



Career Opportunities in the Department of Atomic Energy (DAE)

M Ramanamurthi
Human Resource Development Division, BARC



CAREER
OPPORTUNITIES

Attributes of Nuclear Technology

- *Nuclear technology is knowledge intensive*
- *Needs well trained Human Resource and strong industrial infrastructure for its exploitation.*
- *Needs synergistic pursuit of basic research and technology development*
- *Requires safety analyses encompassing the entire gamut of engineering & health related safety issues*

Human Resource Development

Hire and train approach- to produce industry ready manpower

*Practising professionals as adjunct faculty - Tacit ,
Explicit and Implicit Knowledge is transferred*

Over 7500 have graduated so far

Manpower Requirements from Indian Universities

OCES

One-year Orientation Course For Engineering Graduates (B.E.

/B.Tech/B.Sc.-Engg.)

and Science Post-graduates (M.Sc .) at following BARC

Training Schools

- *At BARC, Mumbai - Since 1957*
- *At IGCAR, Kalpakkam - Since 2006*
- *At RRCAT, Indore - Since 2000*
- *At NFC, Hyderabad- Since 2001*
- *At AMD, Hyderabad- Since 2010*

DGFS

Two-year Dae Graduate Fellowship Scheme for Engineering Graduates and Physics Post Graduates

For those who are selected for BARC Training School and also secure admission for M.TECH. in IIT- Bombay, Delhi, Kanpur, Kharagpur, Madras, Roorkee, Guwahati, (BHU)-Varanasi, NIT- Rourkela and M.Chem.Engg. At ICT, Mumbai

Paid stipend and tuition fee during M.Tech.

Joint Guideship for 2ND year project from IIT and DAE

Absorption after completion of M. Tech. into one of the following DAE units

- 1. BARC, MUMBAI*
- 2. RRCAT, INDORE*
- 3. IGCAR, KALPAKKAM*

Schedule of TS Selection Process

- *Short advertisement in all newspapers by January- first week*
- *Detailed advertisement in Employment News in January-second week*
- *Online applications –January 6, 2015 to February 6, 2015*
- *Online Written Test March 12, 2015- March 20, 2015*

Interviews for five weeks in 18th May- 18th June

Eligible Disciplines and their Codes

Code	Discipline (to be selected in online application form)	Subject in the Qualifying Degree as awarded by the University / Institute of the Candidate	GATE Paper (for screening through GATE channel)
ME	Mechanical Engineering	Mechanical Engineering	Mechanical Engineering
CH	Chemical Engineering	Chemical Engineering	Chemical Engineering
MT	Metallurgical Engineering	Metallurgical Engineering	Metallurgical Engineering
EE	Electrical Engineering	Electrical Engineering, or Electrical & Electronics Engineering	Electrical Engineering
EC	Electronics Engineering	Electronics Engineering, or Electronics and Communication, or Electronics and Control, or Electrical and Electronics Engineering, or Electronics and Instrumentation	Electronics and Communication Engineering
CS	Computer Science	Computer Science	Computer Science and Information Technology
IN	Instrumentation Engineering	Instrumentation Engineering, or Electronics and Instrumentation	Instrumentation Engineering
CE	Civil Engineering	Civil Engineering	Civil Engineering

Eligible Disciplines and their Codes

Code	Discipline (to be selected in online application form)	Subject in the Qualifying Degree as awarded by the University / Institute of the Candidate	GATE Paper (for screening through GATE channel)
PH	Physics	M. Sc. In Physics/Applied Physics B.E./B.Tech. In Engineering Physics	M. Sc. Applicants must take GATE in 'Physics'; B.E./B.Tech. In Engineering Physics may take GATE either in 'Physics' or in 'Engineering Science'
CY	Chemistry	M.Sc. In Chemistry	'Chemistry'
BS	Bioscience	M. Sc. In Agriculture, Biochemistry, Microbiology, Molecular Biology, Biotechnology, Genetics, Botany, Zoology, Plant Science, Plant Breeding, Plant Pathology, Entomology, Food Technology, Animal Science, Life Sciences & Biosciences Or B.E./B.Tech./B.Sc.(Tech.) in Food Technology	'Life Sciences' or 'Biotechnology'
GE	Geology	M.Sc. Or equivalent M. Tech. In Geology / Applied Geology / Applied Geochemistry OR 5-Year Integrated M. Tech. In Geological Technology	'Geology & Geophysics'
GP	Geophysics	M. Sc. In Geophysics / Applied Geophysics or 5-Year Integrated M. Tech. In Geophysical Technology	'Geology & Geophysics'
RSE	Radiological Safety Engineering	This is not a separate discipline but an additional Training Scheme option at the BARC Training School, Mumbai for M. Sc. Applicants in Physics or Chemistry	Physics' or 'Chemistry' as per the degree discipline of the applicant

