



**PUJA (BRUNEI)
ADMISSION BY-LAW**

AND

**PUJA (BRUNEI)
PROFESSIONAL
ASSESSMENT (PPA)
REGULATIONS**

**1st Edition
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PUJA (BRUNEI) ADMISSION BY-LAW

1.01 PUJA (Brunei) is an Institution of multi-professional nature. A common ground has been established for the acceptance of the membership in regard to the following:

- i. Method of assessment.
- ii. The accepted academic qualification.
- iii. The minimum duration for obtaining the academic qualification and the practical experience required.

1.02 Qualification for Membership

The following qualification shall be deemed acceptable to the Council for Qualification to be a Corporate Member or Non-Corporate (Graduate Member, Associate Member and Student member). PUJA (Brunei) adopts and uses the list of accredited degree programmes recognized by the National Accreditation Council, Brunei Darussalam for the Corporate and Graduate Membership.

(a) Corporate Membership

Any applicant who has obtained the academic qualification in surveying, engineering or architecture recognized by and acceptable to the Council of PUJA(Brunei), having obtained the necessary practical experience in the said Profession Assessment (PUJA (Brunei) Professional Assessment) shall be deemed acceptable to the Council for qualification to be CORPORATE MEMBER of the Institution as required under Clause 7 (a) of the Constitution.

(b) Non-Corporate Membership

i. Graduate Member

Any applicant who has obtained the academic qualification in surveying, engineering or architecture recognized by the Council, shall be deemed acceptable as GRADUATE MEMBER of the Institution under Clause 7 (b) (i) of the Constitution.

ii. Associate member

Any applicant who has at least three (3) years experience in any of the said professions and has obtained the academic qualification which is acceptable to the Council, may be accepted for ASSOCIATE MEMBER of the Institution under Clause 7 (b) (ii) of the Constitution.

iii. Student member

Any student who has been admitted to a course in any of the professional discipline recognized by PUJA (Brunei) may be accepted for STUDENT MEMBER of the Institution under Clause 7 (b) (iii) of the Constitution.



1.03 (a) PUJA(Brunei) Professional Assessment (PPA) will consist of two parts, written submission and interview in accordance to the PPA regulations:-

i. Written submission :-

To assess the knowledge, skill and maturity at a level required of the candidate in order to fulfill his professional duties and is to determine his understanding of his own management of the said professional practice.

ii. Interview :-

To assess his interaction :-

1. In knowing his own roles, duties and his obligations as a professional surveyor, engineer or architect respectively;
2. In dealing competently with other members of the project team.

(b) The Council will appoint a PPA panel on behalf of PUJA (Brunei) to conduct, assess and recommend. The PPA panel should consist of three (3) assessors with one to be lead assessor; all of whom must be Corporatemembers from the relevant professional discipline.

(c) A person who has passed PUJA (Brunei) Professional Assessment does not automatically become a member of PUJA (Brunei). Membership will be awarded by the council upon approval of the application.

1.04 Practical experience

- a) A candidate, other than a research and teaching candidate should have a minimum period of three (3) years of practical experience of a satisfactory nature in the said profession after obtaining the academic qualification for the surveying, engineering or architecture qualification.
- b) A candidate must maintain a record of practical experience in the form of a log book to be signed and certified by the supervising qualified Surveyor, Engineering or architect.

1.05 Research candidate

- i) An applicant who has obtained an academic qualification in Surveying, Engineering or Architecture recognized by the council.
- ii) Must satisfactory complete research in the Surveying, Engineering or architecture for a minimum of three (3) years.



1.06 Teacher candidate

- i) An applicant who has obtained an academic qualification in Surveying, Engineering or Architecture recognised by the Council.
- ii) Must be engaged in teaching an approved Surveying / Engineering / Architecture degree / advanced diploma course at the time of his/her application.
- iii) Have been engaged, in teaching the final two (2) years of the engineering / architecture / surveying course for a period of at least one (1) year.
- iv) Have had the equivalent of one (1) year practical engineering / architectural / surveying experience which can be made up of separate parts.
- v) Have had in addition to (iii) and (iv) either not less than three (3) years experience which may include a period on:
 - a) An approved course of full time post-graduate study or
 - b) On research for the award of a higher degree or
 - c) Research done whilst holding the position of teacher in an approved degree course.

