



ANNEXURE - 3

Admission Notice Post-Graduate Programme 3yr-MSc.Tech (Applied Geophysics)

Admission notice for 3yr-MSc.Tech (Applied geophysics) Programme in the Department of Applied Geology, Dibrugarh University, Assam (India) for the academic session 2021-2022.

Total number of seats: 20 + 2 (EWS)

Date of Entrance Test: 27th September, 2021(Monday)

Time: 11.00 am – 1.00 pm

**Venue: Department of Applied Geology, Dibrugarh University,
Dibrugarh, Assam (India)-786004**

Important Dates:

As per the main Notification given above.

Selection Test:

Eligibility:

Candidates having *BSc. (Physics major) or, BSc. (Geology major with Physics & Mathematics) degree or, BTech. (Petroleum Engineering or Petroleum Geosciences or equivalent Earth Science related streams) degree* from any UGC recognized University securing at least 60% marks in aggregate (or, OGPA 7.0 in the scale of 10.0 points). Candidates are supposed to appear for a written Entrance Examination Test [Subjects: *Physics (Graduation pass course level): 50%*; General awareness, Reasoning, Technical English, General mathematical aptitude, Imaginative power :50%; Question Type: Objective; Time: 2 hrs.] Based on the Entrance Examination Test performance, a merit list of the selected candidates will be displayed on the Dibrugarh University website and candidates after payment of the prescribed fee shall be admitted for the Programme.

Note: Relaxation and Reservation: As per the Rule.

Course fee:

Rs. 30,000/- per semester (for 1st - 5th) and Rs. 15,000/ (for the 6th semester)

Approximate expenditure for the programme: Rs. 1, 90,000 (Tuition fees + Semester examination fees + Miscellaneous for six semesters)

Objectives:

The basic objective behind offering Applied Geophysics as an MSc. Tech Programme principally to the students having major in Physics and Geology (with Mathematics and Physics) at the graduation level is three-fold. First, to generate quality human resources in the 'high skill' segment of workers who are supposed to explore, develop and exploit principal natural resources like oil, water and minerals in a sustainable manner and increasing thereby the practical importance of higher education in nation building. Secondly, introduction of more down-to-earth steps so that the academia-industry symbiosis becomes more meaningful as well as useful. Developing the software-based learning skill has been given additional weightage. Making the students confident enough not only to face interviews rather to face different challenges of life while playing leadership roles is the third objective.

Special Features:

1. Industry as well as research oriented balanced syllabus.
2. Faculties having industrial as well as long years of academic background.
3. Earth system science approach.
4. Continuous interactions with the resource persons from the premiere oil industries like the OIL and the ONGC.
5. Serious project work.
6. Better training for availing job prospect.
7. Purposeful research orientation.

Job prospect:

We don't guarantee jobs but the track record of the department shows that the employability of the students passing out of this department in premiere industries like OIL, ONGC, GSI, Shell, Schlumberger, Halliburton, Reliance, NHPC and many other reputed concerns is quite impressive. Moreover, students are motivated to enhance their competitive edge and grow research oriented minds to keep their learning curve up in a sustainable manner. As a result, a number of students have joined PhD programmes in institutions like IIT Bombay, IIT Kharagpur, IIT Roorkee and of course in state Universities like the Cotton, Guwahati and Dibrugarh.

Programme structure:

In conformity with the stated objectives, the first year of the Programme is devoted to introduce the philosophy of scientific exploration in general and exploration geophysics in particular. Earth System Science approach with emphasis on climate change has been included which is supposed to act as a broader perspective. To develop geophysical goal oriented computational skill, a course 'Geoscientific data analysis with MATLAB' has been introduced. The second year is principally devoted to core issues like Seismology and Seismic methods of data acquisition & processing. Besides these, there is in-depth coverage of Gravity and Magnetic Methods. Electrical methods along with Electromagnetic methods are given sufficient weightage. Elective papers include Hydrogeology and ground water investigations, and Principles of Stratigraphy. Moreover, there is a 'Field Visit' component which is planned as per convenience. The third year is devoted principally to more specialized issues of exploration applications like seismic data interpretation, well logging and Reservoir Geophysics. Options are given to choose from latest fields of concern like 'Decision Analysis and Value of Information' and 'Simulation modelling in environmental science' etc. Besides the regular field work, serious project works of six months' duration having strictly monitored periodic submission of progress reports related to exploration under the joint supervision of the Department of Applied Geology, Dibrugarh University and reputed organizations (OIL, ONGCL, CSIR- NEIST etc.) will be conducted in the final sixth semester to promote research aptitude of the candidates.