Table-2: Training Schools, Eligible Disciplines, Orientation of Training

Training School	Disciplines	Orientation of Training
BARC, Mumbai (since 1957)	ME, CH, MT, EE, EC, CS, IN, CE, PH, CY, BS, RSE	Engineering Design, Development, Operation and Maintenance of Nuclear Reactors
		Research in frontier areas of Basic and Engineering Sciences
IGCAR, Kalpakkam (since 2006)	ME,CH, EC, PH, CY	R&D and Engineering related to Fast Breeder Reactors
		Research in frontier areas of Basic and Engineering Sciences
RRCAT, Indore (since 2006)	EE, EC, PH	R&D and Engineering related to lasers, accelerators, plasma physics, cryogenics and superconductivity
NFC-HWB, Hyderabad (since 2001)	ME, CH, EE, EC	Operation & Maintenance and Engineering related to Nuclear Fuel Facilities and production plants for production of Heavy Water to support the Nuclear Power Program
AMD, Hyderabad (since 2010)	GE, GP	Exploration Techniques for Uranium and other Atomic Minerals and related R&D activities

Relevant M.Tech./M.Chem.Engg. Program or Name of Dept/ Centre at the M.Tech./ M.Chem.Engg. Institute	Pre-M.Tech./M.Chem.Engg. Degree (Disciplines)	Institutes**
Mechanical Engineering	BE (Mechanical)	All but ICT
Cryogenic	BE (Mechanical)	Kh
Chemical Engineering	BE (Chemical)	All but Rkl
Applied Mechanics	BE (Civil/ Mechanical)	M
Civil Engineering	BE (Civil)	All but Rkl, ICT
Earthquake Engineering	BE (Civil)	K, R
Nuclear Hydrology	BE (Civil/ Chemical)	R
Metallurgical Engineering, Materials Science/ Engineering	BE (Metallurgy/ Chemical)	All but G, ICT
Electrical Engineering	BE (Electrical/ Electronics)	All but G, ICT
Reliability Engineering, Systems & Control Engineering, Energy Systems	BE (Mechanical/ Electrical/ Chemical)	B, D, Kh, R
Power/ Communication/ Control Engg, Integrated Electronics & Circuits	BE (Electrical/ Electronics)	D, G, R
Instrumentation	BE (Electrical/ Electronics/ Instrumentation)	Kh, M, R
Computer Science, Engineering & Technology	BE (Computer/ Electrical/ Electronics)	All but Rkl, Var, ICT
Applied Optics, Lasers & Optoelectronics	BE (Electronics/Optoelectronics) M.Sc. (Phy/ App Phy)	D
Nuclear Engineering & Technology	BE (Mechanical/ Chemical/ Electrical/ Electronics)	K
Solid State Materials/ Electronic Materials	BE (Electrical/ Electronics) M.Sc. (Phy/ App Phy)	D, R
Electronics Engineering, Electronics and Communication Engineering	BE (Electrical/Electronics)	Rkl & Var

** Institutes where specified M.Tech./ M.Chem.Engg. courses are offered under this scheme: **B = IIT Bombay; D = IIT Delhi; G=IIT Guwahati; K = IIT Kanpur; Kh = IIT Kharagpur; M = IIT Madras; R = IIT Roorkee; Rkl = NIT Rourkela; Var = IIT-(BHU)- Varanasi; ICT = Institute of Chemical Technology, ICT, Mumbai.** Number of DGFS Fellows selected in each approved M.Tech. / M.Chem.Engg. Specialisation at the Institutes under the **DGFS scheme** will depend upon the requirements of **DAE**.

