Professional Engineers
Ontario

DECEMBER 2019
PEO TIMETABLE OF EXAMS

DATE
December 9, 10, 11, 12, 13

TIME
9:30 a.m.–12:30 p.m. & 2:00 p.m.–5:00 p.m.

9:30 A.M.–12:30 P.M.

MONDAY, DECEMBER 9

BS-4	Electric Circuits and Power
BS-5	Advanced Mathematics
BS-12	Organic Chemistry
BS-16	Discrete Mathematics
Bio-A7	Fluid Mechanics
Bio-B12	Applied Optics/Photonics
Chem-B2	Environmental Engineering
Civ-A1	Elementary Structural Analysis
Comp-A6	Software Engineering
Elec-A6	Power Systems and Machines
Elec-A7	Electromagnetics
Env-B4	Site Assessment and Remediation
Env-B7	Environmental Sampling and Analysis
Geol-A4	Structural Geology
Ind-A5	Quality Planning, Control, and Assurance
Mec-A5	Electrical and Electronics Engineering
Mec-B12	Robotics Mechanics
Mex-B10	Power Systems and Machines
Mfg-A6	Quality Planning, Control, and Assurance
Mfg-B8	Robot Mechanics
Nuc-B4	Waste Management
Phys-A3	Electromagnetics
Str-A1	Elementary Structural Analysis
Wrse-A7-1	Irrigation Drain & Erosion Control

TUESDAY, DECEMBER 10

BS-3	Statics and Dynamics
BS-11	Properties of Materials
Bld-A5	Building Science
Chem-A4	Chemical Reactor Engineering
Civ-A6	Highway Design, Construction, and Maintenance
Civ-B1	Advanced Structural Analysis
Civ-B11	Structural Materials
Comp-A2	Digital Systems Design
Elec-B3	Digital Communications Systems
Elec-B4	Information Technology Networks
Elec-B7	Power Systems Engineering
Geol-A6	Soil Mechanics
Ind-A2	Analysis and Design of Work
Mec-A3	System Analysis and Control
Mec-B3	Energy Conversion and Power Generation
Mec-B4	Integrated Manufacturing Systems
Mec-B6	Fluid Machinery
Mfg-A4	Analysis and Design of Work
Mfg-B10	Tooling, Jigs and Fixture Design
Phys-A4	Quantum Mechanics
Str-A4	Advanced Structural Analysis
Tra-A3	Traffic Engineering

WEDNESDAY, DECEMBER 11

BS-1	Mathematics
BS-8	Digital Logic Circuits
BS-13	Biology
Chem-A1	Process Balances and Chemical Thermodynamics
Chem-A2	Unit Operations & Separation Processes
Civ-B3	Geotechnical Design
Civ-B8	Management of Construction
Comp-A4	Program Design and Data Structures
Elec-A2	Systems and Control
Env-A4	Water and Wastewater Engineering
Env-A6	Solid Waste Engineering and Management
Geol-A2	Hydrogeology
Ind-A4	Production Management
Mec-A6	Advanced Fluid Mechanics
Mec-B9	Advanced Engineering Structures
Met-A3	Metal Extraction Processes
Mfg-A3	Production Management
Mfg-B9	Industrial Safety and Health
Pet-A5	Petroleum Production Operations
Str-B1	Geotechnical Design
Str-B2	Management of Construction

THURSDAY, DECEMBER 12

BS-10	Thermodynamics
CS-4	Engineering Management
Civ-A3	Municipal and Environmental Engineering
Civ-A5	Hydraulic Engineering
Comp-A1	Electronics
Elec-A1	Circuits
Env-A1	Principles of Environmental Engineering
Ind-A3	Facilities Planning
Mec-A4	Design and Manufacture of Machine Elements
Met-A4	Structure of Materials
Mex-A2	Circuits and Electronics
Mtl-A2	Transport Phenomena in Materials Engineering
Nav-A2	Hydrodynamics of Ships (I): Resistance and Propulsion
Nav-A3	Hydrodynamics of Ships (II) Ship Motion
Str-B11	Hydraulic Engineering
Tra-A5	Transportation Planning and Demand Analysis
Wrse-A6	Municipal and Environmental Engineering

FRIDAY, DECEMBER 13

BS-9	Basic Electromagnetics
CS-1	Engineering Economics
CS-3	Sustainability, Engineering and the Environment
Chem-B6	Petroleum Refining and Petrochemicals
Civ-A4	Geotechnical Materials and Analysis
Civ-B7	Transportation Planning and Engineering
Elec-B5	Advanced Electronics
Env-A3	Geotechnical & Hydrogeological Engineering
Geol-B3	Site Investigation
Mec-B2	Environmental Control in Buildings
Mex-B4	Environmental Control in Buildings
Mfg-B6	Metrology
Str-A3	Geotechnical Materials and Analysis

2:00 P.M.–5:00 P.M.

MONDAY, DECEMBER 9

BS-6	Mechanics of Materials
BS-7	Mechanics of Fluids
CS-2	Engineering in Society
Agric-A4	Fluid Flow
Chem-A6	Process Dynamics and Control
Civ-B6	Urban and Regional Planning
Civ-B9	The Finite Element Method
Elec-A3	Signals and Communications
Elec-B2	Advance Control Systems
Env-A2	Hydrology and Municipal Hydraulics Engineering
Env-B5	Industrial and Hazardous Waste Management
Geol-A1	Mineralogy and Petrology
Ind-B5	Ergonomics
Mec-A1	Applied Thermodynamics and Heat Transfer
Mec-B5	Product Design and Development
Mex-B8	Product Design and Development
MMP-B2	Rock Fragmentation
Pet-A6	Reservoir Mechanics
Str-A6-1	Applications of Finite Elements

TUESDAY, DECEMBER 10

NO EXAMS SCHEDULED

WEDNESDAY, DECEMBER 11

BS-14	Geology
BS-15	Engineering Graphics & Design Process
Agric-A2	Soil Physics and Mechanics
Bio-A2	Process Dynamics Control
Chem-B1	Transport Phenomena
Civ-A2	Elementary Structural Design
Comp-A5	Operating Systems
Elec-A5	Electronics
Env-B6	Agricultural Waste Management
Geol-A7	Applied Geophysics
Ind-A1	Operations Research
Ind-A6	System Simulation
Mec-A2	Kinematics and Dynamics of Machines
Mec-B8	Engineering Materials
Mex-A5	Kinematics and Dynamics of Machines
Mfg-B3	System Simulation
MMP-A2	Underground Mining Methods and Design
Nuc-B2	Radiation Protection
Str-A2	Elementary Structural Design
Str-B5	Foundation Engineering