1.07 Candidate over forty (40) years of age

A candidate over forty (40) years of age with at least fifteen (15) years experience, who is unable to produce drawings and documents prepared by him within recent years, may submit a detailed report of some of his major works in surveying, engineering or architecture in which he was engaged, accompanied by not more than six (6) drawings (not necessarily prepared by him) to illustrate his work. This report must be certified by a sponsor who must be a Corporate Member of PUJA (Brunei) of the relevant professional discipline.

1.08 Certificate of Membership

Certificate of membership in the form approved by the Council shall be issued to Corporate Members of the institution. Such certificate shall bear the seal of the Institution.

1.09 Assessment Period

Assessment is to be conducted two (2) times a year.

1.10 Assessment Fee

All candidates are to pay an assessment fee which is to be determined in each year.



- 1.11 Before the Membership Committee makes final recommendation to the Council, the Committee is to post the names of the candidates at PUJA (Brunei) Headquarters notice board for one month. Any member may raise comments on the qualification and character of the candidate for admission to the Secretary General PUJA (Brunei) within this period. The Membership Committee is to include the comments in their report to the Council.



PUJA (BRUNEI) DISCIPLINARY REGULATIONS (Version 2)

1. Every member shall be bound by the Constitution, Code of Professional Conduct and Regulations of the Institution.
2. Under Clause 12(a) of the Constitution, the Council may make Disciplinary Regulations in all matters relating to discipline.
3. Under Clause 12(b) of the Constitution, if any member is convicted by a court law of any offence which involves fraud or dishonesty, the Council shall have the power to expel such member summarily without any notice or hearing.
4. Any complaint shall be made to the Council in writing and shall be supported by such statutory declaration as the Council may require.
5. The Council shall, upon receiving any complaint, subject the complaint to a review.
6. The Council may also, on its own motion, subject any information concerning any improper or dishonourable act or conduct of a member to a review.
7. For the purpose of conducting such review, the Council may enlist the assistance of any one or more Corporate Members.
8. On the completion of a review, the Council may:
 - a) Dismiss the complaint,
 - b) Issue letter of advice or letter of warning,
 - c) Refer the matter to a Disciplinary Committee for a formal inquiry,
 - d) Make such order as the Council considers appropriate.
9. The Council may appoint a Disciplinary Committee to formally inquire into a complaint.
10. A Disciplinary Committee shall comprise:
 - a) The Vice President of PUJA (Brunei) of the same professional discipline or any Council member that the Council may see fit, who will be the Chairman of the Disciplinary Committee,
 - b) A Corporate Member of the same professional discipline,
 - c) A Corporate Member of different professional discipline.
11. Upon due inquiry into the complaint, the Disciplinary Committee shall report its finding and make recommendations to the Council.



12. Before any disciplinary action against such member is taken, the Secretary General shall give such member four (4) weeks written notice to attend a meeting of the Council and shall inform the member of the complaints.
13. If at such meeting the Council decide that the member whose conduct is the subject of the investigation has acted in an improper or unprofessional manner, the Council may make one or more of the following orders:-
 - a) Expulsion from membership of the Institution;
 - b) Suspension from membership for any specified period;
 - c) Reprimand or admonition.
14. The decision of the Council shall be communicated by registered post by the Secretary General to the member concerned.
15. In the event of the Council making an order against the member, the Council may also refer all the facts of the case to the Board of Architects, Professional Engineer and Quantity Surveyors for any action such Board may consider necessary under the provisions contained in the Registration by the Board of Architects, Professional Engineers and Quantity Surveyors.



THE PUJA (BRUNEI) PROFESSIONAL ASSESSMENT REGULATIONS

1.0 General

- 1.1 The PUJA (Brunei) Professional Assessment (PPA) will be conducted two (2) times a year in Brunei Darussalam in the month of March and September.

All applications must reach the Secretary General of PUJA (Brunei) latest by 14th February or 14th August. The Secretary General of PUJA (Brunei) will transmit the applications for approval by the respective division committee. Applications who have the required qualifications and practical experience will be informed by the committee that their applications to attend the Professional Assessment has been approved.

