematics; Integration Flow equations; Flow measurement; Relative Motion, Moment of momentum; Viscosity, Boundary layer and control. Drag, Lift : Dimensional Analysis. Modelling Cavitation; Flow Oscillations; Momentum and Energy principles in open channel flow. Flow controls. Hydraulic jump. Flow section and properties; Normal flow. Gradually varied flow: Surges, Flow development and losses in pipe flows, Measurement, Siphons, Surges and Water hammer. Delivery of Power, Pipe networks.

### **(b) Hydraulic Machines and Hydropower**

Centrifugal pumps, types, performance parameters, scaling pumps in parallel. Reciprocating pumps, air vessels, performance parameters. Hydraulic ram. Hydraulic turbines types, performance parameters/controls, choice, power houses, classification and layout, storage, pondage, control of supply.

### **2. (a) Hydrology**

Hydrological cycle, precipitation and related data analysis, PMP unit and synthetic hydrographs; Evaporation and transpiration; Floods and their management, PMF; Streams and their gauging: River morphology; Routing of floods; Capacity of Reservoirs.

### **(b) Water Resources Engineering**

Water resources of the globe; Multipurpose uses of Water: Soil-Plant-Water relationship, irrigation systems, water demand assessment; Storages and their yields; Ground water yield and well hydraulics; Water-logging, drainage design; Irrigation revenue; Design of rigid boundary canals, Lacey's and Tractive force concepts in canal design, lining of canals; Sediment transport in canals; Non-overflow and overflow sections of gravity dams and their design. Energy dissipators and tailwater rating; Design of headworks distribution works, falls, cross-drainage works, outlets; River raining.

## **ENVIRONMENTAL ENGINEERING**

### **3. (a) Water Supply Engineering**

Sources of Supply, yields, design of intakes and conductors; Estimation of demand; Water quality standards. Control of Water-borne diseases; Primary and secondary treatment detailing and maintenance of treatment units; Conveyance and distribution systems of treated water, leakages and control; Rural water supply; Institutional and industrial water supply.

### **(b) Waste Water Engineering**

**Urban rain water disposal** : Systems of sewage collection and disposal; Design of sewers and sewerage systems; pumping. Characteristics of sewage and its treatment. Disposal of products of sewage treatment, stream flow rejuvenation; Institutional and industrial sewage management; Plumbing Systems; Rural and semi-urban sanitation.

### **(c) Solid Waste Management**

Source, classification, collection and disposal; Design and Management of Landfills.

### **(d) Air and Noise Pollution and Ecology**

Sources and effects of air pollution, monitoring of air pollution; Noise pollution and Standards; Ecological chain and balance. Environmental assessment.

### **4. (a) Soil Mechanics**

Properties of soils, classification and inter-relationship. Compaction behaviour, methods of compaction and their choice; Permeability and seepage, flownets. Inverted filters; Compressibility and consolidation; Shearing resistance. Stresses and failure; Soil testing in laboratory and in situ; Stress path and applications; Earth pressure, theories. Stress distribution in soils; Soil exploration, samplers, load tests penetration tests.

### **(b) Foundation Engineering**

Types of foundations. Selection criteria, bearing capacity, settlement, laboratory and field tests; Types of piles and their design and layout. Foundations on expansive soils, swelling and its prevention foundation on swelling soils.

### **5. (a) Surveying**

**Classification of surveys, scales accuracy; Measurement of distances**—direct and indirect methods; optical and electronic devices; Measurement of directions, prismatic compass, local attraction; Theodolites-types; Measurement of elevations-Spirit and trigonometric levelling. Relief representation-Contours; Digital Monitoring Organisation elevation modelling concept; Establishment of control by triangulation and traversing—measurements and adjustment of observations computation of coordinates; Field astronomy. Concept of global positioning system; Map preparation by plane tabling and by photogrammetry. Remote sensing concepts, map substitutes.

### **(b) Transportation Engineering**

Planning of highway systems, alignment and geometric design horizontal and vertical curves, grade separation; Materials and construction methods for different surfaces and maintenance; Principles of pavement design; Drainage, Traffic Surveys; Intersection, Signalling; Mass transit system, accessibility, networking.

Tunnelling, alignment, methods of construction, disposal of muck, drainage lighting and ventilation, traffic control, emergency management.

Planning of railway systems, terminology and designs relating to gauge, track, controls transits, rolling stock, tractive power



and track modernisation; Maintenance, Appurtenant works, Containerisation.