THURSDAY, DECEMBER 12

BS-2	Probability and Statistics
Agric-B11	Principles of Waste Management
Bio-A1	Biomaterials and Biocompatibility
Bio-B6	Bioinstrumentation
Bld-A6	Geotechnical Materials and Analysis
Chem-A3	Heat and Mass Transfer
Civ-B5	Water Supply and Wastewater Treatment
Civ-B10	Traffic Engineering
Comp-B10	Distributed Systems
Elec-B1	Digital Signal Processing
Geol-B10-1	Gravity and Magnetics Fields
Ind-B1	Applied Probability and Statistics
Mec-B1	Advanced Machine Design
Met-A5	Mechanical Behaviour and Fracture of Materials
Pet-B1	Well Logging and Formation Evaluation
Wrse-B3	Water Supply and Wastewater Treatment

FRIDAY, DECEMBER 13

Agric-B7	Principles of Hydrology
Chem-A5	Chemical Plant Design and Economics
Chem-B4	Biochemical Engineering
Civ-B2	Advanced Structural Design
Comp-B11	Advanced Software Design
Elec-A4	Digital Systems and Computers
Elec-B8	Power Electronics and Drives
Env-A5,	Air Quality and Pollution Control Engineering
Geom-A2	Adjustment of Observations and Data Analysis
Ind-B2	Manufacturing Processes
Mec-A7	Advanced Strength of Materials
Pet-A2	Petroleum Reservoir Fluids
Str-A5	Advanced Structural Design
Str-B10	Earthquake Engineering

Professional Engineers
Ontario

To: **Candidates Writing December 2019 National Technical Exams**

From: Exam Centre

Email Contacts: exams@peo.on.ca

Date: October 3, 2019

Subject: Information for the Guidance of Candidates

1. **December 2019 Timetable of Exams - enclosed**

Exams will be held simultaneously at all centres; the morning exams begin at 9:30 a.m. and the afternoon exams begin at 2:00 p.m. All exams are of three-hour duration except BS-2, Probability and Statistics, which is a two-hour exam. Candidates are expected to arrive at the assembly area outside the exam room fifteen minutes before the starting time, to consult seating lists, etc. **Candidates who arrive late for the exam will be admitted up to one-half hour after the start, but no time extension will be allowed. No candidate may leave the exam room within the first half-hour of the exam period. Candidates are responsible for finding the location centre and arriving on time to write the exams, including during bad weather. Please note if required during the exam period only one washroom or personal break is allowed alert the proctor in charge and the break cannot be more than 2 – 5 minutes the proctor will indicate on the attendance sheet that you left the exam room briefly. Note, no cellular telephones, pagers, palm organizers etc. are permitted for the duration of the examination.**

Please note candidates must show one piece of recent picture identification at the examination centre. (i.e., driver's licence, current passport, health card with picture, etc.)

2. **Examiners' Advice to Candidates**

Applicants should write in ink (ballpoint) rather than pencil. A paper written in ink is much easier to read.

If a candidate believes that there is an error on the exam, typographical or otherwise, the candidate must state an assumption regarding the error and continue with the exam. **Put your comments directly to the attention of the examiner in your written answer book. Even if you believe the question(s) asked was outside the scope of the current syllabus not the suggested textbook(s). Or submit an email or fax immediately after writing the exam explaining any comments or concerns you may have had about the exam paper and your comments will be given to the examiner to mark accordingly.**

All applicants who are writing a Basic Studies exam should be aware that these exams correspond to 2nd or 3rd year level engineering courses and should not infer that because they are termed "Basic" that they are simple.

Carefully complete the outside cover of your exam book. If more than one book is used, number each book by showing its number in the series; i.e., 1 of 3, 2 of 3, and so on. **Indicate the questions you want marked on the front-page cover. This will clearly display to the examiner the questions you want marked.**

Read the paper through, including its title page; make any notes that occur to you on the left-hand (rough work) page of the exam book. Identify your rough work by Question Number.
Start with the question you can answer best, first reading it again with care to ensure that you understand it. Identify it by its number. The sequence in which you attempt questions is at your choice.

Budget your time. Answer, if possible, the total number of questions that are required to be attempted. Spare time should be devoted to a review.

3. **List of Aids Permitted – listed below this document**

Format 1 - No calculator permitted. The exam may be **Closed** or **Open Book.**

Format 2 - There are two calculator models permitted for this format: either a Casio or Sharp model. The exam may be **Closed** or **Open Book. Note, any alpha letters that immediately follows the calculator model number is fine except for the letter 's' which means the calculator is programmable. If the letter 's' is in combination with other alpha letters, then the calculator is acceptable i.e. 'ms'. (Please note that "none" in the list of aids represents no further instructions for this exam.)**

Format 3 - Any non-communicating calculator will be permitted. The exam will be an **Open Book** exam. Candidates will identify the calculator used on the inside left-hand sheet of the exam workbook; i.e., name and model designation. (**Please note that "none" under aids and instructions represents that you may bring as many textbook(s) or notes etc. into the exam there is no restrictions with this format 3 exam.) Please note space allocated to candidates writing open book exams will be the same as closed book exams. Therefore, you will need to limit the number of textbooks brought into the exam room.**

Closed Book - Only pens, pencils, and drawing instruments may be brought into the room. "If format 2 is selected, candidates are permitted to bring any approved Casio or Sharp calculator into the exam room."

Open Book - Any notes, textbooks, materials, etc. may be brought into the exam centre. (Where the examiner has specified only certain material, this is noted.)

Closed Book with Specified Aids - For some exams, a single, precisely identified aid is allowed. This is noted on the list under aids and instructions.

4. **Location of Exam Centres and Rooms – last page of this document**
5. **Results of Exams**

Exam results will be mailed 45 working days after the last exam has been written (February 17, 2020). No results will be communicated by telephone, email, fax or in person.

