NOTICE OF VACANCY FOR RECRUITMENT IN APWD

RECRUITMENT TO GROUP "B" (NG) VACANT POSTS OF ARCHITECTURAL ASSISTANT, ASSISTANT (ARCH DEPT.), PLANNING ASSISTANT, JUNIOR ENGINEER (CIVIL), JUNIOR ENGINEER (ELECTRICAL & MECHANICAL), AND GROUP "C" VACANT POSTS OF DRAUGHTSMAN- GRADE-III (CIVIL), DRAUGHTSMAN- GRADE -III (ELECTRICAL & MECHANICAL) & SURVEYOR PROPOSED TO BE FILLED IN THE ANDAMAN PUBLIC WORKS DEPARTMENT (A.P.W.D), ANDAMAN & NICOBAR ADMINISTRATION BY CONDUCTING OPEN RECRUITMENT EXAMINATION.

1. The Andaman Public Works Department (A.P.W.D), Andaman & Nicobar Administration invite **ONLINE APPLICATIONS** from the eligible candidates to fill-up the following Group 'B'(Non-Gazetted) Non-Ministerial and Group 'C' Non-Ministerial posts in the Pay Matrix Level as indicated against each. The selection will be done by conducting "**WRITTEN EXAMINATION**" by the Andaman Public Works Department (A.P.W.D), Andaman & Nicobar Administration with the assistance of Recruitment Agency. No application through any other mode will be accepted.

Sl. No.	Name of Post	Group	Level in the Pay Matrix
1.	Architectural Assistant	Gr. ' B'(NG)	Level-7 (Rs. 44900-142400)
2.	Assistant (Arch Dept.)	Gr. ' B'(NG)	Level-6 (Rs. 35400-112400)
3.	Planning Assistant	Gr. ' B'(NG)	Level-6 (Rs. 35400-112400)
4.	Junior Engineer (Civil)	Gr. ' B'(NG)	Level-6 (Rs. 35400-112400)
5.	Junior Engineer (Electrical & Mechanical)	Gr. ' B'(NG)	Level-6 (Rs. 35400-112400)
6.	Draughtsman Grade- III (Civil)	Gr. ' C'	Level-4 (Rs.25500-81100)
7.	Draughtsman Grade- III (Electrical & Mechanical)	Gr. ' C'	Level-4 (Rs.25500-81100)
8.	Surveyor	Gr. ' C'	Level-4 (Rs.25500-81100)

2. DETAILS OF VACANCIES:-

Sl. No.	Name of Posts	Category Wise Details of Vacancies							Total
		UR	EWS	OBC (NCL)	ST	PwDs (HH)	MSP	ESM	
						Horizontal Reservation			
1.	Architectural Assistant	01	00	00	00	00	00	00	01
2.	Assistant (Arch. Dept)	01	00	01	00	00	00	00	02
3.	Planning Assistant	01	00	00	01	00	00	00	02
4.	Junior Engineer (C)	34	09	32	10	*04 (3 HH & 01 OA/OL)	00	00	85
5.	Junior Engineer (E&M)	05	01	04	02	*01 (OL/HH)	00	00	12
6.	Draughtsman Gr.- III (C)	05	01	04	01	*01(HH)	*01	*01	11
7.	Draughtsman Gr.- III (E&M)	01	01	01	01	00	00	00	04
8.	Surveyor	06	01	03	00	*01(OA/ OL/HH)	*01	*01	10

NOTE:-I.

(a) Abbreviation used:- UR-Un-Reserved, EWS- Economically Weaker Section, OBC- Other Backward Class, NCL- Non-Creamy Layer, ST-Schedule Tribes, PwDs-Person with Disability, OL-One Leg, OA- One Arm, HH- Hearing Handicapped, MSP- Meritorious Sports Person, ESM- Ex- Servicemen.

(b) *All the Persons with Disabilities are eligible to apply for the post. However, preference would be given to the category mentioned specifically in the vacancy notice.

(c) The number of vacancies is tentative and may increase or decrease at the sole discretion of the A & N Administration.

(d) The candidates who have registered their candidature in the Employment Exchanges shall also submit **ONLINE APPLICATION** in the website irrespective of their name being sponsored by the Employment Exchanges or otherwise.

NOTE:-II.

1.	*The nature of vacancy is temporary, but likely to continue and 02 year probation period is subject to extension further at the discretion of the competent authority.*
2.	*Only Local Scheduled Tribe candidates covered under the category of "Tribes" as specified under constitutions (A & N Islands) Scheduled Tribe Order 1959 are eligible to apply for the reservation against the Schedule Tribe (ST) quota. The other ST candidate will be considered only for Unreserved Vacancies.*
3.	*Only Local Other Backward Class (Non- Creamy Layer) covered under the category of "OBC" as specified in the Gazette Notification No. 343/205/F.No. 8-3/2003-TW dated 16th December, 2005 and No. 752006/F.No. 8-3/2003-TW dated 19th April, 2006 are eligible to apply for the reservation against Other Backward Class (OBC) quota. The candidates belonging to OBC (Creamy Layer) are not eligible to apply for the reservation against Other Backward Class (OBC) quota.*
4.	*Reservation for Persons with Disability, EWS, Meritorious Sports Persons, Ex-Serviceman etc shall be applicable as per the guidelines/instructions issued by the Government of India/A & N Administration from time to time.*
5.	*In case suitable local candidates of A & N Islands under EWS/MSP/ESM are not in the merit of the offline recruitment examination then the vacancy reserved under EWS/MSP/ESM shall be filled under the UR category.*

3. Eligibility Conditions:

(i) Applicant must be an Indian National.

(ii) All candidates shall be required to apply Online for the post whether they are registered with the Employment Exchange or not.

(iii) The Central Government civilian employees/servants and Departmental Candidates of A & N Administration must also apply online within the due date and also upload the NOC or intimation to the respective department about the online submission of application for the respective post.

4. **Age Limit**:–

Architectural Assistant Assistant (Arch. Dept.) Planning Assistant Junior Engineer (C) Junior Engineer (E&M)	Not exceeding 30 years Note: The crucial date for determining the age limit shall be the closing date for receipt of application.
Draughtsman Gr.-III (C) Draughtsman Gr.- III (E & M) Surveyor	18-33 years for male 18-38 years for female Note: - The crucial date for determining the age limit shall be the closing date for receipt of application.

NOTE:

(i) Age is relaxable to candidates of OBC, ST, PwD, Govt. Servant, Ex-servicemen etc as per the order issued by Govt. of India & A & N Administration.

(ii) Candidate should qualify in the recruitment examination to be conducted by the APWD through Recruiting Agency for direct Recruitment.

5. EDUCATIONAL AND OTHER QUALIFICATIONS:-

(A) ***POST-WISE ESSENTIAL EDUCATIONAL AND OTHER QUALIFICATIONS:***

S.No.	Name of Post	*Essential Qualification*
1.	Architectural Assistant	**Essential:** I. Degree in Architecture from a recognized University. II. Should be registered with the Council of Architecture.
2.	Assistant (Arch. Dept.)	**Essential:** I. Degree in Architecture from a recognized University. **(or)** II. Diploma in Architectural Assistantship from a recognized Institution with 2 years of experience in the field.
3.	Planning Assistant	**Essential:** **A.** I. Bachelor's Degree in Planning from a recognized University **(or)** II. Bachelor's Degree in Architecture from a recognized University or having passed AIIA (Part A & B) examination conducted by Indian Institute of Architects & recognized by Council of Architecture **(or)** III. Bachelor's Degree in Civil Engineering from a recognized University or having passed Part A & B examination of Institution of Engineering (India) and **B.** At least one year professional experience in Planning or Architecture or Civil Engineering.
4.	Junior Engineer (Civil)	**Essential:-** I. Degree or Diploma in Civil Engineering from a recognized University/Board/Institution **or** having passed Part A & B examination of Institution of Engineers (India).
5.	Junior Engineer (Elec. &Mech.)	**Essential:** I. Degree or Diploma in Electrical or Mechanical Engineering or Automobile Engineering or Electrical & Electronics or Air Conditioner/Refrigerator Engineering from a recognized University/Board/Institution or having passed Part A & B examination of Institution of Engineers (India).
6.	Draughtsman Gr.- III (Civil)	**Essential:** I. Matriculation from a recognized Board or having passed Xth standard from a recognized Institution/Board. II. 2 years certificate course including practical training of 6 (six) months in Draughtsmanship (Civil) from a recognized Institution/Board.
7.	Draughtsman Gr. - III (Elec.&Mech.)	**Essential:** I. Matriculation from a recognized Board or having passed Xth standard from a recognized Institution/Board. II. 2 years certificate course including practical training of 6(six) months in Draughtsmanship (E&M) from a recognized Institution/Board.
8.	Surveyor	**Essential:** I. Matriculation from a recognized Board or having passed Xth standard from a recognized Institution/Board. II. 2 years certificate course including practical training of 6 (six) months in Surveyor from a recognized Institution/Board.

NOTE: QUALIFICATION ACQUIRED THROUGH DISTANCE EDUCATION MODE AT DIPLOMA AND BACHELOR DEGREE/MASTER DEGREE LEVEL IN THE FIELDS OF ARCHITECTURE / PLANNING / ENGINEERING / TECHNOLOGY AND AT ITI LEVEL IS NOT ELIGIBLE.

(B) PROCESS OF CERTIFICATION AND FORMAT OF CERTIFICATES:-

Candidates who wish to be considered against vacancies reserved or age-relaxation **must submit valid requisite certificate** from the competent authority issued on or before the last date of receipt of online application, in the prescribed format, whenever such certificates are sought by the Andaman Public Works Department for document verification. Otherwise, their claim for ST/OBC/EWSs/Meritorious Sportsperson/ Ex-Servicemen category will not be entertained and their candidature/applications will be considered under **General (UR) category**. Candidates may note that in respect of the above, the candidature will remain provisional till the veracity of the concerned document is verified by the Appointing Authority.

NOTE: Candidates are warned that they will be permanently debarred from the recruitment examination conducted by the Andaman Public Works Department, Andaman & Nicobar Islands in case they fraudulently claim ST/OBC/EWSs/Meritorious Sportsperson/ Ex-Servicemen status.

(C) THE CRITERIA FOR MERITORIOUS SPORTSPERSON: - The instructions regarding appointment of Meritorious Sportsperson shall be made in accordance with the Orders prescribed by the Govt. of India from time to time as shall be applicable.

(a) List of sports/games which qualify for appointment of meritorious sports person.