Selection Process- Two Stages

STAGE 1 - SCREENING

Gate Score or Online Test

STAGE 2 - INTERVIEW - MAY & JUNE

At BARC Guest House - Anushakti Nagar, Mumbai

(Train Fare Paid to Attend Interview)

Last Dates for Applications

February 6th , 2015

AGE LIMITS: 26 YRS On August 1 , 2015 for General Category

Age relaxation for (YRS) a) OBC-3 b) SC/ST-5 c) Dependents of those who died in 1984 Riots-5 d) Physically Challenged- 10 (additionally)

Important Dates

Launching of Online Application Portal for OCES/DGFS-2015	6th January, 2015
Last date for Online Application	6th February, 2015
Online Test	12th - 20th March, 2015
Last date for candidates to upload their GATE score	30th March, 2015
Display of List of candidates short-listed for Interview on Online Application Portal	2nd week of April, 2015
Availability based option on Online Application Portal to select Interview Slot for qualified candidates	2nd week of April, 2015
Selection Interviews	18th May - 18th June, 2015
Display of List of Candidates finally selected for OCES-2015 on Online Application Portal	24th June, 2015
Last Date for Selected OCES-2015 Candidates to upload their preferences vis-à-vis different Training Schemes	28th June, 2015
Display of Training Schemes Allotted to selected OCES-2015 Candidates on Online Application Portal	30th June, 2015
Last Date for Selected OCES-2015 Candidates desirous of DGFS to give details of M.Tech/ M.Chem.Engg. admission in a DGFS institute	3rd July, 2015
Declaration of List of Persons Selected for DGFS-2015 on Online Application Portal	2nd week of July, 2015

Eligibility Criteria

For Engineering Disciplines

(ME, CH, MT, EE, EC, CS, IN, CE)

B.E. / B.Tech. / B.Sc. (Engineering) / 5-year Integrated M.Tech. / A.M.I.E. / A.M.I.E.T.E./ A.M.I.I.Ch.E. / A.M.I.I.M. with a minimum of 60%* aggregate marks in one of the eight eligible engineering disciplines. Applicants opting to be considered on the basis of a GATE score must have a valid GATE-2014 or GATE-2015 Score in the same engineering discipline as the qualifying degree discipline. Those having qualifying degree in branches like Aerospace, Automobile, Industrial Production, Reliability, Ceramics, Architecture, Geology, Mining, Bio-Medical Electronics/ Instruments, Communication, Information Technology, Master of Computer Applications, Dyes & Dye Intermediates, Electrochemical, Energy Systems, Oils & Fats, Paints & Varnishes, Petrochemicals, Plastics, Paper, Sugar Technology, Textiles, Mechatronics etc. are not eligible

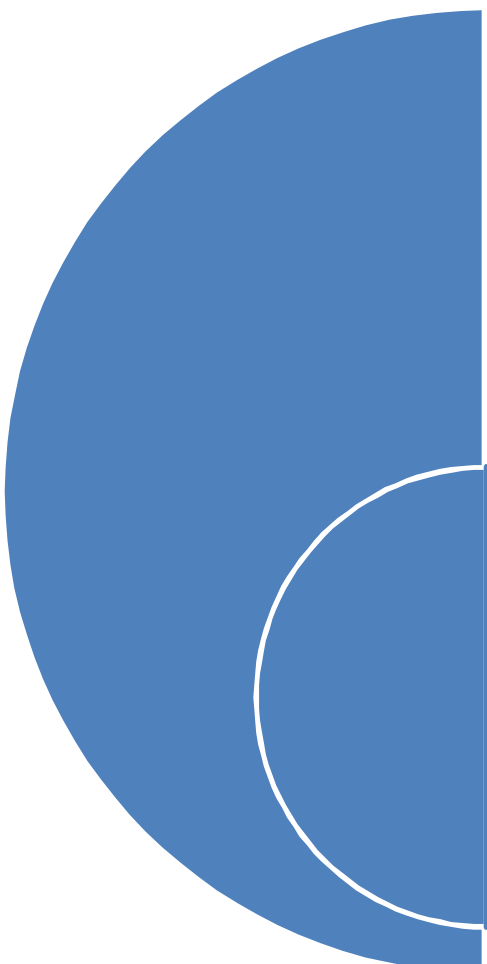
*A minimum of 60% marks means the marks as per the ordinances of the respective university.