Harbours—layouts, shipping lanes, anchoring, location identification; Literal transport with erosion and deposition; Sounding methods; Dry and wet docks, components and operations; Tidal data and analysis.

Airports—layout and orientation; Runway and Taxiway; design and drainage management; Zoning laws; Visual aids and air traffic control; helipads, hangers, service equipment.

**MECHANICAL ENGINEERING** (For both objective and conventional type papers)

**PAPER I**

**1.** Thermodynamics, Cycles and IC Engines, Basic concepts. Open and Closed systems. Heat and work, Zeroth, First and Second Law, Application to non-flow and Flow processes. Entropy, Availability, Irreversibility and TDS relations. Clapeyron and real gas equations, Properties of ideal gases and vapours. Standard vapour. Gas power and Refrigeration cycles. Two stage compressor. C. I. and S. I. Engines. Pre-ignition, Detonation and Diesel-knock, Fuel injection and Carburation. Supercharging Turbo-prop and Rocket engines. Engine Cooling. Emission and Control, Fuel gas analysis. Measurement of Calorific values. Conventional and Nuclear fuels. Elements of Nuclear power production.

**2.** Heat Transfer and Refrigeration and Airconditioning Modes of heat transfer. One dimensional steady and unsteady condition. Composite slab and Equivalent Resistance. Heat dissipation from extended surfaces. Heat exchangers. Overall heat transfer coefficient. Empirical correlations for heat transfer in laminar and turbulent flows and for free and forced Convection. Thermal boundary layer over a flat plate. Fundamentals of diffusive and convective mass transfer, Block, body and basic concepts in Radiation. Enclosure theory. Shape factor. Net work analysis. Heat pump and Refrigeration cycles and systems. Refrigerants. Condensers. Evaporators and expansion devices. Psychrometry, Charts and application to airconditioning. Sensible heating and cooling. Effective temperature, Comfort indices. Load calculations. Solar refrigeration. Controls, Duct design.

**3. Fluid Mechanics**

Properties and classification of fluids, Manometry. Forces on immersed surfaces. Center of pressure. Buoyancy, Elements of stability of floating bodies. Kinematics and Dynamics, irrotational and incompressible, inviscid flow, velocity potential, Pressure field and Forces on immersed-bodies Bernoulli's equations. Fully developed flow through pipes. Pressure drop calculations. Measurement of flow rate and Pressure, drop. Elements of boundary layer theory. Integral approach. Laminar and turbulent flows. Separations, Flow over weirs and notches. Open channel flows. Hydraulic jump. Dimensionless numbers Dimensional analysis. Similitude and modelling. One-dimensional isentropic flow. Normal shock wave. Flow through convergent—divergent ducts. Oblique shock-wave, Rayleigh and Fanno lines.

**4. Fluid Machinery and Stream Generators**

Performance, Operation and control of hydraulic Pump and impulse and reaction Turbines. Specific speed Classification. Energy transfer. Coupling Power, transmission. Steam generators. Fire-tube and water-tube boilers. Flow of steam through nozzles and diffusers, Wetness and condensation. Various types of steam and gas turbines Velocity diagrams. Partial admission Reciprocating, Centrifugal and axial flow Compressors, Multi-stage compression, role of Mach Number, Reheat, Regeneration, Efficiency. Governance.

**PAPER II**

**5. Theory of Machines**

Kinematic and dynamic analysis of planar mechanisms. Cams. Gears and gear trains. Flywheels, Governors, Balancing of rigid rotor and field balancing. Balancing of single and multicylinder engines. Linear vibration analysis of mechanical systems. Critical speeds and whirling of shafts. Automatic Controls.

**6. Machine Design**

Design of Joints : cotters, keys, spines, welded joints, threaded fasteners, joints formed by interference fits.

Design of friction drives: couplings and clutches, belt and chain drives, power screws.

Design of Power transmission systems: gears and gear drives, shaft and axle, wire ropes.

Design of bearings, Hydrodynamic bearings and rolling element bearings.

**7. Strength of Materials**

Stress and strain in two dimensions. Principal stresses and strains, Mohr's construction, linear elastic materials, isotropy and anisotropy, stress-strain relations, uniaxial loading, thermal stresses. Beams: Bending moment and shear force diagram, bending stresses and deflection of beam. Shear stress distribution. Torsion of shafts, helical springs. Combined stresses, thick and thin walled pressure vessels. Struts and Columns. Strain energy concepts and theories of failure.