1	Archery.	21	Handball	41	Swimming
2	Athletics(incl.Track& Field events)	22	Hockey	42	Table Tennis
3	Atya-patya	23	Judo	43	Taekwondo
4	Badminton	24	Kabaddi	44	Ten Pin Bawling
5	Ball Badminton	25	Karate-DO	45	Tennikoit
6	Baseball	26	Kayaking and Canoeing	46	Tennis
7	Basket Ball	27	Kho-Kho	47	Tennis Ball Cricket
8	Billiards and Snooker	28	Korfball	48	Throw Ball
9	Boxing	29	Mallakhamb	49	Triathlon
10	Bridge	30	Motor Sports	50	Tug of War
11	Carrom	31	Net Ball	51	Volley- Ball
12	Chess	32	Polo	52	Weight-Lifting
13	Cricket	33	Power Lifting	53	Wrestling
14	Cycle Polo	34	Rifle Shooting	54	WUSHU
15	Cycling	35	Roller-Skating	55	Yachting
16	Equestrian Sport	36	Rowing		
17	Fencing	37	Shooting Ball		
18	Football	38	Softball		
19	Golf	39	Speak Takraw		
20	Gymnastics (incl. Body building)	40	Squash		

(b) List of authorities competent to award certificate on eligibility for recruitment of meritorious sportsperson

S.NO.	COMPETITION	AUTHORITY AWARDING CERTIFICATE	PREFERENCE
1.	International Competition	Secretary of the National Federation of the Game concerned.	1
2.	National Competition	Secretary of the National Federation or Secretary of the State Association of the Game concerned.	2
3.	Inter-University Tournaments	Dean of Sports or other officer in overall charge of sports of the University concerned.	3
4.	National/Sports	Director or Additional / Joint or Deputy Director in overall charge of sports / games for schools in the Directorate of Public Instructions/ Education of the State.	4
5.	Physical Efficiency Drive	Secretary or other officer in overall charge of Physical Efficiency in the Ministry of Education & Social Welfare, Government of India.	5

(c) Order of preference– The candidate will be considered for appointment in the following manner:-

(a)	First preference to those candidates who have represented the country in an International Competition with the clearance of the Department of Youth Affairs and Sports.
(b)	Next preference to those who have represented a State / UT in the Senior or Junior level national championships organised by the National Sports Federation recognised by Department of Youth affairs & Sports or National Games organised by Indian Olympics Association and have won medals or positions upto 3rd place. Between the candidates participating in senior and junior national championships / games, the candidates having participated and won medal in Senior National Championship should be given preference.
(c)	Next preference to those, who have represented a University in an Inter-University competitions conducted by Association of Indian University / Inter University Sport Board and have won medals or positions upto 3rd place in finals.
(d)	Next preference to those who have represented the State Schools in the National Sports / Games for Schools conducted by the All India School Games Federation and have won medals or positions upto 3rd place.
(e)	Next preference to those, who have been awarded National Award in physical efficiency under National Physical Efficiency Drive.
(f)	Next preference to those who represented a State / Union Territory / University / State Schools Teams at the level mentioned in categories (b) to (d) but could not win a medal or position, in the same order of preference.
(g)	In the event of tie, those who are secure a higher position or one more than one medal will be given the preference.
(h)	Participation in individual and team event / item will be given the same preference.
(i)	No preference will be given for winning more than one medal / position.

(D) <u>THE CRITERIA FOR EX-SERVICEMEN:</u>

a) Ex-servicemen who have already secured employment on Civil side under Government in Group 'C' & 'D' posts on regular basis after availing of the benefits of reservation given to ex-servicemen for their re-employment are not eligible for reservation in ESM category. However, such candidates can avail of the benefit of reservation as ex-servicemen for subsequent employment if he/she immediately after joining civil employment, gives a self-declaration undertaking to the concerned employer about the date wise details of application for various vacancies for which he/ she had applied for before joining the initial civil employment as mentioned in the OM No.36034/1/2014-Estt.(Res) dated 14-08-2014 issued by DoP&T.

b) The period of Call up Service of Ex-Servicemen in the Armed Forces shall also be treated as service rendered in the Armed Forces for purpose of age relaxation as per rules.

c) For any servicemen of the three Armed Forces of the Union to be treated as Ex-Serviceman to secure the benefit of reservation, he must have already acquired at the relevant time of submitting his application for the post/service, the status of ex-serviceman or is in a position to establish his acquired entitlement by documentary evidence from the competent authority that he would complete specified term of engagement from the Armed Forces within the stipulated period of one year from the closing date for receipt of application. Such candidates must also acquire the status of an ex-serviceman within the stipulated period of one year from the closing date of receipt of the application.

d) Explanation : An "ex-serviceman" means the person :

(i) Who has served in any rank whether as a combatant or non-combatant in the Regular Army, Navy and Air Force of the Indian Union and

(ii) Who either has been retired or relieved for discharged from such service whether at his own request or being relieved by the employer after earning his or her pension : or

(iii) Who has been relieved from such service on medical grounds attributable to military service or circumstances beyond his control and awarded medical or other disability pension: or

(iv) Who has been released from such service as a result of the reduction in establishment.

e) The ex-serviceman applicant should belong to the region of A & N Islands only.

6. Fee Payable: - No Fee.

7. Center of Examination: - The Recruitment Examination will be held only at Port Blair and Ferrargunj area with one or more examination centers.

8. Method of Selection: - By Written Examination

9. Recruitment Examination:-

- Objective-Multiple- Choice-Type" Question.
- The question paper will be set in English only.
- The scheme of the recruitment examination, the time allowed and the maximum marks for all the posts are as follows:-

Subject	Total No. of Questions	Marks per questions	Total marks	Time duration
Concerned Technical subject for the respective post	80	01	80	02 hours
General Intelligence & reasoning	10	01	10	
General awareness	10	01	10	
MARKING SCHEME				
Each correct option	01			
Each wrong option	(-)025 (MINUS 0.25)			
Not attempted	0			

The detailed Syllabus for the Recruitment Examination for the said posts are appended in the Annexure.

NOTE:-I- Recruitment Examination Centre, Date and time will be notified later.

NOTE:-II- The date of the Recruitment examination will be notified in the Local Newspaper (i.e. "The Daily Telegrams") and Department's website and will be announced through All India Radio & Doordarshan. The **Admit Card** for the Recruitment examination can be downloaded from the website https://erecruitment.andaman.gov.in/ under ADMIT CARD link.

NOTE:-III- Answer keys, in due course after the Recruitment examination, will be placed on the Department's website https://apwd.and.nic.in/index.php. Any representation received regarding answer keys within the time limit fixed by the Department at the time of uploading the answer keys will be scrutinized and the decision of the Department in this regard will be final. Subsequently the final revised answer keys will be placed on the Department's website https://apwd.and.nic.in/index.php. No representation regarding the answer keys shall be entertained after publicity of final Answer key.

10. **How to apply:-**

a) The ONLINE application shall be submitted at https://erecruitment.andaman.gov.in/ **from 17/08/2022 at 10:00 AM to 16/09/2022 at 05:00 PM** by the eligible candidates.

b) Online application consists of five sections viz. (1) Personal details, (2) Post selection, (3) Qualification details, (4) Experience details and (5) Upload Qualification Document, Experience (if any). Photograph and Signature.

c) Only those application which are complete with all the above five section will be treated as complete. However, applications that are submitted partially, due to reasons such as network issues, can be resumed and completed at a later point in time through appropriate options in the recruitment portal. All such applications are to be completed before the last date of the online application.

d) Candidates have to upload good quality Photograph and Signature in jpeg format. If the uploaded photograph is not legible and of poor quality then his/her admission to the examination hall may be prohibited.

* Photograph should be between 20 KB to 50 KB and the resolution recommended is 200x230 (width x height) in jpeg format and
* Signature should be between 10 KB to 20 KB and the resolution is 140x60 (width x height) in jpeg format.
* Other documents such as proof of age, qualifications, category, NOC etc should be between 100 KB to 500 KB to be uploaded as instructed in the online portal.

e) The candidate should read the instructions for filling out the online application and follow the instructions as directed in the online portal.

f) Before submitting his/her ONLINE application, the candidate should read and follow the instructions for filling the online application and follow the instructions as directed in the online portal. Candidates should read the eligibility conditions for the examination and satisfy himself/herself that he/she fulfills all eligibility conditions to avoid rejection of her/his candidature, before submitting his/her ONLINE application.

g) The candidates should apply for posts in order of their preferences, if any.

h) Helpdesk:- Candidate may contact over Phone 03192-231164 to resolve/resort any problem in registration of online application and downloading the Admit card in the website. In case of any technical glitches during registration, contact 03192-259200 SOVTECH from 09.00 am to 05.00 pm in all working days.

i) The email Id for any querries/communication is ceapwd@and.nic.in.

11. VERIFICATION OF DOCUMENTS:

All the successful candidates short listed through the Recruitment Examination will be called for Document/Certificate verification in person. The Candidates must bring all relevant documents/certificates in original as are mandatory and submit another self-attested copy of all those mandatory certificates /testimonials in person to the authorized officers/officials at the prescribed venue on the scheduled date & time, failing which his/her candidature shall be struck off from the relevant panel for all purposes and no further request /correspondence shall be entertained.

12. GENERAL INSTRUCTIONS TO BE COMPLIED WITH BY THE CANDIDATES DURING THE RECRUITMENT EXAMINATION

NOTE: *The admission of the candidates for the recruitment examination is provisional. If it is found later on or any stage that he/she does not fulfill any of the conditions of the eligibility, the candidature will be cancelled and no appeal against such cancellation will be entertained. Therefore, candidates are advised to check carefully and satisfy themselves that he/she fulfill all the conditions of eligibility to the post applied.*

a) The candidate will be admitted to take the recruitment examination at the centre specified in the Admit Card only and no other centre. It shall be desirable to familiarize themselves with exact location of the examination centre in advance.

b) The candidates must bring in original a photo-bearing identity card such as Islander Card, Pan Card, Voter ID Card, Driving License, Aadhaar Card, etc. issued by the Competent Authority.

c) Candidates are required to bring one recent passport size photograph.

d) The candidate should not bring any other paper except the Admit card to the Recruitment Examination Hall/Room. Candidate found using or attempting to use any unfair means shall be liable to such punishment as Competent Authority may decide to impose.

e) Candidates are not permitted to use Mobile Phone, Micro Phone, Calculators or any other associated accessories, Log Tables, Pager, Digital Diary, Electronic Watch, Bluetooth devices or any other electronic/electrical devices, Book and Note etc. Therefore, candidate must not bring the said items inside the recruitment examination hall/room. Possession of these items, whether in use or otherwise, will be considered as "Use of unfair means" in the recruitment examination and appropriate action will be taken by the Department against such candidates.

f) During the recruitment examination the candidates shall strictly follow the instructions provided in the Admit Card.

13. MODE OF SELECTION:

a) The recruitment process will consist of the Written Examination, Document/Certificate verification.

b) All the candidates whose applications were received through online will be called for appearing to the Recruitment Examination. The Andaman Public Works Department, A & N Islands will not undertake detailed scrutiny of the applications for the eligibility and other aspects at the time of Recruitment Examination. Therefore, the candidature will be accepted provisionally.

c) The Recruitment Examination is objective multiple-choice type. The question papers will be in English only and answers are to be marked in OMR sheets.

d) The shortlisted candidates, who qualify the recruitment examination, will be called for certificate/document verification in person.

e) The candidates shortlisted for certificate/document verification will be based on merit in the Recruitment Examination, in the respective category.

f) ST, OBC, EWS, MSP & Ex-servicemen candidates, who are selected on their merit without relaxed standards, will not be adjusted against the reserved share of vacancies.
Such ST, OBC, EWS, MSP& Ex-servicemen candidates will be accommodated against the general/unreserved vacancies as per their position in the Merit List.