For Physics Discipline (PH)

M.Sc. in Physics / Applied Physics or B.E. / B.Tech. in Engineering Physics with a minimum of 60%* aggregate marks in the qualifying degree. M. Sc. candidates (other than those with a 5-year integrated M.Sc.) must have a minimum of 60%* aggregate marks in B.Sc. additionally. M.Sc. applicants should have Physics and Mathematics at B.Sc. or at subsidiary and / or ancillary level in case of 5-year integrated M.Sc. Physics postgraduate applicants opting to be considered on the basis of a GATE Score should have a valid GATE-2014 or GATE-2015 Score in 'Physics'. Applicants having B.E. / B.Tech. (Engineering Physics) as qualifying degree can apply on the basis of a valid GATE-2014 or GATE-2015 Score either in 'Physics' or in 'Engineering Science'.

*A minimum of 60% marks means the marks as per the ordinances of the respective university.



For Chemistry Discipline (CY)

M.Sc. in Chemistry with Physics up to B.Sc. or at subsidiary and / or ancillary level in case of 5-year integrated M.Sc. and Mathematics at Std. XII or at B.Sc. or at subsidiary and / or ancillary level in case of 5-year integrated M.Sc., with minimum of 60%* aggregate marks in M.Sc. as well as in B.Sc. Applicants opting to be considered on the basis of a GATE Score should have a valid GATE-2014 or GATE-2015 Score in 'Chemistry'.

*A minimum of 60% marks means the marks as per the ordinances of the respective university.



For Biosciences Discipline (BS)

M.Sc. in Agriculture, Biochemistry, Microbiology, Molecular Biology, Biotechnology, Genetics, Botany, Zoology, Plant Science, Plant Breeding, Plant Pathology, Entomology, Food Technology, Animal Science, Life Sciences and Biosciences with a minimum of 60%* aggregate marks in M.Sc. as well as in B.Sc.; or B.E. / B.Tech. / B.Sc. (Tech) only in Food Technology with minimum of 60%* aggregate marks. M.Sc. applicants should have Physics or Chemistry or Biochemistry or Agriculture Chemistry at the B.Sc. stage or at subsidiary and / or ancillary level in case of five year integrated M.Sc. Applicants opting to be considered on the basis of a GATE Score should have a valid GATE-2014 or GATE-2015 Score in 'Life Sciences' or in 'Biotechnology'. Those having M.Sc. with specialisation in subjects like Fisheries, Horticulture, Forestry, Agronomy, Animal Husbandry, Marine Biology and Home Science etc and B.E. / B.Tech. / M.Tech. in Biotechnology / Genetic Engineering are not eligible.

*A minimum of 60% marks means the marks as per the ordinances of the respective university.

For Radiological Safety Engineering (RSE)

M.Sc. in Physics or Chemistry with Physics and Chemistry up to B.Sc. or at subsidiary and / or ancillary level in case of integrated M.Sc., and Mathematics at Std. XII or at B.Sc. or at subsidiary and / or ancillary level in case of 5-year integrated M.Sc. , with minimum of 60%* aggregate marks in M. Sc. as well as in B. Sc...

*A minimum of 60% marks means the marks as per the ordinances of the respective university.



For Geology Discipline (GE)

M.Sc. or equivalent M.Tech. in Geology / Applied Geology / Applied Geochemistry with Geology at B. Sc. or 5-Year integrated M. Tech. in Geological Technology. All applicants must have two subjects out of Mathematics, Physics and Chemistry up to B.Sc. or at subsidiary and / or ancillary level in case of five year integrated M.Sc./M.Tech., with minimum of 60%* aggregate marks in M.Sc. / M.Tech. as well as in B.Sc. Eligible candidates must have passed Mathematics in Std. XII. All applicants opting to be considered on the basis of a GATE Score should have a valid GATE-2014 or GATE-2015 Score in 'Geology and Geophysics'.

*A minimum of 60% marks means the marks as per the ordinances of the respective university.

For Geophysics Discipline (GP)

M.Sc. in Geophysics / Applied Geophysics or 5-Year Integrated M. Tech. in Geophysical Technology with Mathematics up to B.Sc. or at subsidiary and / or ancillary level in case of 5-year integrated M.Sc./M.Tech., with a minimum of 60%* aggregate marks in M.Sc. as well as in B.Sc. Applicants opting to be considered on the basis of a GATE Score should have a valid GATE-2014 or GATE-2015 Score in 'Geology and Geophysics'.

*A minimum of 60% marks means the marks as per the ordinances of the respective university.

Admission to DGFS

Admission to DGFS: Candidates having a qualifying degree in any of the eight eligible Engineering disciplines or who are physics postgraduates and who meet the corresponding eligibility criteria are eligible to apply for DGFS provided they secure admission for M.Tech. / M.Chem.Engg. starting in the academic year 2015 in select Institutes and specialisations listed earlier. Confirmation of M.Tech. / M.Chem.Engg. admission should be communicated by July 3, 2015.