**8. Engineering Materials**

Basic concepts on structure of solids. Crystalline materials, Defects in crystalline materials. Alloys and binary phase diagrams, structure and properties of common engineering materials. Heat treatment of steels. Plastics, Ceramics and composite materials. Common applications of various materials.

**9. Production Engineering**

**Metal Forming** : Basic Principles of Forming, drawing and extrusion; High energy rate forming; Powder metallurgy. Metal Casting: Die casting, investment casting, Shell Moulding, Centrifugal Casting, Gating and Riser design; melting furnaces.

**Fabrication Processes** : Principles of Gas, Arc. Shielded arc Welding; Advanced. Welding Processes; weldability; Metallurgy of Welding.

**Metal Cutting** : Turning, Methods of Screw Production. Drilling, Boring. Milling, Gear Manufacturing. Production of flat surfaces

Grinding and Finishing Processes. Computer Controlled Manufacturing Systems— CNC, DNC, FMS, Automation and Robotics.

**Cutting Tool Materials**, Tool Geometry Mechanism of Tool Wear, Tool Life and Machinability; Measurement of cutting forces. Economics of Machining. Unconventional Machining. Processes, Jigs and Fixtures.

**Fits and Tolerances**. Measurement of surface texture. Comparators, Alignment tests and reconditioning of Machine Tools.

## 10. Industrial Engineering

**Production, Planning and Control** : Forecasting— Moving average exponential smoothing. Operations scheduling; assembly line balancing Product development. Break-even analysis, capacity planning, PERT and CPM.

**Control Operations** : Inventory Control—ABC analysis EOO model. Materials requirement planning Job. design. Job standards. Work measurement. Quality management— Quality analysis and control.

**Operations Research** : Linear programming— Graphical and Simplex methods. Transportation and assignment models. Single server queuing model.

**Value Engineering** : Value analysis for cost/value.

## 11. Elements of Computation

Computer Organisation, Flow charting. Features of Common Computer Languages—FORTRAN, d' Base III. Lotus 1-2-3, C and elementary programming.

**ELECTRICAL ENGINEERING** (for both objective and conventional type papers)

### PAPER I

#### 1. KM Theory

Electric and magnetic fields. Gauss's Law and Ampere's Law, Fields in dielectrics, conductors and magnetic materials. Maxwell's equations. Time varying fields. Plane-Wave propagation in dielectric and conducting media. Transmission lines.

#### 2. Electrical Materials

Band Theory. Conductors, Semi-conductors and Insulators. Super-Conductivity. Insulators for electrical and electronic applications. Magnetic materials. Ferro and ferri-magnetism. Ceramics, properties and applications Hall effect and its applications. Special semiconductors.

#### 3. Electrical Circuits

Circuit elements. Kirchoffs Laws Mesh and nodal analysis. Network theorems and applications. Natural response and forced response. Transient response and steady-state response for arbitrary inputs. Properties of networks in terms of poles and zeros. Transfer function. Resonant circuits. Three-phase circuits Two-port network. Elements of two-element network synthesis.

#### 4. Measurements and Instrumentation

Units and Standards, Error analysis. Measurement of current. Voltage Power, Power-factor and energy. Indicating instruments. Measurement of resistance inductance. Capacitance and frequency. Bridge Measurements. Electronic measuring instrument, digital voltmeter and frequency counters. Transducers and their applications to the measurement of non-electrical quantities like temperature, pressure, flow-rate displacement, acceleration, noise level etc. Data acquisition systems. A/D and D/A Converters.

#### 5. Control Systems

Mathematical modelling of physical systems. Block diagrams and signal flow graphs and their reduction. Time domain and frequency domain analysis of linear dynamical system. Errors for different types of inputs and stability criteria for feedback systems. Stability analysis using Routh-Hurwitz array, Nyquist plot and Bode plot. Root locus and Nicols chart and the estimation of gain and phase margin. Basic concepts of compensator design. State variable matrix and its use in system modelling and design Sampled data system and performance of such a system with the samples in the error channel. Stability of sampled data system. Elements of nonlinear control analysis. Control system component, electromechanical hydraulic pneumatic components.

### PAPER II

#### 1. Electrical Machines and power transformers

**Magnetic Circuits**.— Analysis and Design of Power transformers. Construction and testing. Equivalent circuits, losses and efficiency Regulation. Auto-transformer. 3-phase transformer. Parallel operation.

Basic concepts in rotating machines. EMF, torque, basic machine types. Construction and operation, leakage, losses and efficiency.