If a candidate disagrees with an exam mark, they may request a re-read. There is a non-refundable fee of $330.00 for every exam written for this service. There is no guarantee that a re-read will result to the favour of the candidate. The re-read mark will then be the final mark and the original mark can go up or down. Note: Failed papers are re-read by the examiner. A re-read request must be submitted within 30 days after receipt of results (not when results are received). The re-read grading will take eight weeks or longer. **If you do request a re-read and do not receive a confirmation in writing from the Exam Centre within two weeks of submittal of payment you must contact the Exam Centre immediately to confirm receipt of re-read request.**

Exam papers will not be returned to the candidate or seen by the candidate, nor are the answers available. The passing mark is 50.

6. **The Following Are Not Allowed**

Use of notes on exams where none are permitted
Communicating with another candidate
Employment of another person to write an exam

7. **Leaving an Exam Room without Writing**

A candidate who appears in the exam room and then decides not to write the exam, must place the signed exam book in the envelope provided, sign the outside of the envelope, and hand it to the invigilator/proctor. Any such candidate is given a mark of **Zero** for the exam and this will be considered a failure.

8. **No Show**

Candidates who apply to write technical exams and do not attend the sitting(s) will be marked "**No Show**." They will forfeit the exam fee, i.e., **no refund, credit or transfer to the next sitting. A "No Show" is not considered a failure or an attempt.** Candidates that were issued **a reminder letter to write at this sitting and selected not to write for whatever reason the file is closed for time expiration and you will need to re-apply again with another license application form to pursue licensure**. Note: A "No Show" is better than writing an exam you do not feel prepared to write and might fail, even if it means having this current file closed. Candidates can re-apply again with another license application form.

December 9,10,11,12,13, 2019
Morning exams 9:30 am – 12:30 pm – Afternoon Exams 2:00 pm – 5:00 pm

Basic Examinations

Dec – 11- am- 04-BS-1, Mathematics_

Dec – 12- pm- 04-BS-2, Probability and Statistics_2 hours

Dec – 10 - am- 04-BS-3, Statics and Dynamics__

Dec – 9- am - 04-BS-4, Electric Circuits and Power_

Dec – 9- am- 04-BS-5, Advanced Mathematics_

Dec – 9- pm - 04-BS-6, Mechanics of Materials_

Dec – 9- pm - 04-BS-7, Mechanics of Fluids____

Dec – 11- am - 04-BS-8, Digital Logic Circuits____

Dec – 13 - am - 04-BS-9, Basic Electromagnetics____

Dec – 12 – am - 04-BS-10, Thermodynamics____

Dec – 10 – am -04-BS-11, Properties of Materials___

Dec 9 – am - 04-BS-12, Organic Chemistry__

Dec – 11 – am -04-BS-13, Biology__

Dec 11 – pm - 04-BS-14, Geology__

Dec – 11- pm - 04-BS-15, Engineering Graphics & Design Process___

Dec – 9 -am -04-BS-16, Discrete Mathematics_____

Complementary Examinations

Dec – 13 – am -11-CS-1, Engineering Economics_

Dec – 9 – pm -11-CS-2, Engineering in Society_

Dec – 13 – am -11-CS-3, Sustainability, Engineering and the Environment_

Dec – 12 – am -11-CS-4, Engineering Management_

December 9,10,11,12,13, 2019
Morning exams 9:30 am – 12:30 pm – Afternoon Exams 2:00 pm – 5:00 pm

Agricultural Examinations

Dec 11 – pm -04-Agric-A2, Soil Physics and Mechanics_

Dec – 9 – pm -04-Agric-A4, Fluid Flow_

Dec – 13 – pm -04-Agric-B7, Principles of Hydrology -

Dec – 12 – pm- 04-Agric-B11, Principles of Waste Management_

Biomedical Examinations

Dec – 12 – pm - 04-Bio-A1, Biomaterials and Biocompatibility_

Dec – 11 – pm -04-Bio-A2, Process Dynamics Control_

Dec – 9 – am - 04-Bio-A7, Fluid Mechanics _

Dec – 12 – pm -04-Bio-B6, Bioinstrumentation__

Dec – 9 – am -04-Bio-B12, Applied Optics/Photonics _

Building Examinations

Dec 10 – am - 07-Bld-A5, Building Science__

Dec 12 – pm -07-Bld-A6, Geotechnical Materials and Analysis__

December 9,10,11,12,13, 2019
Morning exams 9:30 am – 12:30 pm – Afternoon Exams 2:00 pm – 5:00 pm

Chemical Examinations

Dec – 11 – am -16-Chem-A1, Process Balances and Chemical Thermodynamics

Dec – 11 – am -16-Chem-A2, Unit Operations & Separation Processes

Dec – 12 – pm -16-Chem-A3, Heat and Mass Transfer

Dec – 10 – am -16-Chem-A4, Chemical Reactor Engineering

Dec – 13 – pm -16-Chem-A5, Chemical Plant Design and Economics

Dec – 9 – pm -16-Chem-A6, Process Dynamics and Control

Dec – 11 – pm - 16-Chem-B1, Transport Phenomena

Dec – 9 – am -16-Chem-B2, Environmental Engineering

Dec – 13 – pm -16-Chem-B4, Biochemical Engineering

Dec – 13 – am - 16-Chem-B6, Petroleum Refining and Petrochemicals

Civil Examinations

Dec – 9 – am -16-Civ-A1, Elementary Structural Analysis

Dec 11- pm -16-Civ-A2, Elementary Structural Design

Dec – 12 – am -16-Civ-A3, Municipal and Environmental Engineering

Dec 13 – am -16-Civ-A4, Geotechnical Materials and Analysis

Dec – 12 – am -16-Civ-A5, Hydraulic Engineering

Dec – 10 – am -16-Civ-A6, Highway Design, Construction, and Maintenance

December 9,10,11,12,13, 2019
Morning exams 9:30 am – 12:30 pm – Afternoon Exams 2:00 pm – 5:00 pm