The candidate will be informed the followings :-

- a) The latest date by which the documents have to reach the PUJA (Brunei) office.
 - b) The place, time and the date of the Professional Assessment.
- 1.2 All applications for corporate membership must use PUJA (Brunei) application forms and are to be submitted with the PPA fees.
- 1.3 The documents should be sent by the candidate to the PUJA (Brunei) Headquarters direct or by registered post securely packed. The parcel should be marked, at the top left hand corner, Professional Assessment Documents. Each sheet of drawing and every document must bear the candidate's name.
- 1.4 Each accepted candidate will be required to be present at an appointed place and time for an interview on the report submitted. After this interview the candidate may be required to return later that day or the next day to write an essay on a subject or subjects selected by the interviewers, which may include writing specification. A limited amount of reference books can be taken subject to approval.
- 1.5 Unsuccessful candidates will be informed of the reason for failure but no correspondence will be entertained. A list of successful candidates will be brought up at proceeding Council Meeting for Council's approval. Approved successful candidates are to be notified by the Secretary General.

2.0 Documents to be submitted

- 2.1 All candidate are required to submit :
- a) Two (2) copies of a Report, giving an account of their training and experience, prepared in accordance with section 4 : and
 - b) Single copies of other documents and/or drawings (for details see Appendix A to D) duly certified and conforming to one (1) of the alternatives in 2.2 Candidates are required to indicates under which alternatives they wish to apply.



2.2 Details of Documents

- 2.2.1 At least two (2) and not more than four working drawings, detailed design calculations relating to one (1) or more of the candidate's own submitted drawings, and specifications and a set of quantities, comprising abstract, take off sheets of shop list relating either to one of the submitted drawings or to another drawing, not prepared by the candidate, which must also be submitted. A candidate may submit an additional drawing not necessarily prepared by him, to illustrate his experience in the engineering/ architectural/ surveying works; OR
- 2.2.2 A part of a feasibility study involving functional and economic comparison of preliminary designs for an architectural/ engineering/ surveying system, OR a comprehensive report of a major engineering/ surveying/ architectural project, OR a system design of a major engineering / surveying/ architectural works. The above documents should include the followings:
- i) At least one (1) relevant drawing conveying essential features or details of a structure of system;
 - ii) Where appropriate at least three (3) and not more than six (6) sketches containing sufficient details to enable a draughtsman to work them up into drawings without further guidance;
 - iii) Preliminary stress of systems analysis;
 - iv) Quantity, cost of economic analysis as appropriate; OR
- 2.2.3 A candidate, who at the time of this application is engaged in Architectural/ Engineering/Surveying research work, may as an alternative submit, in duplicate, a report or published papers, evidence of research carried out by him. A thesis already accepted for a higher degree may not be acceptable but a candidate may submit a report incorporating a reasonable proportion of the matter for a higher degree thesis, together with evidence of new matters in extension of his research work. This is in addition to the Report on training and experience. The subject of his research should be related to the practice of architecture/ engineering / surveying. The report may be illustrated by drawings, and
- 2.2.4 A candidate who is a teacher must submit:
- (a) Two (2) copies of a report giving an account of his training and experience prepared in accordance with The Professional Interview Regulations; and
 - (b) Two (2) copies of a report of not more than four thousand (4000) words in evidence of research carried out by him. This report should include a brief summary of the candidate's research work, stating the subject matter and objectives, together with a short list of any papers he has published. A thesis prepared for a higher degree is not acceptable but a candidate may include the matter of this thesis together with new matter. The report may be illustrated by drawings, and must describe work actually carried out by the candidate, or for which he was substantially responsible. A survey of existing knowledge of a subject will not be considered adequate. A candidate will be tested on his knowledge of matters arising out of his research, his command of methods appropriate to the handling of them, and his understanding of the relevance of this



work to engineering / architecture / surveying. The report should include details of the engineering course taught by him.