**D. C. Machines Construction**.—Excitation methods, Circuit models. Armature reaction and commutation. Characteristics and performance analysis. Generators and motors. Starting and speed control. Testing Losses and efficiency.

**Synchronous Machines**.—Construction Circuit model. Operating characteristics and performance analysis. Synchronous reactance. Efficiency. Voltage regulation. Salient pole machine. Parallel operation. Hunting. Short circuit transients.

**Induction Machines Construction**.—Principle of operation. Rotating fields. Characteristics and performance analysis. Determination of circuit model. Circle diagram. Starting and speed control.

**Fractional KW motors**. — Single-phase synchronous and induction motors.

#### 2. Power Systems

Types of Power Station Hydro, Thermal and Nuclear Stations. Pumped storage plants. Economics and operating factors.

**Power transmission lines**.— Modelling and performance characteristics. Voltage control. Load flow studies. Optimal power

system operation. Load frequency control. Symmetrical short circuit analysis. Z-Bus formulation Symmetrical Components. Per unit representation. Fault analysis. Transient and steady-state stability of power systems. Equal area criterion. Power system Transients. Power system Protection Circuit breakers Relays. HVDC transmission.

### **3. Analog and Digital Electronics and Circuits**

Semi-conductor device physics, PN junctions and transistors, circuits Models and parameters, FET Zener tunnel, Schottky, photo diodes and their applications, rectifier circuits voltage regulators and multipliers, switching behaviour diodes and transistors. Small signal amplifiers biasing circuits, frequency response and improvement, multistage amplifiers and feed-back amplifiers, D.C. amplifiers. Oscillators, Large signal amplifiers, coupling methods, push pull amplifiers, operational amplifiers, wave, shaping circuits. Multivibrators and flip-flops and their applications. Digital logic gate families, universal-gates-combinational circuits for arithmetic and logic operation sequential logic circuits. Counters Registers. RAM and ROMs.

### **4. Microprocessors**

**Microprocessor architecture.**—Instruction set and simple assembly language programming. Interfacing for memory and I/O. Applications of Microprocessors in power system.

### **5. Communication Systems**

Types of modulation; AM, FM and PM. Demodulators. Noise and bandwidth consideration. Digital communication systems. Pulse code modulation and demodulation. Elements of sound and vision broadcasting Carrier communication. Frequency division and time division multiplexing. Telemetry system in power engineering.

### **6. Power Electronics**

Power Semi-conductor devices, Thyristor, Power transistor, GTOs and MOSFETs. Characteristics and operation. AC to DC Converters. 1-phase and 3-phase DC to DC Converters.

**AC regulators.**—Thyristor controlled reactors, switched capacity networks.

**Inverters :** Single-phase and 3-phase Pulse width modulation. Sinusoidal modulation with uniform sampling. Switched mode power supply.

**ELECTRONICS AND TELECOMMUNICATION ENGINEERING** (For both objective and conventional type papers)

#### **PAPER I**

##### **1. Materials and components**

Structure and properties of Electrical Engineering materials Conductors, Semi-conductors and Insulators, Magnetic, Ferroelectric, piezoelectric Ceramic, Optical and Superconducting materials. Passive components and characteristics Resistors, Capacitors and Inductors : Ferrites, Quartz crystal. Ceramic resonators, Electromagnetic and electro-mechanical components.

##### **2. Physical Electronics, Electron Devices and ICs**

Electrons and holes in semi-conductors. Carrier Statistics, Mechanism of current flow in a semi-conductor, Hall effect. Junction theory; Different types of diodes and their characteristics; Bipolar Junction transistor; Field effect transistors; Power switching devices like SCRs. CTOs, power MOSFETs; Basics of ICs-bipolar, MOS and CMOS types; Basics of Opto-Electronics.

##### **3. Signals and Systems**

Classification of signals and systems; System modelling in terms of differential and difference equations; State variable representation; Fourier series; Fourier transforms and their application to system analysis; Laplace transforms and their application to system analysis; Convolution and superposition integrals and their applications; Z-transforms and their applications to the analysis and characterisation of discrete time systems; Random signals and probability. Correlation functions; Spectral density; Response of linear system to random inputs.

##### **4. Network Theory**

Network analysis techniques: Network theorems, transient response steady state sinusoidal response; Network graphs and their applications in network analysis; Tellegen's theorem. Two port networks : Z, Y, h and transmission parameters. Combination of two ports analysis of common two ports. Network functions; parts of network functions; obtaining a network function from a given part. Transmission criterion : delay and rise time. Elmore's and other definition effect of cascading Elements of network synthesis.