Civil Examinations

Dec 10 – am -16-Civ-B1, Advanced Structural Analysis_

Dec 13 – pm -16-Civ-B2, Advanced Structural Design_

Dec – 11 – am -16-Civ-B3, Geotechnical Design_

Dec – 12 – pm -16-Civ-B5, Water Supply and Wastewater Treatment_

Dec – 9 – pm -16, Civ-B6, Urban & Regional Planning_

Dec – 13 – am -16-Civ-B7, Transportation Planning and Engineering__

Dec -11 – am - 16-Civ-B8, Management of Construction_

Dec - 9 – pm -16-Civ-B9, The Finite Element Method_

Dec – 12 – pm -16-Civ-B10, Traffic Engineering_

Dec – 10 – am -16-Civ-B11, Structural Materials__

Computer Examinations

Dec – 12 – am -17-Comp-A1, Electronics__

Dec - 10 – am -17-Comp-A2, Digital Systems Design__

Dec -11 – am -17-Comp-A4, Program Design and Data Structures__

Dec – 11 – pm - 17-Comp-A5, Operating Systems__

Dec – 9 – am -17-Comp-A6, Software Engineering_

Dec – 12 – pm -17-Comp-B10, Distributed Systems__

Dec – 13 – pm -17-Comp-B11, Advanced Software Design__

December 9,10,11,12,13, 2019
Morning exams 9:30 am – 12:30 pm – Afternoon Exams 2:00 pm – 5:00 pm

Electrical Examinations

Dec – 12 – am -16-Elec-A1, Circuits

Dec – 11 – am -16-Elec-A2, Systems and Control

Dec – 9 – pm -16-Elec-A3, Signals and Communications

Dec – 13 – pm -16-Elec-A4, Digital Systems and Computers

Dec 11 – pm -16-Elec-A5, Electronics

Dec – 9 - am -16-Elec-A6, Power Systems and Machines

Dec – 9 – am -16-Elec-A7, Electromagnetics

Electrical Examinations

Dec – 12 – pm -16-Elec-B1, Digital Signal Processing

Dec – 9 – pm -16-Elec-B2, Advance Control Systems

Dec – 10 – am -16-Elec-B3, Digital Communications systems

Dec – 10 – am - 16-Elec-B4, Information Technology Networks

Dec – 13 – am -16-Elec-B5, Advanced Electronics

Dec – 10 am - 16-Elec-B7, Power Systems Engineering

Dec – 13 – pm -16-Elec-B8, Power Electronics and Drives

December 9,10,11,12,13, 2019
Morning exams 9:30 am – 12:30 pm – Afternoon Exams 2:00 pm – 5:00 pm

Environmental Examinations

Dec – 12 – am -18-Env-A1, Principles of Environmental Engineering

Dec – 9 – pm -18-Env-A2, Hydrology and Municipal Hydraulics Engineering

Dec – 13 – am - 18-Env-A3, Geotechnical & Hydrogeological Engineering

Dec – 11 – am -18-Env-A4, Water and Wastewater Engineering

Dec – 13 – pm -18-Env-A5, Air Quality & Pollution Control Engineering

Dec – 11 – am -18-Env-A6, Solid Waste Engineering and Management

Dec – 9 – am - 18-Env-B4, Site Assessment and Remediation

Dec – 9 – pm -18-Env-B5, Industrial & Hazardous Waste Management

Dec – 11 – pm -18-Env-B6, Agricultural Waste Management

Dec – 9 – am - 18-Env-B7, Environmental Sampling and Analysis

Geological Examinations

Dec – 9 – pm -18-Geol-A1, Mineralogy and Petrology

Dec – 11 – am -18-Geol-A2, Hydrogeology

Dec – 9 – am -18-Geol-A4, Structural Geology

Dec – 10 – am -18-Geol-A6, Soil Mechanics

Dec – 11 – pm -18-Geol-A7, Applied Geophysics

Dec – 13 – am -18-Geol-B3, Site Investigation

Dec – 12 – pm -18-Geol-B10-1, Gravity & Magnetics Fields

December 9,10,11,12,13, 2019
Morning exams 9:30 am – 12:30 pm – Afternoon Exams 2:00 pm – 5:00 pm

Geomatics Examinations

Dec- 13 – pm -18-Geom-A2, Adjustment of Observations and Data Analysis

Industrial Examinations

Dec – 11 – pm -17-Ind-A1, Operations Research

Dec – 10 – am -17-Ind-A2, Analysis & Design of Work

Dec – 12 – am -17-Ind-A3, Facilities Planning

Dec – 11 – am -17-Ind-A4, Production Management

Dec – 9 – am -17-Ind-A5, Quality Planning, Control, and Assurance

Dec – 11 – pm -17-Ind-A6, System Simulation

Dec – 12 – pm -17-Ind-B1, Applied Probability and Statistics

Dec – 13 – pm -17-Ind-B2, Manufacturing Processes

Dec – 9 – pm -17-Ind-B5, Ergonomics

Mechanical Examinations

Dec – 9 – pm -16-Mec-A1, Applied Thermodynamics and Heat Transfer

Dec -11 – pm -16-Mec-A2, Kinematics and Dynamics of Machines

Dec – 10 – am -16-Mec-A3, System Analysis and Control

Dec – 12 – am -16-Mec-A4, Design and Manufacture of Machine Elements

Dec – 9 – am -16-Mec-A5, Electrical and Electronics Engineering

Dec – 11 – am -16-Mec-A6, Advanced Fluid Mechanics

Dec – 13 – pm -16-Mec-A7, Advanced Strength of Materials

December 9,10,11,12,13, 2019
Morning exams 9:30 am – 12:30 pm – Afternoon Exams 2:00 pm – 5:00 pm

Dec – 12 – pm -16-Mec-B1, Advanced Machine Design__

Dec – 13 – am -16-Mec-B2, Environmental Control in Buildings___

Dec – 10 – am -16-Mec-B3, Energy Conversion and Power Generation___

Dec – 10 – am -16-Mec-B4, Integrated Manufacturing Systems___

Dec – 9 – pm -16-Mec-B5, Product Design and Development__

Dec – 10 – am -16-Mec-B6, Fluid Machinery___

Dec – 11 – pm -16-Mec-B8, Engineering Materials___

Dec – 11 – am - 16-Mec-B9, Advanced Engineering Structures___

Dec – 9 – am -16-Mec-B12, Robotics Mechanics__

Mechatronics Examinations

Dec – 12 – am -16-Mex-A2, Circuits and Electronics__

Dec – 11 – pm -16-Mex-A5, Kinematics and Dynamics of Machines___

Dec – 13 – am -16-Mex-B4, Environmental Control in Buildings__

Dec – 9 – pm -16-Mex-B8, Product Design and Development__

Dec – 9 – am -16-Mex-B10, Power Systems and Machines__

December 9,10,11,12,13, 2019
Morning exams 9:30 am – 12:30 pm – Afternoon Exams 2:00 pm – 5:00 pm