- 2.2.5 Must describe work actually carried out by the candidate, or for which he was substantially responsible. A survey of existing knowledge of subject will not be considered adequate. A candidate will be tested on his knowledge of matters arising out of research, and his command of the methods appropriate to the handling of them. A thesis, published papers of report must be certified, OR
- 2.2.6 A candidate whose experience lies in the maintenance of an electrical/mechanical plant of engineering system, can submit a detailed description of the operations of the plant of system together with the maintenance schedule which he has formulated. In his submission he should clearly indicate his contributions which should show applications of architectural/ engineering / surveying principles. A critical appraisal of the design of the architectural/ engineering / surveying system which may not be the work of the candidate, should be included. Details of modifications made to the existing system which are the work of the candidate should also be submitted, OR
- 2.2.7 A candidate over forty (40) years of age with least fifteen (15) years experience, who is unable to produce drawings and documents prepared by him within recent years, may submit a detailed report of some the major work(s) upon which he has been engaged. Preferably accompanied by not more than six (6) drawings (not necessary prepared by him) to illustrate this work. This, report, which is in addition to the Report of training experience should be of three thousand (3000) to four thousand (4000) words and must be submitted in duplicate.

3.0 Certification of Documents

- 3.1 Every drawing and document is to be signed by the architect/ engineering/ surveyor who is in a responsible position as the employer or the principal for it or under whom it was prepared. This person must also certify on the prescribed form that these are the work of the candidate this must be clearly indicated and initialed by the architect/ engineering/ surveyor, it is essential that the drawings and documents submitted shall be the work of the candidate in the ordinary course of his employment. Drawings and documents prepared as exercises during university or collage courses are not admissible. The Report need only be taken of drawings, sketches, photographs, and other documents which will be returned to candidates, normally immediately after the interview, but the Institution can accept no responsibility for them.

4.0 Report on Training and Experience

- 4.1 The object of this report is to inform the Interviewers about the candidate's architectural/engineering/ surveying training and experience throughout his career. The report, which should be of one thousand five hundred (1500) to two thousand (2000) words, must be typewritten and submitted in duplicate.
- 4.2 At the head of the report the candidate must set out in chronological order, giving the months and years in each case, the inclusive dates of the particular periods of the training and experience he has had. He should include in this list any periods devoted to a degree or diploma course or other fulltime or sandwich course at an architectural/ engineering/ surveying college, to any vacation employment on architectural/ engineering/ surveying work, and to any post graduate study or research.



- 4.3 Immediately below this summary a candidate must state the total time he has spent:
- a) In an architect's/ engineer's/ surveyor's office (or on research or as a teacher in architecture/ engineering/ surveying) ;
 - b) In initial pre-design filed and feasibility studies, eg. Surveying, soil investigations, system analysis. Etc;
 - c) In upon works. Eg. Supervision of organization of works, operations and maintenance.

When periods of time on works or in the office have to be aggregated to make up the periods required by the Bylaws, full details must be tabulated.

- 4.4 In the report (which must strictly avoid resemblance to a mere inventory of words prepared and executed) the candidate must deal fully with the tasks on which he has been employed, whether in design, construction, operations, manufacture or research. This account should be in chronological sequence and should explain clearly the precise position, the candidate has occupied in each case and the degree of responsibility assigned to him. He should enlarge on any special problems he has met and within the permissible limits, explain how they were dealt with, and should also enlarge on any subject in which he has specialized or obtained exceptionally good experience. Where possible, some indications of the size and cost of the works should be given.
- 4.5 Throughout the report reference should be made to the candidate's employers of immediate superiors who have been responsible for his practical training or under whom he has served, giving the names and appointments and stating their grade. If any, in the Institution.

5.0 The Professional Interview

- 5.1 When a candidate attends the professional Interview all his practical experience will be assessed/not only on a time basis but also on merit. In general the interview is intended to test the candidate's :
- a) Grasp of the application of engineering/ architectural/ surveying principles to the solutions of problems arising in the investigation, planning of construction of architectural/ surveying/ engineering works or in research ;
 - b) Capacity to accept professional responsibility;
 - c) Ability to communicate.
- 5.2 Thus, at the Professional Interview a candidate, regardless of his branch or specialty, will be required to show that he can apply in practice the theory of at least one (1) of the branches of engineering/ architectural/ surveying science, and has acquired an understanding of the fundamental process of investigation, planning, design or construction by actually taking part in, making a contribution to, one (1) or more of these processes in connection with an engineering project, whether or not it is brought to fruition.