##### **5. Electromagnetic Theory**

Analysis of electrostatic and magnetostatic fields; Laplace's and Poisson's equations; Boundary value problems and their solutions; Maxwell's equations : application to wave propagation in bounded and unbounded media; Transmission lines : basic theory, standing wave, matching applications microstrip lines; basics of waveguides and resonators; Elements of antenna theory.

##### **6. Electronic Measurement and Instrumentation**

Basic concepts standards and error analysis; Measurements of basic electrical quantities and parameters; Electronic measuring instruments and their principles of working, analog and digital, comparison characteristics, applications Transducers; Electronic measurements of non-electrical quantities like temperature, pressure, humidity etc. Basics of telemetry for industrial use.

#### **PAPER II**

##### **1. Analog Electronic Circuits**

Transistor biasing and stabilization small signal analysis. Power amplifiers Frequency response. Wide banding techniques Feedback amplifiers Tuned amplifier? Oscillators, Rectifiers and power; supplies Op Amp PLL other linear integrated circuits and applications Pulse shaping circuits and waveform generator.

##### **2. Digital Electronic Circuits**

Transistor as a switching element; Boolean algebra simplification of Boolean functions, Karnaugh map and applications' IC Logic gates and their characteristics : IC logic families : DTL, TTL, ECL, NMOS PMOS and CMOS gates, and their comparison Combinational logic circuits; Half adder Full adder. Digital comparator. Multiplexer. Demultiplexer; ROM and their applications, Flipflops, R-S, J. K., D and T np-nops; Different types of counters and registers; Waveform generators. A/D and D/A converters. Semi-conductor memories.

### 3. Control Systems

Transient and steady state response of control systems, Effect of feedback on stability and sensitivity; Root locus techniques; Frequency response analysis Concepts of gain and phase margins; constant-M and Constant-N Nichols's Chart; Approximation of transient response from Constant-N nichols Chart; Approximation of transient response from closed loop frequency response; Design of Control systems Compensators; Industrial controllers.

### 4. Communication Systems

Basic information theory. Modulation and detection in analogue and digital systems; Sampling and data reconstruction Quantization & Coding; Time division and frequency division multiplexing, Equalisation; Optical Communication in free space and fibre optic; Propagation of signals at HF, VHP, UHF and microwave frequency; Satellite Communication.

### 5. Microwave Engineering

Microwave Tubes and solid state devices, Microwave generation and amplifiers, Waveguides and other Microwave Components and Circuits Microstrip circuits, Microwave Antennas, Microwave Measurements, Masers Lasers; Microwave propagation. Microwave Communication systems-terrestrial and Satellite based.

### 6. Computer Engineering

Number Systems; Data representation; Programming; Elements of a high level programming language PASCAL/ C. Use of basic data structures; Fundamentals of computer architecture; Processor design; Control unit design; Memory organisation. I/O System Organisation, Micro-processors : Architecture and instruction set of micro-processors 8085 and 8086. Assembly language programming. Micro-processor based system design : typical examples. Personal computers and their typical uses.

## Appendix-II

### INSTRUCTIONS TO THE CANDIDATES FOR FILLING ONLINE APPLICATIONS

**Candidates must apply Online by using the Website [www.upsconline.nic.in](http://www.upsconline.nic.in) Salient Features of the system of Online Application Form are given here under :**

Detailed instructions for filling up Online Applications are available on the above mentioned website.

Candidates will be required to complete the Online Application Form containing two stages viz. Part-I and Part-II as per the instructions available in the above mentioned site through drop down menu.

The candidates are required to pay a fee of **Rs. 200/- (Rupees Two Hundred Only)** [excepting Female/SC/ST/PH candidates who are exempted from payment of fee] either by remitting the money in any branch of SBI by cash, or by using net banking facility of State Bank of India/State Bank of Bikaner & Jaipur/State Bank of Hyderabad/ State Bank of Mysore/State Bank of Patiala/State Bank of Travancore or by using any Visa/Master Credit/Debit Card.

Before start filling up Online Application, a candidate must have his/ her photograph and signature duly scanned in the .jpg format in such a manner that each file should not exceed 40 KB each and must not be less than 3 KB in size for the photograph and 1 KB for the signature.

The Online applications(Part I and II) can be filled from **27<sup>th</sup> February, 2016 to 25<sup>th</sup> March, 2016 till 11.59 p.m.**, after which link will be disabled.