Metallurgical Examinations

Dec – 11 – am -10-Met-A3, Metal Extraction Processes__

Dec – 12 – am -10- Met-A4, Structure of Materials___

Dec – 12 – pm -10-Met-A5, Mechanical Behaviour and Fracture of Materials__

Manufacturing Examinations

Dec – 11 – am -08-Mfg-A3, Production Management__

Dec – 10 – am -08-Mfg-A4, Analysis & Design of Work_

Dec – 9 – am -08-Mfg-A6, Quality Planning, Control, and Assurance__

Dec – 11 – pm -08-Mfg-B3, System Simulation___

Dec – 13 – am - 08-Mfg-B6, Metrology__

Dec – 9 – am - 08-Mfg-B8, Robot Mechanics__

Dec – 11 – am -08-Mfg-B9, Industrial Safety and Health__

Dec – 10 – am -08-Mfg-B10, Tooling, Jigs & Fixture Design_

Mineral Examinations

Dec – 11 – pm -18-Mmp-A2, Underground Mining Methods and Design_

Dec – 9 – pm -18-Mmp-B2, Rock Fragmentation__

December 9,10,11,12,13, 2019
Morning exams 9:30 am – 12:30 pm – Afternoon Exams 2:00 pm – 5:00 pm

Material Examinations

Dec – 12 – am -12-Mtl-A2, Transport Phenomena in Materials Engineering __

Naval Examinations

Dec – 12 – am -16-Nav-A2, Hydrodynamics of Ships (I): Resistance and Propulsion_

Dec – 12 – am -16-Nav-A3, Hydrodynamics of Ships (II) Ship Motion _

Nuclear Examinations

Dec – 11 – pm -08-Nuc-B2, Radiation Protection___

Dec – 9 – am - 08-Nuc-B4, Waste Management___

Petroleum Examinations

Dec – 13 – pm -17-Pet-A2, Petroleum Reservoir Fluids__

Dec – 11 – am -17-Pet-A5, Petroleum Production Operations__

Dec – 9 – pm -17-Pet-A6, Reservoir Mechanics__

Dec – 12 – pm -17-Pet-B1, Well Logging and Formation Evaluation_

Physical Examinations

Dec – 9 – am -17-Phys-A3, Electromagnetics__

Dec – 10 – am -17-Phys-A4, Quantum Mechanics__

December 9,10,11,12,13, 2019
Morning exams 9:30 am – 12:30 pm – Afternoon Exams 2:00 pm – 5:00 pm

Structural Examinations

Dec – 9 – am -07-Str-A1, Elementary Structural Analysis__

Dec – 11 – pm -07-Str-A2, Elementary Structural Design__

Dec – 13 – am -07-STR-A3, Geotechnical Materials and Analysis__

Dec – 10 – am -07-Str-A4, Advanced Structural Analysis___

Dec – 13 – pm -07-Str-A5, Advanced Structural Design__

Dec – 9 – pm -07-Str-A6-1, Applications of Finite Elements__

Dec – 11 – am -07-Str-B1, Geotechnical Design__

Dec – 11 – am -07-Str-B2, Management of Construction__

Dec – 11 – pm -07-STR-B5, Foundation Engineering __

Dec – 13 – pm -07-Str-B10, Earthquake Engineering_

Dec – 12 – am -07-Str-B11, Hydraulic Engineering___

Transportation Examinations

Dec – 10 – am -07-Tra-A3, Traffic Engineering _

Dec – 12 – am -07-Tra-A5, Transportation Planning and Demand Analysis___

Water Resources Examinations

Dec – 12 – am -07-Wrse-A6, Municipal and Environmental Engineering___

Dec – 9 – am - 07-Wrse-A7-1, Irrigation Drain & Erosion Control__

Dec – 12 – pm -07-Wrse-B3, Water Supply & Wastewater Treatment___

Format 1, No Calculators Permitted;
Format 2, One of two calculators is permitted - any Casio or Sharp approved model;
Format 3, Any non-communicating calculator is permitted.

EXAM FORMAT AND AIDS PERMITTED FOR THE DECEMBER 2019 NATIONAL TECHNICAL SESSION

Name of Subject **Basic Studies**	**Format** **1,2, or 3**	**Closed or Open Book**	**Aids/Instructions to the Candidates**
04-BS-1, Mathematics	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae
04-BS-2, Probability and Statistics (2hrs)	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae. Note; statistical tables of the normal, t, chi-square and F distributions are provided
04-BS-3, Statics and Dynamics	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae. The aid sheet must be submitted with the written exam paper.
04-BS-4, Electric Circuits and Power	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
04-BS-5, Advanced Mathematics	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
04-BS-6, Mechanics of Materials	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae. Note, example problems and solutions to problems are **NOT** allowed. **THE AID SHEET MUST BE SUBMITTED WITH THE WRITTEN EXAM.**
04-BS-7, Mechanics of Fluids	2	CLOSED	NONE
04-BS-8, Digital Logic Circuits	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
04-BS-9, Basic Electromagnetics	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
04-BS-10, Thermodynamics	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
04-BS-11, Properties of Materials	2	CLOSED	NONE
04-BS-12, Organic Chemistry	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
04-BS-13, Biology	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
04-BS-14, Geology	2	CLOSED	NONE
04-BS-15, Engineering Graphics and Design Process	1	CLOSED	NONE
04-BS-16, Discrete Mathematics	2	CLOSED	NONE

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EXAM FORMAT AND AIDS PERMITTED FOR THE DECEMBER 2019 NATIONAL TECHNICAL SESSION