NOTE: The candidate applying for the post should ensure that they fulfill all eligibility conditions prescribed for the post. Their admission at all the stages of recruitment process will be purely provisional, subject to their satisfying the prescribed eligibility conditions. Success in the recruitment examination confers no right of appointment unless government is satisfied after such enquiry as may be considered necessary that the candidate is suitable in all respects for appointment to Government service/post.

14. RESOLUTION OF TIE CASES:

In the event of tie in aggregate marks in the recruitment examination, such cases will be resolved by applying following criteria, one after another, till the tie is resolved.

I. Date of birth i.e. the candidate older in age gets preference.

II. By referring to the alphabetical order of the names taking first name into consideration.

15. ADMISSION TO THE EXAMINATION:

All candidates who apply in response to this advertisement by the CLOSING DATE FOR RECEIPT OF ONLINE APPLICATION shall be assigned registration numbers/unique application number. The Registration number/unique application number will be mandatorily required to download the Admit Card for the recruitment examination. Admit Card to candidates for recruitment examination will be issued by the Department through online mode only. The candidates have to download and take printout of the admit card from the website. The Andaman Public Works Department, A&N Islands shall not be responsible for non-receipt/delay in obtaining the same by the candidate or any

other reason(s). The candidates are advised to regularly read the local Newspaper or visit the Department's website for examination related latest updates/information. **No admit card for the aforesaid posts will be send by post.**

NOTE-I: The candidates must carry the Admit Card downloaded from the website, along with one recent passport size photograph and at least a photo-bearing identity card such as Islander Card, Pan Card, Voter ID Card, Driving License, Aadhaar Card, etc. issued by the Competent Authority in original while attending the recruitment examination, failing which they shall not be allowed to appear for the examination and to abide by the instructions overleaf of the Admit card and given at the examination centres. Retain the Admit Card for future record and to be produced at any stage of recruitment processes even after qualifying the recruitment examination.

NOTE-II: The photographs used by the candidates must be a recent, relaxed face, and the picture should be in colour, against a light-coloured background. If flash is used then ensure that there is no red-eye and, in case of glasses, your eyes should be visible. The face should not cover less than 80 % of the entire photo.

16. ACTION AGAINST CANDIDATES FOUND GUILTY OF MISCONDUCT:

Candidates are warned that they should not furnish any particulars that are false or suppress any material information while filling in the application form. Candidates are also warned that they should in no case attempt to alter or otherwise tamper with any entry in a document or the attested certified copy submitted by them nor should they submit a tampered/fabricated document. If there is any inaccuracy or any discrepancy, in filling OMR Sheet, OMR Sheet will not be evaluated. Without prejudice to criminal action/debarment from the Andaman Public Work Department, A & N Administration's examination wherever necessary, candidature will be summarily cancelled at any stage fora period of maximum 3 years of the recruitment in respect of candidates found have indulged in any of the following:-

a) In possession of MOBILE PHONE & ACCESSORIES AND OTHER ELECTRONICS OR ELECTRICAL GADGETS WITHIN THE PREMISES OF THE EXAMINATION CENTRES, WHETHER IN USE OR IN SWITCH OFF MODE AND ON PERSON OR OTHERWISE.
b) Involved in malpractices.
c) Using unfair means in the recruitment examination hall/room.
d) Obtaining support for his/her candidature by any means.
e) Impersonate/procuring impersonation by any person.
f) Submitting fabricated documents or documents which have been tampered with.
g) Making statements which are incorrect or false or suppressing material information.
h) Resorting to any other irregular or improper means in connection with his/her candidature for the recruitment examination.
i) Misbehaving in any other manner in the recruitment Examination hall/room with the Supervisor, Invigilator or with any other representative involved in the conduct of such recruitment examination.
j) Taking away the Answer Sheet with him/her from the examination hall, or passing it on to unauthorized persons during the conduct of the recruitment examination.
k) Intimidating or causing bodily harm to the staff employed by the department/Administration for the conduct of recruitment examination.
l) To be ineligible for the Recruitment Examination by not fulfilling the eligibility conditions mentioned in the Notice.
m) Candidate can also be cancelled at any stage of the recruitment for any other ground which the Andaman Public Works Department, A & N Administration considers to be sufficient cause for cancellation of candidature.

17. DECISION OF ANDAMAN PUBLIC WORKS DEPARTMENT, A & N ADMINISTRATION IS FINAL

The decision of the Andaman Public Works Department, A & N Administration in all matters relating to eligibility, acceptance or rejection of the applications, penalty for false information, mode of selection, conduct of recruitment examination(s) allotment of recruitment examination centers, selection and allotment of post to selected candidates will be final and binding on the candidates and no enquiry/inquiry/correspondence will be entertained in this regard.

18. COURTS JURISDICTION

Any dispute in regard to this recruitment will be subject to courts/tribunals having jurisdiction over the Port Blair of Andaman & Nicobar Islands only.

19. CLOSING DATE:-

The facility of online application will be available at **www.andaman.gov.in** **from 17/08/2022 at 10:00 AM to 16/09/2022 at 05:00 PM.** No Physical copy of application shall be entertained.

20. SELECTION OF CANDIDATES: -

a) Final Selection for appointment to the post notified herein will be made on the basis of total marks secured in the Recruitment examination subject to satisfying verification of all mandatory original certificate/testimonials on scheduled/prescribed date & venue**.**
b) Only shortlisted candidates, who qualified the recruitment examination, will be called for Document/certificate verification in person.
c) Merit list will be prepared on the principle that name of a candidate appears for appointment against one post only, which will be determined strictly with reference to the order of individual merit and preference exercised by him/her (Candidate) in the application form.

21. ADDITIONAL INSTRUCTIONS AND CONDITIONS TO THE CANDIDATE:-

(a) Candidates are advised to fill the ONLINE application carefully with due diligently as once application is submitted cannot be modified.

(b) Request for change/correction, in any particulars in the application form, once submitted will not be entertained under any circumstances. The Department will not be responsible for any consequence arising of non-acceptance of correction/addition/deletion in any particular filled in the online application form whatever the reasons may be.

(c) Candidates must write/mark the answers in their own hand. In no case & circumstances, will they be allowed or provided the help of a scribe to write/mark the answers for them.

(d) The candidates appear for the examinations are requested to present at the center of the examination hall, one hour before the commencement of recruitment examination.

(e) No TA/ DA will be paid to the candidates for appearing in the recruitment examination.

(f) Similarly, the shortlisted candidates will be called as per merit to attend this office whenever asked and no TA/DA will be paid to the candidates for attending this office.

(g) The candidates shall hand over the Question paper & OMR Answer Sheet to the Invigilator. No candidate shall be allowed to leave the Exam Hall before the closing time of the Written Exam.

(h) Final selection for appointment of candidates to the respective post will be made on based on the marks secured on merit basis in recruitment examination subject to verification of character and antecedents and medical examination from the appropriate authority.

(i) Candidates seeking reservation benefits available for ST/OBC/EWSs/ExS etc. must ensure that they are entitled to such reservation as per eligibility prescribed in the Notice. They should also be in possession of the valid required certificates in the prescribed format in support of their claim at the time of application.

(j) Central Government civilian employees/servants Departmental Candidates of A& N Administration claiming age relaxation should be in possession of a certificate in the prescribed format from their office in respect of length of continuous service which should be for not less than three years in the immediate period preceding the closing date for receipt of application. They should continue to have the status of Central Government civilian employees / servants till the time of appointment, in the event of their selection.

(k) The candidates must fill their name, date of birth, father's name and mother's name strictly as given in the matriculation certificate otherwise their candidature will summarily be cancelled at the time of document verification or as and when comes into the notice of the department.

(l) In accordance with the directions issued by DoPT vide its O.M. No. 39020/1/2016/Estt.(B) dated 21.06.2016 for increasing access of the unemployed candidates to job opportunities, it has been decided that after declaration of the final result, the Andaman Public Works Department will make available-scores and ranking of candidates in the recruitment examination on the portal. Accordingly, it has been decided that apart from Roll Number-scores, the ranking of the candidates in the final examination-Name of the candidate, name of parents/husband, educational qualification, date of birth, category, sex (male/female), total marks in qualifying examination, complete address including e-mail address will be made available on the website after the declaration of final result. HOWEVER, THE CANDIDATES WILL HAVE THE OPTION TO OPT OUT OF THE DISCLOSURE SCHEME TO DISCLOSE HIS/HER INFORMATION PUBLICLY AT THE TIME OF DOWNLOADING ADMITCARD.

(m) The Chief Engineer, APWD reserves the right to accept/reject any candidature without assigning any reason thereof.

(n) The Department will not undertake detailed scrutiny of applications for the eligibility and other aspects at the time of written examination and, therefore, candidature will be accepted only provisionally. The candidates are advised to go through the requirements of educational qualification, experience, age; physical and medical standards etc, and satisfy themselves that they are eligible for the post(s). Copies of supporting documents will be sought at the time of Document Verification. When scrutiny is undertaken, if any claim made in the application is not found substantiated, the candidature will be cancelled and the Department's decision shall be final.

E.O TO CHIEF ENGINEER
APWD, PORT BLAIR

SYLLABUS FOR RECRUITMENT OF ARCHITECTURAL ASSISTANT

1. **Architectural Design: -**(Architectural Design- I, II, III, IV, V, VI, VII)-Applying the knowledge gained in other subjects and to design building of medium complexity e.g. Schools, Colleges, Dispensaries, Shops and Houses etc. and present them in graphic form. Fine Arts, Theory & Methodology of Architectural Design, Sociology, Structural Mechanics, I, II, III, IV, Geometrical Drawing, Mathematics, Architectural Graphics- I, II, Surveying & Leveling, Climatology – I, II, Model Workshop, Architectural Acoustics, Computer Application in Architecture – I, II, Interior Design, Landscape Architecture, Town Planning, Design of RCC Structure, Building Services Water Supply & Sanitary Engineer & Electrical,

2. **Building Construction**:-(Building Materials and Construction - I, II, III, IV, V, VI)-Knowledge of various methods of buildings construction of medium complexity with timer, stone, bricks, concrete etc. including foundation, walls roofs, staircase, journey and finishes.

3. **Building Materials and Sciences:** Knowledge of basic building materials and their behavior such as bricks, stones, metals, timber and finishing materials. Effects of climate on built environment to be able to design for comfortable conditions.

4. **Architectural Drawing and Graphics**: Ability to present in graphic form all elements of design-study of shades and shadows, textures, tones, colours, geometrical form., perspective and projections, free hand drawing and rendering.

5. **History ofArchitecture:-**(History of Architecture – I, II, III, IV, V)-Study of various style of Architecture and methods of construction through the ages in the world with emphasis on Indian Architecture.