DGFS is only allotted to the most meritorious candidates.

CUT-OFFS For Screening in to OCES/DGFS-2014 Selection Interviews

Discipline	OCES-2014	
	Cut-off GATE Score for screening in to Selection Interview	Cut-off Online Percentile Rank for screening in to Selection Interview
ME	723	90.7
CH	616	88.3
MT	540	63.4
EE	736	95.8
EC	822	98.1
CS	740	96.4
IN	599	89.2
CE	632	
PH	609	87
CY	554	74.3
BS	669	93.6
GE	530	65.8
GP	621	70

During Training

General

Stipend	: RS. 20000/- P.M.
Book Allowance	: RS. 10000/- ONE-TIME
Accommodation	: OCES-at DAE Hostel Mandatory : DGFS-at IIT Hostel Mandatory

Structure of Course

Nuclear Related	: 30%
Discipline Specific	: 30%
Project (12 Weeks)	: 30%
Vacation (4 Weeks)	: 10%

Assessment

Examinations	: After Every 6 Weeks
Course Viva-Voce	: After Every 12 Weeks
Project Viva-Voce	: After 5 Weeks & Final

On Appointment

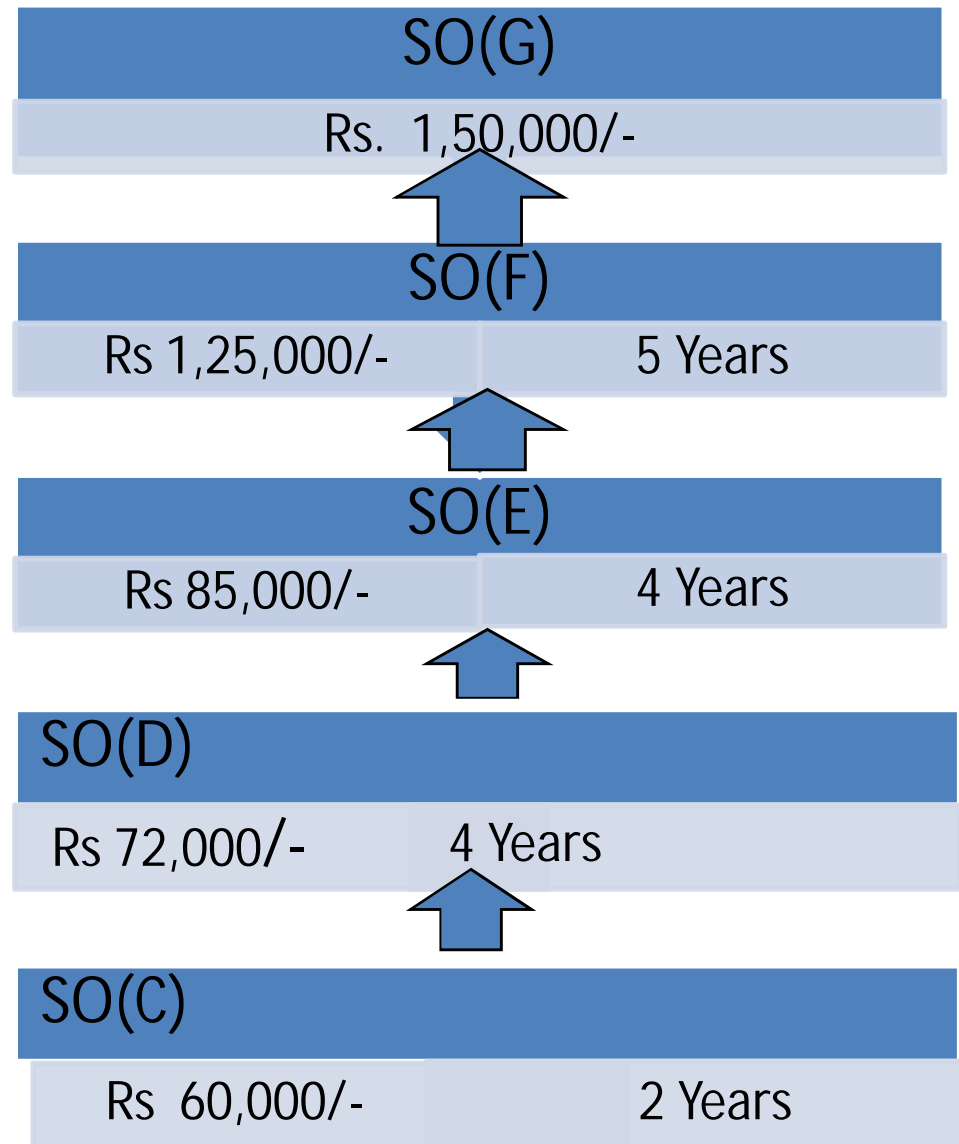
Total Emoluments

About Rs. 61,000/-

*(Upward Pay Revision under the consideration of 7th Central
Pay Commission)*

*Absorbed as Group 'A' Gazetted Officer –Government of
India on the post of Scientific Officer(C) except in the case
of PSUs where service rules of the corporations apply.*

Career Progression - Grade, Gross Emoluments and Minimum Incumbency Period



Training Schools Programmes Numbers Joined in OCES/DGFS-2014

Training School Location	Numbers
BARC, Mumbai	141
RRCAT, Indore	7
NFC-HWB, Hyderabad	31
IGCAR, Kalpakkam	48
AMD, Hyderabad	19
DGFS	11
TOTAL	257

Activities of Board of Research in Nuclear Sciences

- Identify and fund R & D Programmes AND Projects.
- Award fellowships to pursue doctoral programmes.
- Award research grants to young scientists.
- Organize symposia on topics of relevance and interest to DAE as well as in frontier areas of science and technology.
- Extend financial support to symposia and conferences organized by professional bodies and other agencies.
- Establishment of chairs in universities and other institutions of higher learning.
- Create infrastructure facilities for advanced research.
- Identify/Create and support centres of excellence.

Classification of Activities of BRNS

- Advanced Technologies Committee (ATC)
- Basic Sciences Committee (BSC)
- Nuclear Reactor & Fuel Cycle Committee (NRFC)
- Radiation Technologies & Applications Committee (RTAC)