Name of Subject Complementary Studies	Format 1,2, or 3	Closed or Open Book	Aids/Instructions to the Candidates
11-CS-1, Engineering Economics	3	OPEN	Candidates should bring with them compound interest factors tables
11-CS-2, Engineering in Society-Health and Safety	2	CLOSED	NONE
11-CS-3, Sustainability, Engineering and the Environment	2	CLOSED	NONE
11-CS-4, Engineering Management	1	CLOSED	NONE

Name of Subject Agricultural	Format 1,2, or 3	Closed or Open Book	Aids/Instructions to the Candidates
04-Agric-A2, Soil Physics and Mechanics	3	OPEN	NONE
04-Agric-A4, Fluid Flow	3	OPEN	NONE
04-Agric-B7, Principles of Hydrology	3	OPEN	NONE
04-Agric-B11, Principles of Waste Management	3	OPEN	NONE

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EXAM FORMAT AND AIDS PERMITTED FOR THE DECEMBER 2019 NATIONAL TECHNICAL SESSION

Name of Subject Biomedical/Biochemical	Format 1,2, or 3	Closed or Open Book	Aids/Instructions to the Candidates
04-Bio-A1, Biomaterials and Biocompatibility	3	OPEN	NONE
04-Bio-A2, Process Dynamics and Control	3	OPEN	NONE
04-Bio-A7, Fluid Mechanics	3	OPEN	NONE
04-Bio-B6, Bioinstrumentation	3	OPEN	NONE
04-Bio-B12, Applied Optics/Photonics	2	OPEN	NONE

Name of Subject Building	Format 1,2, or 3	Closed or Open Book	Aids/Instructions to the Candidates
07-Bld-A5, Building Science	3	OPEN	NONE
07-Bld-A6, Geotechnical Materials and Analysis	2	CLOSED	NONE

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EXAM FORMAT AND AIDS PERMITTED FOR THE DECEMBER 2019 NATIONAL TECHNICAL SESSION

Name of Subject Chemical	*Format 1,2, or 3*	**Closed or Open Book**	**Aids/Instructions to the Candidates**
16-Chem-A1, Process Balances and Chemical Thermodynamics	3	OPEN	NONE
16-Chem-A2, Unit Operations and Separation Processes	3	OPEN	Candidates can bring **ONE** textbook of their choice. The textbook can have notations listed on the margins but no loose notes are permitted.
16-Chem-A3, Heat and Mass Transfer	3	OPEN	One textbook of choice with notations listed on the margins but no loose notes are permitted.
16-Chem-A4, Chemical Reactor Engineering	3	OPEN	Candidates can bring **ONE** textbook of their choice. The textbook can have notations listed on the margins but no loose notes are permitted. Candidates should have unit conversion tables and/or mathematical tables such as a CRC handbook.
16-Chem-A5, Chemical Plant Design and Economics	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
16-Chem-A6, Process Dynamics & Control	3	OPEN	NONE
16-Chem-B1, Transport Phenomena	3	OPEN	One textbook of choice with notations listed on the margins, but no loose notes are permitted.
16-Chem-B2, Environmental Engineering	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae. Candidates **MUST** write the name and model number of their calculator on the inside front cover of the exam book.
16-Chem-B4, Biochemical Engineering	2	CLOSED	NONE
16-Chem-B6, Petroleum Refining and Petrochemicals	3	OPEN	NONE

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EXAM FORMAT AND AIDS PERMITTED FOR THE DECEMBER 2019 NATIONAL TECHNICAL SESSION

Name of Subject Civil	Format 1,2, or 3	Closed or Open Book	Aids/Instructions to the Candidates
16-Civ-A1, Elementary Structural Analysis	2	CLOSED	NONE
16-Civ-A2, Elementary Structural Design	2	CLOSED	Handbooks and textbooks are permitted. **NO notes or loose sheets are allowed**. Candidates **MUST** write the name and model number of their calculator on the inside front cover of the exam book. Note: The solutions for Standards of Steel, Concrete & Timber must come from the latest manual editions.
16-Civ-A3, Municipal and Environmental Engineering	2	OPEN	NONE
16-Civ-A4, Geotechnical Materials and Analysis	2	CLOSED	NONE
16-Civ-A5, Hydraulic Engineering	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
16-Civ-A6, Highway Design, Construction and Maintenance	2	CLOSED	NONE
16-Civ-B1, Advanced Structural Analysis	2	CLOSED	NONE
16-Civ-B2, Advanced Structural Design	2	CLOSED	Design handbooks and textbooks are permitted. **NO notes or loose sheets are allowed.** Candidates **MUST** write the name and model number of their calculator on the inside front cover of the exam book.
16-Civ-B3, Geotechnical Design	3	OPEN	It is to the candidate's advantage to bring the Canadian Foundation Manual.
16-Civ-B5, Water Supply & Wastewater Treatment	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
16-Civ-B6, Urban & Regional Planning	2	CLOSED	NONE
16-Civ-B7, Transportation Planning and Engineering	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
16-Civ-B8, Management of Construction	2	CLOSED	NONE
16-Civ-B9, The Finite Element Method	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
16-Civ-B10, Traffic Engineering	3	OPEN	NONE
16-Civ-B11, Structural Materials	3	OPEN	Candidates can bring **ONE** textbook of their choice. The textbook can have notations listed on the margins but no loose notes are permitted.

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Name of Subject Computer	Format 1,2, or 3	Closed or Open Book	Aids/Instructions to the Candidates
17-Comp-A1, Electronics	3	OPEN	NONE
17-Comp-A2, Digital Systems Design	2	CLOSED	NONE
17-Comp-A4, Program Design and Data Structures	1	CLOSED	NONE
17-Comp-A5, Operating Systems	2	CLOSED	NONE
17-Comp-A6, Software Engineering	1	CLOSED	NONE
17-Comp-B10, Distributed Systems	2	CLOSED	NONE
17-Comp-B11, Advanced Software Design	1	CLOSED	Candidates are allowed to bring **ONE** aid sheets 8.5” X 11” hand-written on both sides containing notes and formulae.