6. **Workshop Practice**: Ability to make building models with various materials such as card-board, wood plastics, plaster of paris and metals. Ability to make simple joint in timber, pipes and other materials.
7. **Landscape Design**: Understanding of landscape elements like trees, shrubs, plants, water, rocks and development of landscape planning and application in architectural design.

8. **Structural Mechanics and Theory of Structures**: Understanding the structural concepts and behavior of structural elements, simple calculations for columns, beams, frames, footing slabs walls in concrete, steel and timber.

9. **Surveying and Leveling**: Understanding of various survey and leveling instruments, carrying out surveys of land of medium complexity and preparation of survey plans.

10. **Building Service & Equipments**: Study of land designing for water supply, drainage, sewage disposal, electricity supply, wiring and lighting for building, Air Conditioning, Advances Structural Systems, Estimation & Specification, Building service-I, II& III, Elective – I, II, III, IV, Transportation Planning, Urban Design,

11. **Humanities:** Study of sociology, economics and culture, as applicable for design of human settlements.

12. **Estimating and Costing**: Systems of taking out quantities and estimating for all trades involved in construction of medium complexity.

13. **Principles of Human Settlements**: Man and environment, Biological and behavioral responses to human settlements, design for living, natural and built environment. Ancient texts and treatises on settlements and area planning in India. Human settlements during ancient medieval and modern periods in India, Europe and other parts of the worlds. Characteristics of human settlements built by Muslims and Hindu in India.

14. **Architectural design, planning and thesis**: Design of complicated buildings and campuses involving analytical studies of building and spaces form sociological, economic and cultural points of view such as Universities, Industrial Estates, Housing Schemes etc. Thesis on a subject requiring detailed analytical study to lay down validity and design criteria presented in graphic form, models and report. Thesis may also be research projects presents as a written report.

15. **Building Construction, Materials and specifications**: Study of advanced building construction methods with new materials such as plastics, metals synthetic boards and latest techniques in the use of concrete.
16. **Building Sciences & Services**: Study of Accoustics, Air-Conditioning, Heating, Cooling, Mechanical Installations, Fire-control, Water Supply and Drainages Systems for complicated building.

17. **Town Planning (Theory)**: A general understanding of Town Planning Principles as they have evolved through the ages.

18. **Professional Practice**: Professional Practice, Construction Management, Traditional Architecture, Housing, Architectural Criticism, Energy Efficient Architecture and Dissertation-The examination in professional practice is designed to assess the knowledge, skill and maturity of which fit the architect to fulfill his professional duties and his understanding the managements of an office organization for such as a purpose. The syllabus should cover the following area of study:- General principles of Indian Contract Act, Building Contracts generally, Conditions and forms of contract, Administration of contract, Principle of arbitration, India Arbitration Act, 1940 valuations of properties, Architectural Competitions, Easements of properties, Report writing, copy of practice, conditions of engagement, duties and responsibilities of an architect in relation of owner, contractor, relate professional and Indian Standards & Codes of Practice.

19. **Building Bye- Law**: Study of building regulations to enable design and prepare drawing for submission to concerned bodies.

20. **Advance Structure**: Study of new structural technology such as space frames, prestressing, shells and understanding of the limitations and scope of these technique. Calculations for these techniques are not expected.

E.O TO CHIEF ENGINEER

SYLLABUS FOR RECRUITMENT OF ASSISTANT (ARCH DEPT.):-

1. **Architectural Design: -**(Architectural Design- I, II, III, IV, V, VI, VII)-Applying the knowledge gained in other subjects and to design building of medium complexity e.g. Schools, Colleges, Dispensaries, Shops and Houses etc. and present them in graphic form. Fine Arts, Theory & Methodology of Architectural Design, Sociology, Structural Mechanics, I, II, III, IV, Geometrical Drawing, Mathematics, Architectural Graphics- I, II, Surveying & Leveling, Climatology – I, II, Model Workshop, Architectural Acoustics, Computer Application in Architecture – I, II, Interior Design, Landscape Architecture, Town Planning, Design of RCC Structure, Building Services Water Supply & Sanitary Engineer & Electrical,

2. **Building Construction**:-(Building Materials and Construction - I, II, III, IV, V, VI)-Knowledge of various methods of buildings construction of medium complexity with timer, stone, bricks, concrete etc. including foundation, walls roofs, staircase, journey and finishes.

3. **Building Materials and Sciences:** Knowledge of basic building materials and their behavior such as bricks, stones, metals, timber and finishing materials. Effects of climate on built environment to be able to design for comfortable conditions.

4. **Architectural Drawing and Graphics**: Ability to present in graphic form all elements of design-study of shades and shadows, textures, tones, colours, geometrical form., perspective and projections, free hand drawing and rendering.

5. **History of Architecture:-**(History of Architecture – I, II, III, IV, V)-Study of various style of Architecture and methods of construction through the ages in the world with emphasis on Indian Architecture.

6. **Workshop Practice**: Ability to make building models with various materials such as card-board, wood plastics, plaster of paris and metals. Ability to make simple joint in timber, pipes and other materials.
7. **Landscape Design**: Understanding of landscape elements like trees, shrubs, plants, water, rocks and development of landscape planning and application in architectural design.

8. **Structural Mechanics and Theory of Structures**: Understanding the structural concepts and behavior of structural elements, simple calculations for columns, beams, frames, footing slabs walls in concrete, steel and timber.

9. **Surveying and Leveling**: Understanding of various survey and leveling instruments, carrying out surveys of land of medium complexity and preparation of survey plans.

10. **Building Service & Equipments**: Study of land designing for water supply, drainage, sewage disposal, electricity supply, wiring and lighting for building, Air Conditioning, Advances Structural Systems, Estimation & Specification, Building service-I, II& III, Elective – I, II, III, IV, Transportation Planning, Urban Design,

11. **Humanities:** Study of sociology, economics and culture, as applicable for design of human settlements.

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19. **Building Bye- Law**: Study of building regulations to enable design and prepare drawing for submission to concerned bodies.

20. **Advance Structure**: Study of new structural technology such as space frames, prestressing, shells and understanding of the limitations and scope of these technique. Calculations for these techniques are not expected.

E.O to Chief Engineer

SYLLABUS FOR RECRUITMENT OF DRAUGHTSMAN GRADE- III (E & M):-

Draughtsman Electrical &Mechanical: -The test will include questions on Draughtsman Electrical & Mechanical Trade Theory, Workshop Calculation, Mathematics & Science.

1. Nomenclature. Description and use of drawing instruments &various equipment in drawing office. There care and maintenance, layout of a drawing sheet.
2. Type of lettering proportion and spacing of letter and words.
3. Terms & definitions-polygons and circles. Lines and their meaning, section lines of different materials, conventional signs, symbols & abbreviations, hatching, & shading, Norms of dimensioning different types of drawing sheets.
4. Definition of ellipse, parabola, and hyperbola, different methods of their construction, Definition and method of drawing involutes cycloid curves, helix and spiral.
5. Solution ofproblems on interpenetration of prism, cones, and pyramids with their axes intersecting at an angle. Intersection of cylinder.
6. Principle of Isometric projection, Difference between isometric drawing and isometric projection. Isometric Scale, Dimensions an isometric drawing.
7. Types of perspective projection fundamental concept & definition, location of station point.
8. Terminology- feature, functional feature, functional dimension, datum dimension, principle.
9. Units of dimensioning, system of dimensioning, method of dimensioning and common features limit, fit, tolerance.
10. Types of fastening materials, types of rivets, their proportion & uses. Types of riveted joints, terms & proportions or riveted joints. Conventional representation.
11. Causes of failure of riveted joints, efficiency of riveted joints
12. Description of welded joints and their representation (Actual and symbolic) Indication of welding symbols on drawings as per BIS.
13. Alternating Current motors, different types and its working along with the use. Direct Current motors, different types and its working along with the use. Generators of various types. Their use, working and symbols used in wiring diagrams.
14. Electrical and Electronic symbols of different components used in circuits diagrams. Calculations for measurement of Current, voltage and the Resistance. Electrical circuits in Series and parallel.
15. Concept of Electrical and Electronic panels. Different components used in Electrical Panels for operating of various machines. Electrical Circuit diagrams of the various panels along with the symbols.
16. Power distribution system LT & HT concept, along with the transformers including symbols.
17. Safety precautions, Hand tools used for moulding. The description, use and care of hand tools. Description of different types of moulding. Description of different types of core, sand, and dressing material, Description of cupola.

18. Method of using precision measuring instrument such as inside & outside micrometers, depth gauges, vernier, calipers dial indicator, slip gauges, sine bars, universal bevel protractor etc.
19. Brief description of milling, shaping, slotting and planning machines, quick return mechanism of these machines.
20. Introduction to Auto CAD, Auto CAD main Menu, screen menu, command line, model space Drawing layouts, Tool bars, File creation, Save, Open existing drawing. Related Exercises using Absolute Coordinate system, Polar Co-ordinate System and Relative Co-ordinate System, Exercise using Line, Break, Erase, Undo commands.
21. Piping materials and specifications of WI & Steel pipes, pipe threads pipe fittings, specifications of fittings. Different types of pipe joints.
22. Brief description of Petrol, Diesel and Gas engines.
23. Numbering of drawings and standard parts > Familiarization with BIS.698 02 Production of interchangeable parts, fits limits, tolerance &amiliariation with IS -919 & IS 2709 . Different methods of showing machine surfaces on drawings.
24. Belts-power transmitted by belt. Materials of belts slip and creep Velocity of belt. Arc of contact. Simple exercise in calculation of belt speeds, nos. Of belts needed in V-belt drive, velocity, pulley ratio etc. Standard pulleys width of pulley face, velocity ratio chain drive.
25. Sealed-assembly to details drawing (without the application of tolerance)-swing table or jig table, Belt drive.Assembly to details drawing (with the inclusion of tolerance) and preparation of working drawing-simple tool holder, hand vice.
26. Preparation of an assemble drawing of difference types of pumps and compressors form the given details.
27. Preparation of welding drawing of a bracket showing the correct specification of the welding by symbols as per I.S.I.
28. Drawing of a scale layout of piping with pipe fittings-diagrammatic drawing of piping of the above with the standard symbols of the fittings as per I.S.I.
29. Drawing of a single point cutting tool. Preparation of production tool drawings (assembly and details). Detailing of a simple drilling jig and assembly-plate jig diameter jig. Channel jig-with screw (clamp), bushing leaf jig, tumble jig.Details and assembly of milling fixtures.
30. Preparation of Engineering graphs and charts.Reproduction and duplication of Engineering Drawing. Numbering and preservation of drawing.
31. Project Drawing: Details and assembly of bench grinder, a flanged vice making sketches on the shop floor and taking direct dimensions from there.
32. Concept of SLD, Electrical layout drawings such as cable, earthing, lighting & Lightning protection layouts for substations, control room, process area, off sites and utilities and Sub station Equipment Layouts.
33. Conventional symbols of Electrical installation as per BIS code & IEEE, IES norms Drawings of the typical diagram of plug and socket outlets. Graphical symbols used in electric technology, circuits Elements.