Dr. K.S.Krishnan Research Associateship (KSKRA)

Targeted at promising young scientists & engineers desirous of pursuing a challenging career as part of the R&D programmes of the Department of Atomic Energy

20 Research Associates can be selected every year under the KSKRA scheme and paid a stipend of ₹ 20,000/- per month for a maximum period of 2 years

At the end of 1 year of Associateship, the Research Associates will be considered for absorption as Scientific Officer/Engineer-D, subject to satisfactory performance

Eligibility Criteria:

For Engineers: Ph.D. Degree in Engineering
or

Masters Degree in Engineering (M.Tech./ M.E.) with a minimum of 2-Year R&D experience after obtaining M.Tech./M.E.

For Scientists: PH.D. Degree in Science

The applicants who submit their applications by 1st March will be called for interview, if found to qualify for the same, in June and those who submit their applications by 1st September will be called for interview, if found to qualify for the same, in December of the same year

Other Training Programmes

- Diploma in Radiological Physics (DIPRP) : For Medical Physicists Or Radiological Safety Officers in Hospitals and Industries using Radiation Sources - For PG'S In Physics- 25 nos.
- Diploma in Radiation Medicine (DRM) - To equip Medical Doctors in use of Nuclear Medicine- MBBS + 1 yr. as House Surgeon-10 nos.
- Diploma in Medical Radioisotope Techniques (DMRIT) - Technicians in Nuclear Medicine Depts. of Hospitals - Grads in Science- 10 Nos.

CATEGORY-I & II

Discipline	Trade
Mechanical Engg.	Plant Operator/CPO
Chemical Engg.	Laboratory
Instrumentation	Library Science
Electronics	CPO
Electrical	Fitter
Information Technology	Mill Wright
	Machinist
Telecommunication	Machine Tool Maintenance
Chemistry	Welder
Physics	Turner
Computer Science	A/C Mechanic
	Instrumentation
	Electrical
	Electronics

Conclusions

- *Challenging Problems*
- *Independence in pursuing R&D Problems*
- *Huge pool of technical knowledge base to bank upon*
- *Good working environment*
- *Good starting salary and growth prospects*
- *Great township facilities- school, medical, extra curricular activities*
- *Service to the nation*

EXCELLENT QUALITY OF LIFE

OUR WEBSITES

dae.gov.in

barc.gov.in

npcil.nic.in

barconlineexam.in



Thank You!