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Name of Subject **Electrical**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
16-Elec-A1, Circuits	2	CLOSED	NONE
16-Elec-A2, Systems and Control	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae. **The aid sheet must be signed and submitted with the written exam paper.**
16-Elec-A3, Signals and Communications	2	CLOSED	NONE
16-Elec-A4, Digital Systems and Computers	2	CLOSED	NONE
16-Elec-A5, Electronics	2	CLOSED	NONE
16-Elec-A6, Power Systems and Machines	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae. **No worked out solutions or diagrams are allowed on this sheet.**
16-Elec-A7, Electromagnetics	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
16-Elec-B1, Digital Signal Processing	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
16-Elec-B2, Advanced Control Systems	3	OPEN	NONE
16-Elec-B3, Digital Communications Systems	2	CLOSED	NONE
16-Elec-B4, Information Technology Networks	2	CLOSED	NONE
16-Elec-B5, Advanced Electronics	2	CLOSED	NONE
16-Elec-B7, Power Systems Engineering	3	OPEN	NONE
16-Elec-B8, Power Electronics and Drives	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae. **No worked out solutions or diagrams are allowed on this sheet.**

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Name of Subject Environmental	**Format 1,2, or 3**	**Closed or Open Book**	**Aids/Instructions to the Candidates**
18-Env-A1, Principles of Environmental Engineering	2	CLOSED	Candidates are allowed to bring **TWO** aid sheets 8.5" X 11" hand-written on both sides containing notes and formulae
18-Env-A2, Hydrology and Municipal Hydraulics Engineering	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
18-Env-A3, Geotechnical and Hydrogeological Engineering	3	OPEN	NONE
18-Env-A4, Water and Wastewater Engineering	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
18-Env-A5, Air Quality & Pollution Control	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
18-Env-A6, Solid Waste Engineering and Management	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
18-Env-B4, Site Assessment and Remediation	3	OPEN	NONE
18-Env-B5, Industrial & Hazardous Waste Management	3	OPEN	NONE
18-Env-B6, Agricultural Waste Management	3	OPEN	NONE
18-Env-B7, Environmental Sampling and Analysis	2	CLOSED	NONE

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Name of Subject **Geological**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
18-Geol-A1, Mineralogy and Petrology	1	CLOSED	NONE
18-Geol-A2, Hydrogeology	3	OPEN	NONE
18-Geol-A4, Structural Geology	2	CLOSED	Protractor, drawing compass and ruler are permitted.
18-Geol-A6, Soil Mechanics	2	CLOSED	NONE
18-Geol-A7, Applied Geophysics	2	CLOSED	NONE
18-Geol-B3, Site Investigation	3	OPEN	NONE
18-Geol-B10-1, Gravity & Magnetics Fields	1	CLOSED	NONE

Name of Subject **Geomatics**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
18-Geom-A2, Adjustment of Observations and Data Analysis	2	CLOSED	NONE

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Name of Subject **Industrial**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
17-Ind-A1, Operations Research	3	OPEN	NONE
17-Ind-A2, Analysis and Design of Work	2	CLOSED	NONE
17-Ind-A3, Facilities Planning	2	CLOSED	NONE
17-Ind-A4, Production Management	2	CLOSED	NONE
17-Ind-A5, Quality Planning, Control, and Assurance	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
17-Ind-A6, Systems Simulation	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
17-Ind-B1, Applied Probability and Statistics	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
17-Ind-B2, Manufacturing Processes	2	CLOSED	NONE
17-Ind-B5, Ergonomics	3	OPEN	NONE

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Name of Subject **Mechanical**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
16-Mec-A1, Applied Thermodynamics and Heat Transfer	3	OPEN	Candidates are expected to have copies of both a thermodynamics text AND a heat transfer text in order to make use of the information presented in the tables and graphs. Candidates **MUST** write the name and model number of their calculator on the inside front cover of the exam book.
16-Mec-A2, Kinematics and Dynamics of Machines	3	OPEN	NONE
16-Mec-A3, System Analysis and Control	2	CLOSED	NONE
16-Mec-A4, Design and Manufacture of Machine Elements	3	OPEN	NONE
16-Mec-A5, Electrical and Electronics Engineering	2	CLOSED	NONE
16-Mec-A6, Advanced Fluid Mechanics	2	OPEN	NONE
16-Mec-A7, Advanced Strength of Materials	3	OPEN	NONE
16-Mec-B1, Advanced Machine Design	3	OPEN	NONE
16-Mec-B2, Environmental Control in Buildings	3	OPEN	ONLY textbooks and reference books permitted. NO NOTES AND SOLVED PROBLEMS.
16-Mec-B3, Energy Conversion and Power Generation	2	CLOSED	NONE
16-Mec-B4, Integrated Manufacturing Systems	3	OPEN	NONE
16-Mec-B5, Product Design and Development	2	OPEN	NONE
16-Mec-B6, Fluid Machinery	2	CLOSED	Drawing instruments (scale ruler, protractor and sharp pencil) are required for vector diagrams.
16-Mec-B8, Engineering Materials	3	OPEN	NONE
16-Mec-B9, Advanced Engineering Structures	3	OPEN	NONE
16-Mec-B12, Robot Mechanics	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5” X 11” hand-written on both sides containing notes and formulae.

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Name of Subject Metallurgical	Format 1,2, or 3	Closed or Open Book	Aids/Instructions to the Candidates
10-Met-A3, Metal Extraction Processes	2	CLOSED	NONE
10-Met-A4, Structure of Materials	2	CLOSED	NONE
10-Met-A5, Mechanical Behaviour and Fracture of Materials	2	CLOSED	NONE

Name of Subject Mechatronics	Format 1,2, or 3	Closed or Open Book	Aids/Instructions to the Candidates
16-Mex-A2, Circuits and Electronics	2	CLOSED	NONE
16-Mex-A5	3	OPEN	NONE
16-Mex-B4, Environmental Control in Buildings	3	OPEN	ONLY textbooks and reference books permitted. NO NOTES AND SOLVED PROBLEMS.
16-Mex-B8, Product Design and Development	2	OPEN	NONE
16-Mex-B10, Power Systems and Machines	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae. **No worked out solutions are allowed on this sheet.**

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Name of Subject **Manufacturing**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
08-Mfg-A3, Production Management	2	CLOSED	NONE
08-Mfg-A4, Analysis and Design of Work	2	CLOSED	NONE
08-Mfg-A6, Quality Planning, Control and Assurance	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
08-Mfg-B3, Systems Simulation	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
08-Mfg-B6, Metrology	3	OPEN	NONE
08-Mfg-B8, Robot Mechanics	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
08-Mfg-B9, Industrial Safety and Health	1	CLOSED	NONE
08-Mfg-B10, Tooling, Jigs and Fixture Design	3	OPEN	NONE

Name of Subject **Mining and Mineral Processing**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
18-MMP-A2, Underground Mining Methods and Design	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
18-MMP-B2, Rock Fragmentation	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.