Applicants should avoid submitting multiple applications. However, if due to any unavoidable circumstances any applicant submits multiple applications then he must ensure that the applications with higher RID is complete in all respects.

In case of multiple applications, the applications with higher RID shall be entertained by the Commission and fee paid against one RID shall not be adjusted against any other RID.

The applicants must ensure that while filling their application form, they are providing their valid and active e-mail IDs as the Commission may use electronic mode of communication while contacting them. The Applicants are advised to check their emails at regular intervals and ensure that the email address ending with @nic.in are directed to their inbox folder and not to the SPAM folder or any other folder. Candidates are strongly advised to apply Online well in time without waiting for the last date for submission of Online Application.

## Appendix-III

### (Part – A-)

#### Special Instruction to candidates for conventional type Papers

- Articles permitted inside Examination Hall  
Battery-operated pocket calculators of "non-programmable" type only, mathematical/engineering/ drawing instruments, including a flat rule divided on the edges into inches and tens of an inch and into centimeters and millimeters, a slide rule, set squares, a protractor and a pair of compasses, pencils, coloured pencils, mapping pens, eraser, T-square and drawing board for use wherever necessary. Candidates are not allowed to bring with them any "Tables or Charts" for use in the Examination Hall.

2. Tables to be supplied by UPSC  
If it is considered necessary for answering the questions set in any paper, the Commission may supply any of the following for reference purpose only :
  - (i) Mathematical/Physical/Chemical and Engineering Tables (including Logarithmic Tables);
  - (ii) Steam Table (including Mollier Diagrams for Temperature up to 800• C and Pressure up to 500 Kgf/Cm);
  - (iii) National Building Code of India 1970 or 1983 Group 2 Part VI;
  - (iv) Any other special articles as may be necessary for the candidates to answer the questions set in the question paper. After conclusion of the examination, return the above items to the Invigilator.
3. Answers to be written in own hand.  
Write the answers in your own hand in ink, Pencil may be used for maps, mathematical drawings or rough work.
4. Check Answer Book.  
The candidate must write his roll number (and not his name) only in the space provided for the purpose on every answer book used by him. Before writing in the answer book please see that it is complete. In case there are any missing pages, it should be got replaced. Do not tear out any pages from the Answer Book. If you use more than one Answer Book, indicate on the cover of first Answer Book the total number of Answer Books used. Do not leave any blank, unused spaces between answers. If such spaces are left, score them out.
5. Answers in excess of prescribed number will be ignored.  
The candidate must attempt questions strictly in accordance with the directions given on each question paper. If questions are attempted in excess of the prescribed number, only the questions attempted first up to the prescribed number shall be valued and the remaining answers will be ignored.
6. Questions relating to graph/precis should be attempted only on graph/precis sheets to be supplied on demand by the Invigilators. All loose sheets such as precis sheet, drawing papers, graph sheets etc. whether used or not, should be placed inside the answer books and fastened along with the additional answer book(s), if any. Candidates who fail to observe this instruction will be penalized. Do not write your roll number on these sheets.
7. Unfair means strictly prohibited.  
Do not copy from the papers of any other candidate nor allow your papers to be copied nor give nor attempt to give nor obtain nor attempt to obtain irregular assistance of any description. It will be the responsibility of every candidate to ensure that his answers are not copied by another candidate. Failure to do so will invite penalty, as may be awarded by the Commission for adoption of unfair means.
8. Conduct in Examination Hall  
Do not misbehave in any manner or create disorderly scene in the examination hall or harass or bodily harm the staff deployed for the conduct of examination. You will be severely penalized if you attempt to do so.
9. Please read carefully and abide by the instructions printed on the Question Paper and on the Answer Book supplied in the Examination Hall.
10. The candidates are not allowed to leave the Examination Hall before the expiry of prescribed time period of the examination.