34. Sketching of brush and brush gear of D.C. machines. Lay out D.C. Panel board arrangement. Lettering-Numbers Alphabets. Sketching of D.C. 3-point face Plate starter top scale.
35. Drawing the schematic diagram of automatic voltage regulators of A.C. generators. Drawing the schematic diagram of A.C. 3-ph reversing magnetic starter. Sketching a breather. Free hand sketching of transformer and auxiliary parts and sectional views. Drawing the schematic diagram of plow and pipe earthing I.S.3043. Wiring diagram of the connection of arrangement and push button control of two speed AC motor. IS : 3914 – 1967.
36. Layout diagram of a substation. Sketching different shapes of coils, Sketches indicating possible faults in stator winding. Drawing the development diagram for dupler lap and Wave winding with brush position.
37. Determination of area of sector, segments, ellipse irregular figures, surface area and volumes of pyramids cone, sphere-their frustum including primordial formula.
38. Solution of triangles and problems of height and distance.
39. Calculation on moments center of gravity. Moment of inertia and modulus of section for simple section. Calculation and drawing of B.M. &S.F. diagrams for simple supported beams and cantilevers with concentrated and uniformly distributed loads, selection of steel joints from hand books for given loading.
40. Calculation of material and cost form working drawing.
41. Electricity--laws of electricity brief description working principle and function of a generator, calculation of currents, voltage resistance in series and parallel D.C. circuit-working principle and functions of D.C. and A.C motor and transformers.
42. Pressure of a fluid pressure head of a fluid-total pressure in a surface center of pressure elementary idea of hydraulic press, hydraulic jacks. Flow of fluids-velocity and total heads of fluids-Venturimeter, flow through orifices

E.O TO CHIEF ENGINEER

SYLLABUS FOR RECRUITMENT OF DRAUGHTSMAN GRADE – III (CIVIL)

1) **Preparation of Drawing:-**

Basic drawing skills using drawing instruments. Constructing Plain Scale, Comparative Scale etc, Orthographic projections of different objects with proper lines, lettering& dimensioning, component parts of a single storied residential building, drawing different type of shallow and deep foundation etc, drawing of different types of shoring, arches and lintels with chajja, drawing of different types of roofs, trusses etc as per construction and of various spans. Create objects on CAD work spaces using Toolbars, Commands, Menus, formatting layer and style. Draw a sanction plan of single storied, double storied, public building detailing with roof and Columns by frame structures using CAD. Prepare detailed drawing of RCC structures using CAD and prepare bar bending schedule. Detailing of different types of steel sections, details of Septic Tank etc, flow diagram of Water Treatment Plant(WTP), Sewerage Treatment Plant(STP), Cross section of different type of roads, culverts, bridges, Dam, barrages, cross drainage work using CAD.

2) **Surveying:-**

Perform site survey using Chain/Tape, Prismatic Compass, PlaneTable, make topography map by contours with LevellingInstrument, Theodolite, prepare a map using Total Station, location of station point using GPS and obtain a set of co-ordinates.

3) **Estimating and Costing:-**

Prepare detailed estimate and cost analysis of different types of buildings and other structures using application software. Prepare rate analysis of different items of work and approximate cost estimate for building project.

E.O TO CHIEF ENGINEER

RECRUITMENT FOR THE POST OF PLANNING ASSISTANT

SYLLABUS FOR PLANNING ASSISTANT (CIVIL ENGINEERING STREAM)

1. **APPLIED & ENGINEERING GEOLOGY**: General Geology, Mineralogy, Petrology, Structural Geology and Geophysical Method, Geological Investigations in Civil Engineering.

2. **MECHANICS OF SOLIDS**: Stress Strain and Deformation of Solids, States of Stress, Analysis of Plane Truss, Thin Cylinders / Shells, Transverse Loading on Beams, Deflection of Beams And Shear Stresses, Torsion And Springs.

3. **MECHANICS OF FLUIDS**: Definitions and Fluid Properties, Fluid Statics & Kinematics, Fluid Dynamics, Boundary Layer and Flow through Pipes, Similitude and Model Study.

4. **CONSTRUCTION TECHNIQUES, EQUIPMENT AND PRACTICES:** Concrete Technology, Construction Practices, Sub Structure Construction, Super Structure Construction, Construction Equipment.

5. **SURVEYING I & II :** Introduction And Chain Surveying, Compass Surveying And Plane Table Surveying, Levelling And Applications, Theodolite Surveying, Engineering Surveys. Tacheometric Surveying, Control Surveying, Survey Adjustments, Astronomical Surveying, Hydrographic and Advance Surveying.

6. **SOIL MECHANICS:** Introduction Soil Mechanics, Soil Water and Water Flow, Stress Distribution, Compressibility and Settlement, Shear Strength, Slope Stability.

7. **STRENGTH OF MATERIALS:** Energy Principles, Indeterminate Beams, Columns, State of Stress in Three Dimensions, Advanced Topics in Bending of Beams.

8. **APPLIED HYDRAULIC ENGINEERING:** Open Channel Flow, Uniform Flow, Varied Flow, Pumps, Turbines.

9. **HIGHWAY ENGINEERING:** Highway Planning and Alignment, Geometric Design of Highways, Flexible and Rigid Pavements, Highway Materials and Construction Practice, Highway Maintenance.

10. **IRRIGATION ENGINEERING:** Introduction of Irrigation Engineering, Irrigation Methods, Diversion and Impounding Structures, Canal Irrigation, Irrigation Water Management.

11. **STRUCTURAL ANALYSIS I & II :** Deflection of Determinate Structures, Moving Loads And Influence Lines, Arches, Slope Deflection Method, Moment Distribution Method. Flexibility Method, Stiffness Matrix Method, Finite Element Method, Plastic Analysis of Structures, Space and Cable Structures.

12. **RAILWAYS, AIRPORTS AND HARBOUR ENGINEERING:** Railway Planning and Design, Railway Track Construction, Maintenance and Operation, Airport Planning and Design, Airport Layouts, Visual Aids, and Air Traffic Control, Harbour Engineering.

13. **ENVIRONMENTAL ENGINEERING – I & II :** Planning For Water supply System, Conveyance System, Water Treatment, Advanced Water Treatment, Water Distribution And Supply to Buildings. Planning For Sewerage Systems, Sewer Design, Primary Treatment of Sewage, Secondary Treatment of Sewage, Disposal of Sewage and Sludge.

14. **FOUNDATION ENGINEERING:** Site Investigation and Selection of Foundation, Shallow Foundation, Footings and Rafts, Piles, Retaining Walls.

15. **DESIGN OF RC ELEMENTS:** Methods of Design of Concrete Structures, Limit State Design For Flexure, Limit State Design for Bond, Anchorage Shear & Torsion, Limit State Design of Columns, Limit State Design of Footing And Detailing.

16. **DESIGN OF STEEL STRUCTURES:** Introduction of Design of Steel Structures, Tension Members, Compression Members, Beams, Roof Trusses and Industrial Structures.

17. **CONSTRUCTION PLANNING & SCHEDULING:** Construction Planning, Scheduling Procedures and Techniques, Cost Control Monitoring and Accounting, Quality Control and Safety During Construction, Organization and Use of Project Information.

18. **ENVIRONMENTAL AND IRRIGATION ENGINEERING DRAWING:** Water Supply And Treatment, Sewage Treatment & Disposal, Impounding Structures, Canal Transmission Structures, Canal Regulation Structures.

19. **DESIGN OF REINFORCED CONCRETE & BRICK MASONRY STRUCTURES:** Retaining Walls, Water Tanks, Selected Topics, Yield Line Theory, Brick Masonry.

20. **ESTIMATION AND QUANTITY SURVEYING:** Estimate of Buildings, Estimate of Other Structures, Specification and Tenders, Valuation, Report Preparation.

21. **BASICS OF DYNAMICS AND ASEISMIC DESIGN:** Theory of Vibrations, Multiple Degree of Freedom System, Elements of Seismology, Response of Structures to Earthquake, Design Methodology.

22. **PRESTRESSED CONCRETE STRUCTURE:** Introduction – Theory and Behaviour, Design Concepts, Circular Prestressing, Composite Construction, Pre-Stressed Concrete Bridges.

23. **ENGINEERING ECONOMICS AND COST ANALYSIS:** Basic Economics, Demand And Schedule, Organisation, Financing, Cost And Break Even Analyses.

24. **HYDROLOGY:** Precipitation, Abstraction from Precipitation, Hydrographs, Floods and Flood Routing, Ground Water Hydrology.

25. **CARTOGRAPHY:** Introduction of Cartography, Earth, Sources of Data, Perception and Design, Cartography Abstraction.

26. **ELECTRONIC SURVEYING:** Basic Electronics, Propagation of Electromagnetic Waves, Electromagnetic Distance Measuring System.

27. **REMOTE SENSING TECHNIQUES AND GIS:** EMR and Its Interaction with Atmosphere & Earth Material, Platforms and Sensors, Image Interpretation and Analysis, Geographic Information System, Data Entry, Storage and Analysis.

28. **ARCHITECTURE:** Architectural Design, Site Planning, Building Types, Climate and Environmental Responsive Design, Town Planning.

29. **TOTAL QUALITY MANAGEMENT:** TQM Principles, TQM Tools & Techniques, Quality Systems.

30. **FUNDAMENTALS OF NANOSCIENCE:** Preparation Methods, Patterning and Lithography for Nano scale Devices, Preparation Environments, Characterisation Techniques.