- 5.3 A candidate is required to submit certain documents, to attend for an oral examination, to write an essay and to answer question(s) on topics relating to the Code of Professional Conduct. A candidate is expected to satisfy the Interviewers in all these aspects of the Interview.
- 5.4 The Oral Examination: Each accepted candidate will be required to attend an appointed place and time to be interviewed by two (2) Corporate Members of the Institution on his practical experience with particular reference to its quality.
- 5.5 The Essay: Section A and Section B
- 5.5.1 A candidate shall, after the oral examination, be required to write an essay on one (1) from two (2) alternative subjects selected by the Interviewers (Section A) and answer a question on the code of Professional Conduct (Section B).
- 5.5.2 Both sections of the essay are intended primarily as a test of the candidate's knowledge of and ability to communicate in good English, and to marshal his thoughts and then express them on paper in a clear and concise manner with which the candidate may be expected to be familiar with as he should be able to answer. 1 ½ hours will be allowed for each section.
- 5.5.3 In section B the candidate will be asked to answer one (1) question from two (2) alternative questions selected by the Interviewers from a list of questions made available to the candidate.
- 5.5.4 It is the responsibility of the Council that young surveyors/ engineering/ architects will be encouraged to read and discuss a wide range of current topics and be aware of the Code of Professional Conduct.



APPENDIX A : GUIDANCE ON WRITTEN SUBMISSION

- A. A candidate whose academic qualification is in engineering / architecture / surveying (other than a research candidate or a teacher in engineering / architecture / surveying).
- A1. A candidate, other than a research candidate whose academic qualification is in engineering / architecture / surveying must:
 - a) Have obtained an exempting degree, or equivalent qualification in engineering / architecture / surveying ;
 - b) Have had a minimum period of practical experience of a satisfactory nature.
- A2. A candidate will be required to have had experience in :
 - a) i) The investigation, Planning, design construction or management of engineering / architecture / surveying works and/or
 - ii) Specialist experience (that have contributed to the investigation, Planning, design construction or management of engineering / architecture / surveying works); and
 - b) Will be required to satisfy the Interviewers that he had sufficient field or other experience to enable him to appreciate the problems involved in the practical application of his studies and the contribution made by those studies to the carrying out of engineering / architecture / surveying projects.
- A3. Provided a candidate has met the requirement of para A2 the period of practical experience required to comply with para A1 (b) may include experience in one of the followings :
 - a) Engineering / Architecture / Surveying research.
 - b) The teaching of engineering / architecture / surveying
 - c) Approved courses of full-time postgraduate studies.
- A4. A candidate will be required to submit two (2) copies of a report giving an account of his training and experience prepared in accordance with The Professional Interview Regulations.
- A5. A candidate will also be required to submit single copies of documents prepared in the course of this experience as required under the Professional Interview Regulations.
- A6. It is essential that the drawings and documents submitted should have been made in the ordinary course of the candidate's employment. Drawings and documents prepared as exercises during university or college courses are not admissible.
- A7. It is essential for drawings submitted by candidates to be of works that is intended to be carried out. Designs for substantial temporary works incidental to construction will be accepted. Drawings should be complete, and properly dimensioned and annotated having regard to the purpose they are required to serve. They should show the candidate's intention clearly and unmistakably.



- A8. Calculations. Including those using standard computer programs should be of the form usually required for the particular type of work or, where this is not applicable, notes explaining the considerations affecting the design and reasons for the methods adopted should be submitted. If specialist computer programs are submitted they must be substantially the candidate's own work and must be accompanied by proper documentation.
- A9. A candidate submitting documents single copies only relating to a feasibility study of reportwork must submit part of a feasibility study or report for a project, or a functional and economic comparison or preliminary designs for a works or system, or a study of technical design aspect of a chosen layout or system involving several works, which must include, in all cases, the followings:
- a) At least two (2) and not more than four (4) drawings conveying essential features or details of a works or system; which need not have been prepared entirely by the candidate, must non-the-less have been based on preliminary drawings and sketches prepared by him ; and
 - b) Preliminary stress or systems analysis or other relevant details as appropriate, or properly documented computer programs for such analyses which have been written by the candidate ; and
 - c) Quantity, cost or economic analysis as appropriate.

A candidate may submit an additional drawing to illustrate his experience on site or in the field.

- A10. A candidate submitting documents relating to the designs or construction of engineering / architecture / surveying works must submit single copies only.
- a) At least two (2) and not more than four (4) workings drawings ; the drawings which need not have been prepared entirely by the candidate, must none-the-less have been based on preliminary drawings and sketches prepared by him ; and
 - b) Detailed design calculations relating to one (1) or more of the candidate's submitted drawings; or properly documented computer programs for such calculations which have been written by the candidate; and
 - c) A set of quantities including taking-off sheets or cost estimates relating either to one (1) of the submitted drawings or to another drawing not prepared by the candidate which much also be submitted.