**(Part – B)**

**Special Instruction to candidates for objective type tests**

1. Articles permitted inside Examination Hall.  
Clip board or hard board (on which nothing is written), a good quality black ball pen for making responses on the Answer Sheet. Answer Sheet and sheet for rough work will be supplied by the invigilator.
2. Articles not permitted inside Examination Hall  
Do not bring into the Examination Hall any article other than those specified above e.g. books, notes, loose sheets, electronic or any other type of calculators, mathematical and drawing instruments, Log Tables, stencils of maps, slide rules, Test Booklets, rough sheets pertaining to earlier session(s), etc.  
**Mobile phones, pagers, blue tooth or any other communication devices are not allowed inside the premises where the examination is being conducted. Any infringement of these instructions shall entail disciplinary action including ban from future examinations. Candidates are advised in their own interest not to bring any of the banned items including mobile phones, pagers to the venue of the examination, as arrangements for safekeeping cannot be assured.**
3. **Penalty for wrong Answers (in Objective Type Papers)**  
***THERE WILL BE PENALTY (NEGATIVE MARKING) FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS.***
  - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, one third (0.33) of the marks assigned to that question will be deducted as penalty.
  - (ii) If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above for that question.
  - (iii) If a question is left blank i.e. no answer is given by the candidate, there will be no penalty for that question.
4. **Unfair means strictly prohibited**  
No candidates shall copy from the papers of any other candidate nor permit his papers to be copied nor give nor attempt to give nor obtain nor attempt to obtain irregular assistance of any description.

5. **Conduct in Examination Hall**

No candidates should misbehave in any manner or create disorderly scene in the Examination Hall or harass the staff employed by the Commission for the conduct of the examination. Any such misconduct will be severely penalised.

6. **Answer Sheet Particulars**

- (i) Write in black ball pen your Centre and subject followed by Test Booklet series (in bracket), subject code and roll number at the appropriate space provided on the Answer Sheet at the top. Also encode your booklet series (A, B, C or D as the case may be), subject code and roll number with black ball pen in the circles provided for the purpose in the Answer Sheet. The guidelines for writing the above particulars and encoding the above particulars are given in Annexure. In case the booklet series is not printed on the Test Booklet or Answer Sheet is unnumbered, please report immediately to the invigilator and get the Test Booklet/Answer Sheet replaced.
- (ii) Candidates should note that any omission/mistake/discrepancy in encoding/filling of details in the OMR answer sheet, especially with regard to Roll Number and Test Booklet Series Code, will render the answer sheet liable for rejection.
- (iii) Immediately after commencement of the examination please check that the Test Booklet supplied to you does not have any unprinted or torn or missing pages or items etc. If so, get it replaced by a complete Test Booklet of the same series and subject.
7. Do not write your name or anything other than the specific items of information asked for, on the Answer Sheet/Test Booklet/sheet for rough work.
8. Do not fold or mutilate or damage or put any extraneous marking in the Answer Sheet. Do not write anything on the reverse of the Answer Sheet.
9. Since the Answer Sheets will be evaluated on computerised machines, candidates should exercise due care in handling and filling up the Answer Sheets. **They should use black ball pen only to darken the circles. For writing in boxes, they should use black ball pen. Since the entries made by the candidates by darkening the circles will be taken into account while evaluating the Answer Sheet on computerised machines, they should make these entries very carefully and accurately. The candidate must mark responses in the Answer Sheet with good quality black ball pen.**

10. **Method of marking answers**

In the "OBJECTIVE TYPE" of examination you do not write the answers. For each question (hereinafter referred to as "Item") several suggested answers (hereinafter referred to as "Responses") are given. You have to choose one response to each item. The question paper will be in the Form of TEST BOOKLET. The booklet will contain item bearing numbers 1, 2, 3 etc. Under each item, Responses marked (a), (b), (c), (d) will be given. Your task will be to choose the correct response. If you think there is more than one correct response, then choose what you consider the best response.

In any case, for each item you are to select only one response. If you select more than one response, your response will be considered wrong. In the Answer Sheet, Serial Nos. from 1 to 160 are printed. Against each numbers, there are circles marked (a), (b), (c) and (d). After you have read each item in the Test Booklet and decided which one of the given responses is correct or the best, you have to mark your response by completely blackening to indicate your response. Ink pen or pencil should not be used for blackening the circle on the Answer Sheet.

For example, if the correct answer to item 1 is (b), then the circle containing the letter (b) is to be completely blackened with black ball pen as shown below :-

**Example : (a) • (c) (d)**

11. **Entries in Scannable Attendance List**

Candidates are required to fill in the relevant particulars with black ball pen only against their columns in the Scannable Attendance List, as given below :-

- i) Blacken the circle (P) under the column (Present/Absent)
  - ii) Blacken the relevant circle for Test Booklet Series
  - iii) Write Test Booklet Serial No.
  - iv) Write the Answer Sheet serial No. and also blacken the corresponding circles below
  - v) Append signature in the relevant column
12. Please read and abide by the instructions on the cover of Test Booklet. If any candidate indulges in disorderly or improper conduct, he will render himself liable for disciplinary action and/or imposition of a penalty as the Commission may deem fit.
13. The candidates are not allowed to leave the Examination Hall before the expiry of prescribed time period of the examination.