SYLLABUS FOR PLANNING ASSISTANT (ARCHITECTURE STREAM)

1. **MECHANICS OF STRUCTURES I& II**
   Forces and Structural Systems, Analysis Of Plane Trusses, Properties Of Section, Elastic Properties Of Solids, Elastic Constants. Shear Force and Bending Moment, Stresses In Beams, Deflection of Beams, Columns, Statically Indeterminate Beams

2. **HISTORY OF ARCHITECTURE AND CULTURE II, III, IV, V & VI**
   Ancient India, Buddhist Architecture, Evolution of Hindu Temple Architecture, Temple Architecture - Southern India,Temple Architecture -Northern India. Early Christian, Early Medieval Period, Late Medieval Period, Renaissance and Mannerist, Baroque and Rococo.Introduction To Islamic Architecture, Islamic Architecture In India & Architecture Of The Delhi Sultanate, Islamic Architecture In The Provinces, Mughal Architecture, Cross-Cultural Influences.Leading To A New Architecture, Reviewing Industrialisation, Modern Architecture: Development And Institutionalisation, Modern Architecture : Later Directions, Colonial Architecture In India.Critiquing Modernism, After Modernism – I, After Modernism – Ii, Alternative Practices And Ideas, Post Independent Architecture In India

3. **BUILDING MATERIALS II, III & IV**
   Bricks, Clay Products, Timber and Timber Products, Timber Products, Painting and Varnishing In Timber.Requirements Of Ingredients For Mortar/ Concrete, Cement Concrete And Its Manufacture, Types Of Concrete Aggregates And Concrete, Surface Finishing, Flooring And Damp-Proofing, Glass. Ferrous Metals: Steel And Steel Alloys, Innovations In Steel And Steel Industry, Non-Ferrous Metals, Plastics, Other Materials

4. **BUILDING CONSTRUCTION I, II,III & IV**
   Introduction, Soils, Bamboo, Straw Bales, Stone. Bricks, Clay Products, Timber Joinery, Partitions, Panelling, False Ceiling, Timber Staircases, Timber Walls, Floors And Trusses.Concrete Construction, Water-Proofing And Damp-Proofing Of Concrete Structures, Design And Construction Methods For Concrete Staircases, Advanced Construction Systems Developed By Research Organisations In India, Glass.Steel Construction, Steel Doors, Windows And Rolling Shutters Aluminium Doors And Windows, Aluminium Partitions, Stairs, Curtain Walling, Roofing, Plastics

5. **THEORY OF ARCHITECTURE**
   Introduction to Architecture and Meaning In Architecture, Ordering Elements And Principles Of Architecture, Organisation Of Form And Space, Circulation and in Totality, Experiencing Architecture
6. **ARCHITECTURAL DRAWING I**
   Sociography, Perspective: Scientific Method, Perspective: Short Cut Method, Measured Drawing: Historic Document Study, Measured drawing: Documentation
7. **BUILDING SERVICES I,II & III**
   Water Supply And Water Distribution System, Water Quality Control And Distribution System, Water Management Concepts, Sanitary Waste And Sewerage System, Fundamentals, Sanitary Waste And Sewerage System, Waste Management Concept, Equipment's Used For Management Of Usable Water And Waste Water.Electrical And Electronic Systems: Electrical Wiring Systems, Fundamentals Of Lighting, Illumination And Lighting, Lighting Design: Installation

And Application In Buildings,Lighting Design: Conveying Systems,Air Conditioning: Basic Refrigeration Principles, Air Conditioning: Systems And Applications, Air Conditioning: Design Issues And Horizontal Distribution Of Systems, Fire Safety: Design And General Guidelines Of Egress Design, Fire Safety: Fire Detection And Fire Fighting Installation

8. **CLIMATE AND BUILT ENVIRONMENT**

Climate And Human Comfort, Design Of Solar Shading Devices,Heat Flow Through Building Envelope Concepts, Impact Of Air Movement Due To Natural And Built Forms, Climate And Design Of Buildings

9. **COMPUTER AIDED DRAFTING**

Introduction To Computer And Image Editing, Introduction To Visual Composition Using Computer Tools, Introduction To Computer Aided 2d Drafting, Introduction To 3d Modelling,3d Rendering And Setting

10. **ARCHITECTURAL DESIGN I& II**

Scale and Complexity: projects involving small span, single space, single usespaces withsimple movement, predominantly horizontal, as well as simple function public buildings ofsmall scale; passive energy

Areas of focus/ concern:

architectural form and space

- aesthetic and psychological experience of form and space in terms of scale, colour, light,texture, etc.,
- function and need: user requirements, anthropometrics, space standards, circulation
- image and symbolism

Typology/ project: bedroom, bathroom, kitchen, shop, exhibition pavilion, children'senvironment, snack bar, residence, petrol bunk, fire station.

Scale and Complexity **:** Project involving organization of multiples of single unit space withpredominantly horizontal movement as well as single use publicbuildings of small scale;passive energy

Areas of concern/ focus:

- form-space relationships
- spatial organization
- behavioral aspects especially those relating to children
- site planning aspects
- appropriate materials and construction

Suggestive Typologies/ projects : residential buildings, institutional buildings: nursery or primaryschools, schools for children with specific disabilities, primary health center, banks,neighborhood market, library

11. **DESIGN OF STRUCTURES I, II & III**

Timber Structures, Design of Beams And Columns, Steel Structures, Riveted And Welded Joints,Tension Members, Compression Members,Steel Beams.Methods of Design For Concrete Members, Limit State Design of Beams, Limit State Design of Slabs, Design of Circular Slabs,Designof Staircase By Limit State Method.Limit State Design of Columns, Design of Footings, Design of Retaining Walls, Design of Masonry Walls, Introduction to Prestressed Concrete

12. **SITE SURVEYING AND PLANNING**

Introduction, Site Surveying,Site Analysis, Detailed Analysis And Techniques,Site Planning And Site Layout Principles.

13. PROFESSIONAL PRACTICE AND ETHICS I& II

Introduction To The Architectural Profession,Professional Ethics And Code Of Conduct, Architect's Services & Scale Of Fees, Architectural Competitions, Legal Aspects & Legislation.Tender, Contract &Arbitration,New Trends In Project Formulation And Execution, Implications Of Globalisation In Architectural Practice, Emerging Specialisations For An Architect

14. ARCHITECTURAL ACOUSTICS

Fundamentals, Sound Transmission And Absorption,Noise Control And Sound Absorption, Constructional Measures,Acoustics And Building Design

15. ARCHITECTURAL DETAILING

Introduction To Current Developments In Building Industry, Detailing Of Walls, Roofs And Flooring For Institutional Buildings, Detailing Of Walls, Roof, Flooring For Commercial Buildings, Detailing Of Built-In Furniture And Fittings, Detailing Of Exterior And Interior Architectural Elements

16. SPECIFICATIONS AND ESTIMATION

Specification, Specification Writing, Estimation, Detailed Estimate, Cost Estimating & Cost Budgetting

17. HUMAN SETTLEMENT PLANNING

Introduction, Forms of Human Settlements, Planning Concepts, Urban Planning, Urban Renewal And Regional Planning

18. URBAN DESIGN

Introduction To Urban Design, Historic Urban Form, Theorising And Reading Urban Space, Issues Of Urban Space, Best Practice In Urban Design

19. VERNACULAR ARCHITECTURE

Introduction, Approaches And Concepts, Vernacular Architecture Of The Western Northern Region Of India, Vernacular Architecture Of South India, Western Influences On Venracular Architecture Of India

20. INTERIOR DESIGN

Introduction To Interior Design, History Of Interior And Furniture Design, Components Of Interior Space- Interior Treatment And Finishes, Components Of Interior Space- Lighting And Landscaping, Components Of Interior Space- - Furniture

21. **STRUCTURE AND ARCHITECTURE**

History Of Structural Design In The Pre Industrial Era, History Of Structural Design In The Post Industrial Period, Contemporary Structural Expression Through Case Study – I, Contemporary Structural Expression Through Case Study – II

22. ENERGY EFFICIENT ARCHITECTURE

Architecture And Energy, Solar Passive Architecture, Passive Heating, Passive Cooling, Day Lighting And Natural Ventilation

23. INDUSTRIAL BUILDING SYSTEM

Introduction, Application Of Industrial Building System, Modular Co-Ordination And Industrialised System, Pre-Fabrication System, Procedures And Organisation

24. ART APPRECIATION

Introduction To Art, Vocabulary Of Art, Appreciating Art – Beginnings To Modern Art,Appreciating Art- Modern Art And After, Appreciating Art- Indian Art

25. URBAN HOUSING

Introduction To Housing And Housing Issues – Indian Context, Socio-Economic Aspects, Housing Standards, Site Planning And Housing Design, Housing Process

26. SUSTAINABLE PLANNING AND ARCHITECTURE

Concept of Sustainability – Carrying capacity, sustainable development – Bruntland report – Ethics and Visions of sustainability,Eco system and food chain, natural cycles – Ecological foot print – Climate change and Sustainability, Selection of materials Eco building materials and construction – Biomimicry, Low impact construction, and recyclable products and embodied energy. Life cycle analysis. Energy sources – Renewable and non-renewable energy, Green building design – Rating system –LEED, GRIHA, BREEAM etc., case Studies, Urban ecology, social and economic dimensions of sustainability, urban heat Island effects, sustainable communities – Case studies.

27. PRINCIPLES OF TRADITIONAL INDIAN ARCHITECTURE

Introduction, Measurement And Resonance To Vibration, Site Planning And Cosmogram, Components And Detailing,Materials And Construction

28. COMPUTER APPLICATIONS IN ARCHITECTURE

Video Editing, Image Editing & Vector Editing, Pixel And Vector Animation, Web, Non Linear Presentation (Flash & Director)

29. CONSTRUCTION TECHNOLOGY

General Building Requirements, Construction Systems, Construction Practice, Construction Equipment,Construction Management

30. EARTHQUAKE RESISTANT ARCHITECTURE

Fundamentals of earthquakes, Site planning, performance of ground and buildings, Seismic design codes and building configuration, Various types of construction details, Urban planning and design

31. ARCHITECTURAL CONSERVATION

Introduction to Conservation, Conservation In India, Conservation Practice, Urban Conservation, Conservation Planning

32. SAFETY SYSTEMS AND BUILDING MANAGEMENT

Safety Requirements, Fire Alarm Systems, Fire Suppression Systems: Security Systems, Integrated Building Management System

33. LANDSCAPE AND ECOLOGY

Introduction, Elements In Landscape Design, Garden Design Site Planning, Landscaping Of Functional Areas

SYLLABUS FOR PLANNING ASSISTANT (PLANNING STREAM)

1. **BASICS OF STRUCTURAL DESIGN:** Compression and Tension, Columns and Walls, Shear Force and Bending Moment Diagrams, Principles of Design of Structures
2. **MATERIALS AND PRINCIPLES OF CONSTRUCTION:** Introduction to Building Materials and Finishes, Structural Uses of Timber, Principles of Construction of Building Elements, Site Development and Layouts, Principles on of Service Lines and Networks
3. **STATISTICAL METHODS-I& II :** Introduction, Data Presentation, Statistical Methods, Correlation, Probability, Sampling Distribution,Linear Regression Analysis, Time Series, Index Number, Estimation and Testing of Hypothesis, Large Sample Test, Chi-Square Test
4. **SURVEYING, PHOTOGRAMMETRY AND PHOTOGRAPHY:** Basic Principles and Chain Surveying, Traversing and Plain Table Surveying, Computation of Areas and Levelling, Photogrammetry, Photography
5. **HISTORY OF ART AND CULTURE OF SETTLEMENTS:** Art, Culture and Architecture of Old Civilization, Development of Building Technology, Revolutions and their Influences on Culture, Art and Its development, New' Art Forms and Techniques
6. **APPLIED GEOLOGY**:Introductory Earth Science and Meteorology, Geological Structure, Land Forms, Weathering, Landslides and Mass Wasting, Earthquake, Selection of Site and Foundations, Ground Water
7. **THEORY OF DESIGN:**Forms, Design, Perception, Building Elements, Architecture,
8. **ARTS AND GRAPHICS-II:** Basic Design, Standard Presentation Format, Presentation Drawings and Communication Skills, Sculpture and Modelling, Mural Painting
9. **EVOLUTION OF HUMAN SETTLEMENTS:**Introduction, Planning Elements and Dimensions, Planning Through the Ages, The Modern City, Synthesis,
10. **PLANNING THEORY- I&II**:Concept Formation and Perception of Space, What is Planning, Physical Planning, Process of Planning, Plan Preparation and implementation Agencies.Urban Structure and Growth, Land Use Planning, Types of Planning, Principles of Regional Planning, Regional Planning in India.
11. **TECHNIQUES OF PLANNING· I&II :**Techniques of Preparing Base Maps, Data Base for Planning and Socio - Economic Surveys, Physical Surveys, Techniques of Presenting and Analysing Data.Planning Practice in India, Spatial Standards, Regional Survey, Plan Preparation Techniques, Introduction to Advanced Techniques
12. **ECOLOGY AND RESOURCE MANAGEMENT :**Introduction, Ecosystem and its Relevance to Environment, Quantitative Ecology, Environmental Impact Studies,
13. **TRAFFIC AND TRANSPORTATION PLANNING – I& II:**Urbanisation and Transport Problem, Urban and Regional Road Design, Surveys and Studies, Geometric Design of Roads and Intersections, Traffic Management. Evaluation of Urban Structures, Planning and Management of Transport System, Regional Transport Systems, Transport and Environment, Economic Evaluation and Transport Policies
14. **QUANTITY SURVEYING AND SPECIFICATIONS:**Specification, Specifications for Infrastructure Work, Specifications for External Work, Estimation, -Development Costs of Planning Schemes as per Standards, Norms