A candidate may submit an additional drawing to illustrate his experience on site or in field.

- A11. A candidate submitting documents relating to specialist experience must submit single copies only:
- a) Appropriate drawings, and calculations or computer programs relating to the designs of a project or system analysis; and
 - b) Notes of records of field work.



- A12. A candidate over forty (40) years of age with at least fifteen (15) years experience, who is able to produce drawings and documents prepared by him within recent years, may submit a detailed report of some of major engineering / architectural / surveying work(s) upon which he has been engaged, preferably accompanied by not more than six (6) drawings (not necessarily prepared by him) to illustrate this work. This report, which is in addition to the report of training and experience, should be of three thousand (3000) to four thousand (4000) words and must be submitted in duplicate.



APPENDIX B: A CANDIDATE WHO IS A TEACHER IN ENGINEERING / ARCHITECTURE / SURVEYING

B1. A candidate who wishes to be interviewed on the basis as a teacher of engineering / architecture / surveying must :-

- a) Possess the necessary academic qualification and
- b) Be engaged in teaching an approved engineering / architecture / surveying degree / advanced diploma course at the time of his application and.
- c) Have been engaged, in teaching the final two (2) years of the engineering / architecture / surveying course for a period of at least one (1) year;
- d) Have had the equivalent of one (1) year practical engineering / architectural / surveying experience which can be made up of separate parts and.
- e) Have had in addition to (c) and (d) either not less than three(3) years experience which may include a period on
 - d) An approved course of full time post-graduate study or
 - e) On research for the award of a higher degree or
 - f) Research done whilst holding the position of teacher in an approved degree course.

B2. A candidate must submit :

- (c) Two (2) copies of a report giving an account of his training and experience prepared in accordance with The Professional Interview Regulations and
- (d) Two (2) copies of a report of not more than four thousand (4000) words in evidence of research carried out by him. This report should include a brief summary of the candidate's research work, stating the subject matter and objectives, together with a short list of any papers he has published. A thesis prepared for a higher degree is not acceptable but a candidate may include the matter of this thesis together with new matter. The report may be illustrated by drawings, and must describe work actually carried out by the candidate, or for which he was substantially responsible. A survey of existing knowledge of a subject will not be considered adequate. A candidate will be tested on his knowledge of matters arising out of his research, his command of methods appropriate to the handling of them, and his understanding of the relevance of this work to engineering / architecture / surveying. The report should include details of the engineering course taught by him.



APPENDIX C: A RESEARCH CANDIDATE

C1. A candidate who wishes to be interviewed on the basis of architectural / engineering / surveying research must:

- (a) Posses the necessary academic qualification and
- (b) Be engaged on architectural / engineering / surveying research work at the time of his application; and
- (c) Have been engaged, in a responsible position, on architectural / engineering / surveying research for a period of at least two (2) years; and
- (d) Have had, in addition to (c),

Either

- (i) Not less than four (4) years practical experience which may include
 - (1) Up to one (1) year on an approved course of full time post graduate study;
 - (2) Up to three (3) years on research for the award of higher degree.
 - (3) Research done whilst holding the position of teacher in an approved degree course:

Or

- (ii) Not less than three (3) years practical experience of which not less than two (2) years have been in the investigation, planning, design, construction or management of engineering / architectural / surveying works.

C2. A candidate must submit

- (a) Two (2) copies of a report giving an account of his training and experience prepared in accordance with The professional Interview Regulations; and
- (b) Two (2) copies of a report of not more than four thousand (4000) words in evidence of research carried out by him. This report should include a brief summary of the candidates research work, stating the subject matter and objectives, together with a short list of any papers he has published. A thesis prepared for a higher degree is not acceptable but a candidate may include the matter of this thesis together with new matter. The candidates experience should include designing and setting up equipment and carrying out the research. Reporting on the results and drawing appropriate conclusions. The report may be illustrated by drawings, and must describe work actually carried out by the candidate of for which he was substantially responsible.