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Name of Subject **Materials**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
12-Mtl-A2, Transport Phenomena in Materials Engineering	3	OPEN	One textbook of choice with notations listed on the margins, but no loose notes are permitted.

Name of Subject **Naval Architecture**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
16-Nav-A2, Hydrodynamics of Ships (1): Resistance and Propulsion	2	CLOSED	NONE
16-Nav-A3, Hydrodynamics of Ships (II): Ship Motion	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.

Name of Subject **Nuclear**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
08-Nuc-B2, Radiation Protection	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae. **No worked out solutions or diagrams are allowed on this sheet.**
08-Nuc-B4, Waste Management	2	CLOSED	NONE

Name of Subject **Petroleum**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
17-Pet-A5, Petroleum Production Operations	3	OPEN	NONE
17-Pet-A6, Reservoir Mechanics	3	OPEN	NONE
17-Pet-B1, Well Logging and Formation Evaluation	2	CLOSED	NONE

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Name of Subject **Engineering Physics**	**Format 1,2, or 3**	**Closed or Open Book**	**Aids/Instructions to the Candidates**
17-Phys-A3, Electromagnetics	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
17-Phys-A4, Quantum Mechanics	2	CLOSED	NONE

Name of Subject **Structural**	**Format 1,2, or 3**	**Closed or Open Book**	**Aids/Instructions to the Candidates**
07-Str-A1, Elementary Structural Analysis	2	CLOSED	NONE
07-Str-A2, Elementary Structural Design	2	CLOSED	Handbooks and textbooks are permitted. **NO notes or loose sheets are allowed**. Candidates **MUST** write the name and model number of their calculator on the inside front cover of the exam book. Note: The solutions for Standards of Steel, Concrete & Timber must come from the latest manual editions.
17-Str-A3, Geotechnical Materials and Analysis	2	CLOSED	NONE
07-Str-A4, Advanced Structural Analysis	2	CLOSED	NONE
07-Str-A5, Advanced Structural Design	2	CLOSED	Design handbooks and textbooks are permitted. **NO notes or loose sheets are allowed.** Candidates **MUST** write the name and model number of their calculator on the inside front cover of the exam book.
07-Str-A6-1, Applications of Finite Elements	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.
07-Str-B1, Geotechnical Design	3	OPEN	It is to the candidate's advantage to bring the Canadian Foundation Manual.
07-Str-B2, Management of Construction	2	CLOSED	NONE
07-Str-B5, Foundation Engineering	3	OPEN	NONE
07-Str-B10, Earthquake Engineering	2	OPEN	NONE
07-Str-B11, Hydraulic Engineering	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.

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Name of Subject **Transportation**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
07-Tra-A3, Traffic Engineering	3	OPEN	NONE
07-Tra-A5, Transportation Planning and Demand Analysis	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.

Name of Subject **Water Resources**	**Format** **1,2, or 3**	**Closed or Open** **Book**	**Aids/Instructions to the Candidates**
07-Wrse-A6, Municipal and Environmental Engineering	2	OPEN	NONE
07-Wrse-A7-1, Irrigation, Drainage and Erosion Control	3	OPEN	NONE
07-Wrse-B3, Water Supply & Wastewater Treatment	2	CLOSED	Candidates are allowed to bring **ONE** aid sheet 8.5" X 11" hand-written on both sides containing notes and formulae.

December 2019 Technical Location Sheet December 9, 10, 11, 12, 13, 2019		
City	**Location**	**Report To:**
HAMILTON	McMaster University John Hodgins Engineering (JHE-A102) 1280 Main St. W. Hamilton, ON L8S 4L7	Ginny Riddell and Janet Delsey
KINGSTON	Royal Military College – Sawyer Theatre - Rm. S1303 Please go to the security office to sign in and you can get directions to the room.	Steve Vanvolkingburgh
LAKEHEAD THUNDERBAY	Lakehead University, University Centre Building; Room UC1001 (student central) 955 Oliver Road, Thunder Bay  tbay-campus-map.pdf	Nikki Maronese
LONDON	University of Western Ontario, Claudette MacKay-Lassonde Pavilion “CMLP 60A” and 60B	Basem Haroun
NIAGARA, ST. CATHARINES	St. Andrews Church ; 5645 Morrison St Niagara Falls ON L2E 2E8 ; Tel: 905-356-1624 Signs will be posted for exact room.	George Melvin
OTTAWA	University of Ottawa, Tabaret (TBT) 550 Cumberland Street, Ottawa, Ontario: K1N 6N8. You Should report to the third floor foyer to be allocated to rooms on the third floor	James O’Malley
PETERBOROUGH	General Electric Canada; 107 Park Street N.; go to Visitor entrance at Park St. and enter through main doors check reception area for exact room number.	Dan Manns
SARNIA	Lambton College, 1457 London Road, Room B1-107 Sarnia ON N7S 6K4	Connie Byrns
SUDBURY	Laurentian University, 935 Ramsey Lake Rd. go to Room F-215C, Science II/Fraser Building of the Campus for further instructions regarding the exact room assigned.	Ramesh Subramanian
TORONTO	Victoria University (VC) the building is located east of top (north) edge of the Queen’s Park oval. The nearest intersection is Queen’s Park and Charles Street (Museum Subway Station). From Museum Subway go east on Charles Street, enter the first passage between building on the right and you may enter the side door of VC building. Nearest small parking is on Joseph Street. The Alumni Hall (VC 112) is located at the main floor of the Victoria Building The address is 91 Charles St West, Toronto, On M5S 1K7	Peter Gladysz
WINDSOR	St. Clair College, 2000 Talbot Road, South Campus, Room 2001 Ford Building Check security located at entrance of main building if having difficulty finding the room.	Todd Shaw