15. **ENVIRONMENTAL SCIENCE:** Environmental Disruptions, Solid Waste Management, Forest Resources, Environmental Problems,
16. **ELEMENTS OF ECONOMICS:**Definition and Scope of Economics, Theory of Demand and Supply, Theory of Firm and Production, Concept of Income, Employment and Money, Introduction to Urban and Regional Economics
17. **UTILITIES AND SERVICES PLANNING :**Introduction, Basic Concepts and Theories, Storm Water System, Sanitation and Sewer System, Water Supply System, Solid Waste Disposal,
18. **DEMOGRAPHY AND URBANISATION:**Study of Population, Study of Demography, World Urbanisation and Urbanisation in India, Settlement System and Role of Urban Area, Policies and Strategies for Directing Urbanisation Trends in India
19. **HOUSING AND COMMUNITY PLANNING:**Housing as a Basic Human Necessity, Role of Community Development in Housing, Housing Standards, Planning and Design of Housing Areas, Housing and Finance Policies
20. **SETTLEMENT GEOGRAPHY:** Introduction of Settlement Geography, Classification of Settlements, Rural Settlements, Urban Settlements, Settlements as a System
21. **DEVELOPMENT PLANNING:**Developed, Developing and Under-Developed Economics", Classical Theories of Development:·, Modern Theories of Development ,, Models of Development, Issues in Growth and Development
22. **URBAN DESIGN AND CONSERVATION:**Introduction to Urban Design Theory, Elements of Urban Design, Physical and Non-Physical Determinants of Urban Forms, Basic Principles of Conservation, Aspects of Urban Conservation,
23. **OPERATIONS RESEARCH AND SYSTEMS ANALYSIS/ COMPUTER APPLICATION:**Linear Programming Problems, Transportation Problems, Queuing systems, PERT and CPM Networks, System Simulation
24. **PLANNING AND MANAGEMENT OF INFORMAL SECTOR AND BASIC NEEDS.:**Urban Poverty, Basic Needs, Alternative Approaches ~or Delivery of Basic Services to the Urban Poor, Migratory Impulses and Impact on Informal Sector, Consequences of Spontaneous Growth,
25. **LANDSCAPE PLANNING AND DESIGN: I**andscape Elements, Urban Landscape, Landscape Aspects of Site Planning- I, Landscape Aspects of Site Planning- II, Elements of Landscape Planning,,
26. **LAND ECONOMICS AND LOCATIONAL THEORY:**Introduction to land Economics, Development of Land and Real Property, Real Property Markets, Factors Influencing Locational Decisions, Technique of Cost Benefit Analysis
27. **ELEMENTS OF SETTLEMENT SOCIOLOGY:**Introduction, Basic Concepts of Society, Sociology of India, Urban and Industrial Sociology, Neighbourhood Concept
28. **RURAL AND RESOURCE PLANNING:**Introduction, Village Planning : Concepts and Institutional Framework, Rural Planning in Relation to National and Regional Policies, Resource Planning Development and Management, Community Development and Participation
29. **PLANNING INFORMATION SYSTEMS AND COMPUTER USE:**Introduction, Information Systems, Geographic Information System, Use Map, Other Packages

30. **URBAN MANAGEMENT:**Introduction to Management, Legal Framework, Urban Management, Organisations Involved in Urban Management, Coordination of Participation
31. **PROJECT PLANNING AND CONTROL:**Introduction to Project Management, Project Planning Management, Pre-Implementation Planning Phase, Project Implementation and Evaluation Phase,
32. **PUBLIC FINANCE:**Taxation, Fees and Charges, Borrowing, Inter-Governmental Fiscal Relations, Public Expenditure
33. **PROFESSIONAL PRACTICE:** Organisation, Scope and Scale of Charges, Roleof Planner, Valuation, Methods of Real Property Valuation, Contract Documents and Project Formulation,
34. **PLANNING LEGISLATION:**Concept of Law, Indian Constitution, Land Acquisition Act, Case Studies Related to Land Acquisition Act., Organisations for Plan Implementation,
35. **POLITICAL SYSTEMS AND PLANNING:**Decision Making, Leadership, Communication, Political Systems, Social Systems and Planning, Conflicts.

EO TO CHIEF ENGINEER

SYLLABUS FOR GENERAL INTELLIGENCE & REASONING AND GENERAL AWARENESS FOR ALL THE RESPECTIVE 08 POST OF GROUP "B" (NG) AND GROUP "C" POSTS APWD:-

General Intelligence & Reasoning: The syllabus for General Intelligence would include questions of both verbal and Non-verbal type. The test will include questions on analogies, similarities and difference, space visualization, problem solving analysis, judgment, decision making, visual memory, discrimination observation, relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series, non- verbal series etc. The test will also include questions designed to test the candidate's abilities to deal with abstract ideas and symbols and their relationship, and other analytical functions.

General Awareness: - Questions will be aimed at testing the ability of the candidate's general awareness of the environment around him/her and its application to society. Questions will also be designed to test the knowledge of current events and of such matters of everyday observations and experience in their scientific aspect as may be expected of any educated person and elementary knowledge of computers. The test will also include questions related to India and its neighboring Countries especially pertaining to History, Culture, Geography, Economic, Science, General Politic and Scientific research etc. These questions will be such that they do not require a special study of any discipline.

E.O TO CHIEF ENGINEER

SYLLABUS FOR RECRUITMENT OF JUNIOR ENGINEER (E&M)

1. **Basic Electrical Engineering:**Concept of currents, voltage, resistance, power & energy, their units, Ohm's law, electrical symbols.

2. **Circuit Laws:** Kirchhoff's law, Superposition, Thevenin, Norton, Star- delta network theorems with simple numerical.

3. **Magnetic Circuit:** Concept of flux, EMF, inductance, different kind of magnetic materials, Electro-magnetic induction-Self & Mutual inductance.

4. **A.C fundamental:** Instantaneous, peak, R.M.S and average value of alternating wave, simple Series and Parallel A.C circuits consisting of Resistance, inductance & Capacitance, Analog & Digital ammeters and voltmeters, Wattmeter, Multi-meters, Megger, Low Voltage transformers CT & PT.

5. **Electrical Machines:** Basic principles of AC & D.C. machines (Motors & Generators), construction, principles of operation, speed control & Starting, losses & efficiency of AC & D.C. Machines, equivalent circuit, voltage regulation. Transformer O.C and SC tests, efficiency, auto transformers. Principle of operation, equivalent circuit, torque speed characteristics, starting and speed control of 3 phase induction motor, Generation of three phase EMF, 3-Phase induction motor, rotating magnetic field. Fractional KW motors, 1- Phase induction motor, types of AC Motors, DG Sets, operation.

6. **Estimation and costing:**Estimation of lighting scheme, electric installation of machine and relevant IE rules. Details of illumination system, details of load distribution, Design of electrical installation & its symbols (internal & external), Energy efficient equipment, energy audit, protection systems of Electrical circuit, Earthling Systems, Testing of Electrical Installations, types of cables –Overhead & underground.

7. **General Distribution:** Types of faults – symmetrical and unsymmetrical faults, short circuit current for symmetrical faults, Protection & Switchgear-rating of circuit breakers, principles of arc extinction by oil and air, H.R.C fuses, Protection earth leakage.Lightning Arrestors

8. **Utilization of electrical energy:** Illumination-types of lamps, utilization and applications, electric welding, electric drivers etc.

9. **Renewable Energy:**Solar Energy – Direct Uses, concept, working principle and application of solar thermal systems, Power Generation (On grid & Off Grid System) with simple numerical, Solar Photovoltaic System (SPV) Applications- Solar Lantern, Solar Home System, SPV Street Light, SPV Pumping systems.

10. **Introduction to Refrigeration:** Terms, component & working ofrefrigeration system and properties, C.O.P., E.E.R, unit of refrigeration,Concept of heat engine, heat pump and refrigerator,various refrigeration cycles: refrigeration using simple air cooling system , Reversed Carnot Cycle , Air Refrigeration Cycles - Bell Coleman air refrigerator & their respective plot on P-V and T-S.,Refrigerants, types, nomenclature, selection &harmful environmentaleffects like greenhouse effect, ozone depletion etc… of refrigerants. Eco-friendly refrigerants like R-134a, HCFC etc…Non-conventional methods of refrigeration: Vortex tube, Pulse tube refrigeration.

11. **Air Conditioning & Air Distribution Systems:**Classification of various air conditioning systems, Industrial & commercial Air Conditioning Systems: split type, central type AC, VRF/VRV- maintenance& application. Air distribution systems:duct systems, closed perimeter system, extended plenum system, radial duct system and properties and losses in duct materials. Types & working of fans and blowers-types of diffusers. Thermal & sound Insulation.

12. **Battery:** Automotive battery- construction and operation, battery capacity & ratings. Battery tests Charging System- Uses, Construction & operation of charging system.

Schematic &working of alternator, starting system, lighting system, ignition system and their components in automobile.

13. **Types of measurement, classification of instruments Static terms and characteristics:** Range and Span, Accuracy and Precision, Reliability, Calibration, Hysteresis and Dead zone, Drift, Sensitivity, Threshold and Resolution, Repeatability and Reproducibility, Linearity.

14. **Basic Electronics:** Electronics- Atomic structure of elements. The electron Energy of an electron valence electrons – Free electrons -Voltage source - Constant voltage source - Constant current source.

15. **Electron Emission:** Electron emission, types of electron emission-Thermion emission – Thermionic emitter.

16. **Regulated D.C. Power Supply:** Ordinary D.C. Power supply, Regulated power supply. Types of voltage regulators - Zenor diode voltage regulator.