C3. A candidate must submit

A survey of existing knowledge of a subject will not be considered adequate. A candidate will be tested on his knowledge of matters arising out of his research, his command of the appropriate to the handling of them, and his understanding of the relevance of this work to engineering / architecture / surveying.



APPENDIX D: GUIDANCE ON SPECIFIC REQUIREMENTS FOR THE SPECIALIST BRANCHES OF ENGINEERING / ARCHITECTURE / SURVEYING IS LISTED BELOW

D1. Aeronautical

- (a) Where appropriate drawing and calculations for the design of part of an aircraft of guided missile, or the estimation of the performance of its engines or its structures; maintenance schedules for commercial airlines or the armed service;

And

- (b) Notes or records, such as wind tunnel tests on models of aircraft or on parts thereof: flight trials; strength tests on wings or other components; vibration and stiffness tests; methods of construction and joining parts.

D2. Chemical

- (a) Where appropriate drawings and calculations for the design, include or in part, of an item of work relating to chemical or process engineering e.g. heat exchangers; absorption towers distillation plant : liquor filters : gasdedusting equipment : Plant layouts.

And

- (b) Notes or records such as : the operation and / or testing of chemical plant and items of equipment; the preparation of process flow sheets showing heat and mass balances: maintenance and planning co-ordination; the economic assessment of alternative schemes; the instrumentation and automatic engineering techniques.

D3. Civil

- (a) Drawings and calculations for the design of a civil engineering work.

And

- (b) A set of quantities relating to one of the drawings or, if this is not possible, quantities taken by the candidate from drawings not prepared by him will be accepted and in this case, a tracing or print of the drawings should be attached.

In lieu of the above.Civil engineering candidate of specialized area of study may submit their documents as follows:-

D3.1 Hydrology

- (a) Drawings and calculations and quantities for the design of an item such relating to hydrology, e.g. river gauging or percolation gauges: test wells

And



- (b) Records or in surface of ground water hydrology analysis of hydrological data leading to the of water resources; methods of flood and forecasting.

D3.2 Soil and Rock Mechanics

- (a) Drawings and calculations for the design of a project involving soil or rock mechanics, such as the stability of a dam and the adjoining valley; the stability and anticipated settlement of buildings; retaining walls: railway embankments, etc.

And

- (b) Notes and records from site investigations: field and laboratory tests: trail sections etc, for that purpose of the foregoing.

D3.3 Permanent Way

- (a) Drawings and calculations for the design of a major junction layout with a schedule of materials; details of timbering and programme for carrying out the work.

And

- (b) Notes or records such as the survey for and setting out of a layout: investigation into the strength or stability of tracks; assessment of permissible speeds.

Note: Design and construction experience in some other branch of civil engineering will be required in addition to that described under 'Permanent Way'.

D3.4 Public Health Engineering

- (a) Drawings and calculations for the design of works related to any branch of public health engineering, e.g. water supply treatment, sewerage and sewerage treatment; land drainage and river improvement: refuse disposal plants.

And

- (b) Notes or records of a field study for a public health engineering project.

D3.5 Highway

- (a) Drawings, calculation and quantities to show adequate knowledge of the practical application of the theory of civil engineering design in relation to highway engineering e.g. the design of bridges; retaining walls; earthworks, paving and drainage.

And

- (b) Notes or records on highway capacity standards in relation to estimated traffic volume with particular reference to junction layout; highway materials and pavement design; road location in urban or rural areas.



D3.6 Transportation

- (a) Drawings, diagrams and appropriate calculations to show adequate knowledge of the application of the principles of transportation engineering to practical problems and of the use of current techniques in the analysis and planning of transport systems.

And

- (b) Notes or records on the conduct of traffic surveys, and estimation of future transport needs, and on any items such as the following:-

Statistical analysis of data derived from traffic studies; economic factors in relation to a transportation scheme; the functional design of terminal facilities for road, rail or air transport; design and operation of traffic management scheme; the functional design of road or rail networks; the design of traffic signal systems.

D3.7 Town Planning

- (a) Drawings and maps, written statement, and report of the surveys which have been prepared for submission to the appropriate authority in the form of a Development Plan under the Town and Country Planning Act, or similar legislation.

And

- (b) Notes on the factors governing the proposals for population densities, zoning, communications, and basic layout.