**Annexure**

**How to fill in the Answer Sheet of objective type tests in the Examination Hall**

Please follow these instructions very carefully. You may note that since the Answer Sheets are to be evaluated on machine, any violation of these instructions may result in reduction of your score for which you would yourself be responsible.

Before you mark your responses on the Answer Sheet, you will have to fill in various particulars in it.

As soon as the candidate receives the Answer Sheet, he/she should check that it is numbered at the bottom. If it is found unnumbered he/she should at once get it replaced by a numbered one.

You will see from the Answer Sheet that you will have to fill in the top line, which reads thus:

|         |         |          |                      |             |                      |
|---------|---------|----------|----------------------|-------------|----------------------|
| केन्द्र | विषय    | विषय कोड | <input type="text"/> | अनुक्रमांक  | <input type="text"/> |
| -----   | -----   | -----    |                      | -----       |                      |
| Centre  | Subject | S. Code  |                      | Roll Number |                      |

If you are, say, appearing for the examination in Delhi Centre for the General Studies Paper and your Roll No. is 081276 and your Test Booklet series is 'A', you should fill in thus, using ball pen.

\* This is just illustrative and may not be relevant to the Examination concerned.

|         |         |          |                      |             |                      |
|---------|---------|----------|----------------------|-------------|----------------------|
| केन्द्र | विषय    | विषय कोड | <input type="text"/> | अनुक्रमांक  | <input type="text"/> |
| -----   | -----   | -----    | 9 9                  | -----       | 0 8 1 2 7 6          |
| Centre  | Subject | S. Code  |                      | Roll Number |                      |

You should write with black ball pen the name of the centre and subject in English or Hindi. The test Booklet Series is indicated by Alphabets A, B, C or D at the top right hand corner of the Booklet.

Write your Roll Numbers exactly as it is in your Admission Certificate in the boxes provided for this purpose. Do not omit any zero(s) which may be there.

The next step is to find out the appropriate subject code from the Time Table. Now encode the Test Booklet Series, Subject Code and the Roll Number in the circles provided for this purpose. Do the encoding with black pen. The name of the Centre need not be encoded.

Writing and encoding of Test Booklet Series is to be done after receiving the Test Booklet and confirming the Booklet Series from the same.

For General Ability subject paper of 'A' Test Booklet Series you have to encode the subject code, which is 99. Do it thus.

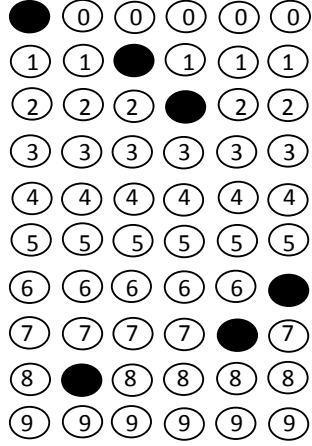
|                                  |                                  |
|----------------------------------|----------------------------------|
| पुस्तिका क्रम                    | विषय                             |
| Booklet Series (A)               | Subject Code 9 9                 |
| -----                            | -----                            |
| <input checked="" type="radio"/> | <input type="radio"/>            |
| <input type="radio"/>            | <input type="radio"/>            |
| <input type="radio"/>            | <input type="radio"/>            |
| <input type="radio"/>            | <input type="radio"/>            |
|                                  | <input type="radio"/>            |
|                                  | <input type="radio"/>            |
|                                  | <input type="radio"/>            |
|                                  | <input type="radio"/>            |
|                                  | <input type="radio"/>            |
|                                  | <input type="radio"/>            |
|                                  | <input type="radio"/>            |
|                                  | <input type="radio"/>            |
|                                  | <input type="radio"/>            |
|                                  | <input type="radio"/>            |
|                                  | <input type="radio"/>            |
|                                  | <input checked="" type="radio"/> |
|                                  | <input checked="" type="radio"/> |

All that is required is to blacken completely the circle marked 'A' below the Booklet Series and below the subject code blacken completely the Circles for '9' (in the first vertical column) and '9' (in the second vertical column). You should then encode the Roll No. 081276. Do it thus similarly.

अनुक्रमांक

Roll Numbers

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 0 | 8 | 1 | 2 | 7 | 6 |
|---|---|---|---|---|---|



**Important :** Please ensure that you have  
have carefully encoded your subject, Test  
Booklet Series and Roll Number.

\* This is just illustrative and may not be relevant to your Examination.

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