17. **Semi-Conductor Physics:**Semi-conductor Bonds in semiconductor-commonly use semiconductors, energy band description of semiconductors-effect of temperature on semiconductor-intrinsic semiconductor-extrinsic semiconductor-properties of p-n junction.

18. **Semi-Conductor Diode:**Semi-conductor diode, logic gates, half wave rectifier-full wave rectifier, zener diode, special diodes, optical diodes, Filters-LC filter, π filter. Principle & application of Solid State Switching Circuits.

19. **Transistors:**Field effect transistors, Uni-junction Transistor (UJT): Construction, working principle, advantage & application

20. **Rectifiers:** Silicon Controlled Rectifier (SCR), Triace**:** Construction, working principle, advantage & application.

21. **Flow of Fluids:** Flow through pipes& discharge measurement- Venturi meter, Orifice meter, Nozzle Meter major.Minor friction losses. Forces of jet impinging on vanes-stationary & moving blades, work done and efficiency. Classification of pumps & turbines on constructional.

22. **Production Engineering:** *Casting***-**Concept and types of Moulds and pattern, different types of sand used for casting, different casting processes. Defects in casting: pouring defect in castings, causes & remedies.
***Welding*–**Concept and types of welding, defects in welds, difference in welding, brazing and soldering.
***Lathes*-**Working of lathes, various tools and its operation on lathes, types of lathes, drilling operations performed on drilling machines. Description, Principlesof working and various operations on machines tools milling machine, *Shaper, grinder, boring & slotting machines, Plating*.

23. **Automobiles:**Classification and types of automobile vehicles, two and four wheeler chassis layout and body types. Layout of vehicle such as front engine rear wheel drive, front engine front wheel drive, rear engine rear wheel drive, four wheels drive etc. their advantages, comparisons on Aerodynamic basis.

24. **Transmission Systems:** Need and Requirements of transmission system. Components and functions of Clutch, Gear box, Propeller shaft, Differential, Axle.

25. **Control Systems:***Steering System*-Purpose, construction and working of - recirculating ball type and rack and pinion steering system. Power steering, *Wheel Geometry*- caster, camber, king pin inclination, Toe In and Toe Out. *Braking System*: Need &types of automotive braking systems for two and four wheeler vehicles: mechanical, hydraulic and air operated. Layout, components, construction and working of hydraulic braking systems, master cylinder and wheel cylinder, Drum braking system, Disc Braking Systems Air braking system.

26. **Suspension Systems, Wheels and Tires:** Types of *wheel*-spooked, disc, light alloy cast. Types of *rims*. Tires specifications. Types - redial ply, cross ply, tubeless. Tires specifications. Factors affecting tyre life.Tires-Desirable properties &Wheel alignment and balancing.

27. **I.C. Engine: I**gnition method of I. C. Engine (C.I & S.I). *Two & Four stroke Engines*: construction and working. Various terms related to I.C Engine: scavenging, pre-ignition, detonation, supercharging, turbo charging, air fuel ratio requirements, M.P.F.I., fuel injection pump.

28. **I.C. Engine Testing and Pollution Control:** *ICEngine Testing* - I.P., B.P. Morse Test.List of fuel, lubricant additives and their advantages. Pollution Contro, their effects on environment, Catalytic Converter, Bharat stage III, IV, VI norms.

29. **Air Compressor:**Concept of single and multistage, single and double acting compressor& methods of energy saving. Types- Reciprocating Air Compressor, Rotary Compressor. Pressure ratio, Compressor capacity, Free Air Delivered, Swept volume of air compressor. Uses of compressed air.

30. **Fuels:**Properties, calorific value & ignition temperature of fuels. Characteristics of a good/ ideal fuel.Liquid fuels: fractional distillation, composition, properties, uses. Applications of-Biodiesel. Gaseous fuels- properties, applications of Biogas, LPG, CNG, hydrogen fuel cell, Li-ion battery.

31. **Lubricant:**Definition, functions, classification& application of lubricant. Selection of Lubricants for road rollers, sewing machine, concrete mixer, I.C engine, cutting tools, gears. Different method of lubricating system in I.C engine.

32. **Simple Machines**: Find Efficiency of given machine, *Definitions*: Simple &compound machine , load , effort , mechanical advantage, velocity ratio , input of a machine ,output of a machine efficiency of a machine , ideal machine, ideal effort and ideal load, load lost in friction, effort lost in friction.

33. **Industrial Safety:** Safety Management**,** Causes**,** types, Preventive measures& Safety procedures of Industrial Accidents**.** Inventory Concept, ABC Analysis - Necessity & Steps, Economic Order Quantity Concept, graphical representation, determination of EOQ, Standard steps in Purchasing, Modern Techniques of Material Management.

34. **Materials Management:** Inventory Concept, its classification, functions of inventory, Standard steps in Purchasing, Modern Techniques of Material Management- Material Resource Planning (MRP) - Functions of MRP, Input to MRP, Benefits of MRP, Enterprise Resource Planning (ERP) - Concept, list of modules, advantages & disadvantages of ERP

35. **Quality Management:**Meaning of Quality**,** Quality Control –Concept, Objectives, Functions, Advantages**.** Meaning of Total Quality and TQM**,** Components of TQM – Concept, Elements of TQM, & Systems of Quality Management like Kaizen,5'S',6 Sigma, ISO 9001:2000 – Benefits.

36. **Basics of Oil Hydraulic System:**Various components in simple oil hydraulic circuits, components,Construction & working principle. Overview of essential properties of hydraulic fluids.

37. **Basic Design Considerations:**General Considerations in Design, Types of loads, concepts & type of stress (Tension, Compression, Shear, Bearing pressure, Intensity, crushing, bending and torsion, Principle Stresses (Simple Numerical)), &strain, Stress – Strain Diagram for Ductile and Brittle Materials, Concept of Creep, Fatigue, S-N curve, Endurance Limit.

38. **Modern Design considerations:** Design for safety, Ecology, societal consideration & Concept of Product Design, System Design & Creativity in Design, Ergonomics and aesthetic considerations in design.

E.O to Chief Engineer

SYLLABUS FOR RECRUITMENT OF JUNIOR ENGINEER (CIVIL):-

1. **Building Materials**: Physical and chemical properties, classification, standard tests, uses and manufacture/quarrying of materials e.g. building stones, silicate based materials, cement (Portland), Asbestos products. Timber and Wood based Products, laminates, bituminous materials, paints, varnishes.

2. **Concrete Technology**: Properties, Advantages and uses of concrete, cement aggregates, importance of water quality, water cement ratio, workability, mix design, storage, batching, mixing, placements, compaction, finishing and curing of concrete, quality control, hot weather and cold weather concreting, repair and maintenance of concrete structure, Admixture and additives.

3. **Surveying**: Principles of surveying, working of prismatic, compass and bearings, planetable surveying, theodolite traverse, adjustment of theodolite, leveling and contouring, curvature, refraction correction, permanent adjustment of dumpy level, methods of contouring and uses of a contourmap, tacheometric survey, Curves, Horizontal and Vertical Curves.

4. **Soil Mechanics**: Origin of soil phase diagram, definitions of void ratio porosity, degree of saturation, water content specific gravity of soil grains and unit weights, grain size distribution curves for different solid and their uses, Atterberg's limits, ISI soil classification, plasticity chart, coefficient of permeability, effective stress, consolidation of soils. Classification, shear strength of soils, direct shear test, vane shear test, triaxial test, soil compaction, Lab compaction, Lab compaction test, moisture content and bearing capacity of soil, plate load test standard penetration test.

5. **Theory of Structures**: Elasticity constants, Types of beams, determinate and indeterminate, Bending moment and shear force diagrams of simply supported, cantilever and over hanging beams, Moment of area and moments of intertia for rect. & circular section, bending moments of shear stress for tee, channel and compound sections, chimneys, dams and retaining walls, eccentric loads slope deflection of simply supported and cantilever beams, critical load columns, torsion of circular section.

6. **RCC & Steel Design**: RCC beams, flexural strength, shear strength, bond strength, design of single reinforce beams, lintels, cantilever beams, double reinforced beams, one way slabs two way slabs, reinforced brick work, T-beams, columns, staircases, retaining walls, water tanks steel design, welded connections, riveted joints, design and construction of steel columns, beams roof trusses plate girders.

7. **Hydraulics**: Fluid properties, hydrostatics, measurements of flow, Bernoulli's theorem and its application, flow through pipes, flow in open channels, weirs, flumes spillways, pump and turbines.

8. **Public Health Engineering**: Quality of water, source of water supply, purification of water, distribution of water, need of sanitation, sewerage systems, circular sewers oval sewers, sewer appurtenances surface water drainage, sewage treatments.

9. **Transport and Highway Engineering**: Classification of Highway, Structural and geometrical components, Design of various elements of highway, Junction and intersection, Type of curves, Elements of curves, Setting out of curves, Materials for highway their testing and types, Physical, Chemical and Mechanical properties, Classification of traffic, Traffic survey, Important characteristics and Highway Construction.

10. **Port- Harbour and Airport**: Definitions and Classifications, Important Components and their Characteristics, Site Investigation and Requirement, Navigation and Control, Essential Amenities and Requirement.

11. **Estimating Costing & Valuation:** Estimate, glossary of technical terms, analysis of rates, methods and unit of measurement, Item of Works – earthwork, Brickwork (Modular & Traditional bricks), RCC work, Shuttering, Timber work, Painting, Flooring, Plastering, Boundary wall, Brick building, water tank, septic tank, bar bending schedule, Centre line method, Mid-section formula, trapezoidal formula, Simpson's rule, Cost estimate of Septic tank, flexible pavements, Tube well,, isolates and combined footings, steel truss, piles and pile caps. Valuation –value and cost, scrap value, salvage value assessed value, sinking fund, depreciation and obsolescence, methods of valuation.

E.O TO CHIEF ENGINEER

SYLLABUS FOR RECRUITMENT OF SURVEYOR

Trade Theory and Practical

Surveying:-

Preparation of site plan using chain/tape, Prismatic compass, Perform Auto CAD drawing.Different site survey using Plane Table (radiation, intersection, traversing, determination of height), Theodolite (measurement of angle, traversing, computation of area), Levelling instrument (different levelling-differential, reciprocal etc), tacheometer (determination of horizontal and vertical distance, constants etc.) field book entry, plotting, mapping, calculation of area, simple building drawing using CAD.

Making topographical map using level instruments with contours, performing survey using Total Station and preparation of map (measurement of angle, co-ordinates and heights, downloading survey data and plotting), making of site plan by Cadastral survey (preparation of site plan, calculation of plot area etc.) performing road project survey (location survey and preparation of route map, profile/longitudinal/cross sectional levelling and plotting) and survey drawing using CAD. Drawing of cartographic projection, setting and application of GIS and GPS techniques in fields, collection and processing of data, performing hydrographic survey (determining hydrographic depth, measuring velocity of flow, determining cross sectional area of river, calculating the discharge of river etc).Setting out Works – setting out buildings, culvert, Centre line of dams, bridges and slope of earthwork. Drawing of building by CAD and preparation of estimation.

E.O TO CHIEF ENGINEER