D4. Electrical, electronics and Communications

- (a) Drawings, charts, calculations for the design, installation, construction and operation in whole or in part of a system or an item of work related to electrical engineering, for example, utilizing of electric plant and equipment such as generating plant, switchgear, transformers, substations, transmission and distribution, electric drive, communications, radio electronic, instrument and control, etc.

And

- (b) Notes or records on operation, maintenance, testing of electrical plant and equipment are telecommunications equipment; generation, transmission and distribution of power; applications of electricity to transport, industry radio broadcasting and commercial and domestic premises, etc.

D5. Gas

- (a) Drawings and appropriate calculations, including basic considerations for design of an item of work related to gas engineering e.g. gas work plant in general ; gas transmission or distribution system; boosting, storage, and control equipment; gas-consuming units – domestic, commercial or industrial.



And

- (b) A record of some particular practical work in the field such as : the operation of a gas – making plant and the evaluation of any specify features: the installation of a gas-transmission pipeline; the performance of a gas-fired industrial furnace for a specify duty.

D6. Marine

- (a) Where appropriate, drawings and calculations for the design in whole or in part, of an item of work related to marine engineering, such as; steam or internal combustion propulsion, or auxiliary, such as electrical generating sets;

And

- (b) Notes or records, such as the operation or testing of one or more of the foregoing.

D7. Mechanical

- (a) Where appropriate drawings and calculations for the design of an item of work related to mechanical engineering, such as: machinery or machine parts: powerhouse or machine-shop equipment: factory or workshop layouts ; earth moving and quarry plants, compressed air, equipment, diesel traction units, pumps, engines, etc.

And

- (b) Notes or records on methods of machinery; accuracy; workmanship, tolerances; testing properties of materials; performance of and tests on plant and machines; workshop organization, maintenance, work study, etc.

D8. Mining

- (a) Drawings and calculations relating to a mining or metallurgical project such as: shaft design; winding or haulage systems; design of underground or open pit workings; gravel pump and dredge operations, a major ventilation survey; items of metallurgical plant connected with crushing, ore dressings or extractive metallurgy; coal preparation plant.

And

- (b) Notes or records on the operation or testing of mining or metallurgical plant and equipment, such as; power loaders; high-speed tunneling equipment; fire-fighting ranges and equipment; pumping equipment; crushing and floatation equipment; furnaces; electro-metallurgical and hydro-metallurgical plant.

D9. Naval Architecture and Shipbuilding

- (a) Drawings and calculations for an item of work relating to; a design study for a modern ship; the launching or a large ship; a typical ships system, e.g. oil fuel, ballast, fresh and salt water, ventilation and air-conditioning; cargo handling.



And

- (b) Notes or records such as; estimate of ship performance including model tests and propeller design; trials at sea; e.g. propulsive performance; sea keeping; vibration; planning, production and quality control applied to shipbuilding.

D10. Production Engineering

- (a) Where appropriate, drawings and calculations for the design of an item of work related to production engineering; e.g. machine tool engineering; factory layout and materials handling; work analysis; manufacturing systems, automations, etc.

And

- (b) Notes or records such as design for production; forming processes; quality and reliability; techniques of operational research; production cost analysis; human aspects, industrial safety consideration.

D11. Architecture

- (a) Drawings for the design of architectural works.

And

- (b) Notes and records of experience in the followings:

- (i) Involvement in:- meetings with clients, preliminary site investigation and evaluation.
- (ii) Participation in:-

Design decisions in the preparation of schematic and decisions in the preparation of schematic and design development drawings: budgets, estimates, cost plan and feasibility studies.

Pre-contract job management.

Contract documentation.

- (iii) Co-ordination of :- The work of consultants and other services required.
- (iv) Site supervision and project management.

- (c) Knowledge in procedures of local authority requirement and building by-laws.

D12. Quantity Surveying

Records of experiences and samples of works in the following topics:-

- (a) Design cost advice and cost planning
- (b) Pre-contract documentation
- (c) Tendering procedures and contractual arrangement



- (d) Post contract services
- (e) Early advice to clients e.g. financial feasibility studies, establishment of cost limits etc.

Or

Other relevant areas e.g. project management, office management, fees, resources allocated advice and action following bankruptcy or liquidation research and development related to the construction industry etc.- subject to the institutions prior approval being obtained.

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