See

Appendix-I- Semester structure**Appendix-II- Model question type for the Entrance Test****For further details, please contact:**

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Appendix-I-Semester structure

SEMESTER-I

Course No.	Course	L	P	Cr	Marks		
					IS	ES	Total
Core Courses							
AGP-101	Philosophy of Science & Exploration	3	-	3	40	60	100
AGP-102	Earth System Science	3	-	3	40	60	100
AGP-103	Applied Mathematics for Geophysics	3	-	3	40	60	100
AGP-104	Geoscientific Data Analysis with Matlab	3	-	3	40	60	100
Practical							
AGP-104-P	Geoscientific Data Analysis with Matlab	1		1	20	30	50
Discipline Specific Elective Courses (DSE)							
AGP-1D-1	Physics Essential	4	-	4	40	60	100
AGP-1D-2	Geology Essential	4	-	4	40	60	100
Ability Enhancement Courses (AEC) [offered by the department]							
AGP-1A-1	Technical English & Professional Communication	2		2	20	30	50

Total Marks for Semester-I: 600
Total Credits: **19(Minimum)**

SEMESTER - II

Course No.	Course	L	P	Cr	Marks		
					IS	ES	Total
Core Courses							
AGP-201	Geophysical Inversion	3	-	3	40	60	100
AGP-202	Geophysical Prospecting	3	-	3	40	60	100
AGP-203	Geophysical signal theory	3	-	3	40	60	100
AGP-204	Numerical Analysis and Computer programming	3	-	3	40	60	100
Practical							
AGP-204-P	Numerical Analysis and Computer programming	1	-	1	20	30	50
Discipline Specific Elective Courses (DSE)							
AGP-2D-1	Hydrogeology & Ground water investigations	3	1	4	40	60	100
AGP-2D-2	Principles of Stratigraphy	4	-	4	40	60	100
Ability Enhancement Courses (AEC) [offered by other departments]							
AGP-2A-1	Summer Training-I: Field/Industrial visit		2	2	20	30	50

Total Marks for Semester-II: 600
Total Credits: **19(Minimum)**

SEMESTER: III

Course No.	Course	L	P	Cr	Marks		
					IS	ES	Total
Core Courses							
AGP-301	Seismology	3		3	40	60	100
AGP-302	Geophysical Tools I: Seismic Methods (Data Acquisition & Processing)	3		3	40	60	100
AGP-303	Geophysical Tools II: Electrical & Electro Magnetic Methods	3		3	40	60	100
AGP-304	Image Processing & Geographic Information System	3		3	40	60	100
Practical							
AGP-301-P	Seismology	-	1	1	20	30	50
AGP-302-P	Geophysical Tools I: Seismic Methods (Data Acquisition & Processing)	-	1	1	20	30	50
AGP-303-P	Geophysical Tools II: Electrical & Electro Magnetic Methods	-	1	1	20	30	50
AGP-304-P	Image Processing & Geographic Information System	-	1	1	20	30	50
Discipline Specific Elective Courses (DSE)							
AGP-3D-1	Decision Analysis and Value of Information	4		4	40	60	100
AGP-3D-2	Fluvial Dynamics and Tectonic Geomorphology	4	-	4	40	60	100
Generic Elective Courses (GE) [offered by the Applied Geology Department]							
AGP-3G-1	Water Science, Policy & Governance	4	-	4	40	60	100
Generic Elective Courses (GE) [offered by other departments]							
PT-3G-4	Petroleum Reservoir Engineering	2	2	4	40	60	100
PT- 3G-5	Basic Drilling Technology	3	1	4	40	60	100
Ability Enhancement Courses (AEC) [offered by other departments]							
AGP-3A-1	Winter Training-Lab visit	2	2		20	30	50

Total Marks for Semester-III: 750
Total Credits: **22(Minimum)**

SEMESTER-IV

Course No.	Course	L	P	Cr	Marks		
					IS	ES	Total
Core Courses							
AGP-401	Geophysical Tools III: MT & GPR Methods	3		3	40	60	100
AGP-402	Geophysical Tools IV: Gravity & Magnetic Methods	3		3	40	60	100
AGP-403	Geophysical Tools V: Well Logging	3		3	40	60	100
AGP-404	Reservoir Geophysics	3		3	40	60	100
Practical							
AGP-401-P	Geophysical Tools III: MT & GPR Methods		1	1	20	30	50
AGP-402-P	Geophysical Tools IV: Gravity & Magnetic Methods		1	1	20	30	50
AGP-403-P	Geophysical Tools V: Well Logging		1	1	20	30	50
AGP-404-P	Reservoir Geophysics		1	1	20	30	50
Discipline Specific Elective Courses (DSE)							
AGP-4D-1	Marine Geophysics	4		4	40	60	100
AGP-4D-2	Geothermics and Geodynamics	4	-	4	40	60	100
Generic Elective Courses (GE) [offered by the Applied Geology Department]							
AGP-4G-1	Environmental Geophysics	4	-	4	40	60	100
Ability Enhancement Courses (AEC) [offered by other departments]							
AGP-4A-1	Summer Training-II-Field/Industrial visit		2	2	20	30	50

Total Marks for Semester-IV: 750
Total Credits: **22(Minimum)**

SEMESTER- V

Course No.	Course	L	P	Cr	Marks		
					IS	ES	Total
Core Courses							
AGP-501	Formation Evaluation	3	1	4	40	60	100
AGP-502	Seismic Data Interpretation and Basin Analysis	3	1	4	40	60	100
AGP-503	Sequence Stratigraphy	3	1	4	40	60	100
AGP-504	Simulation modelling in environmental science	3	1	4	40	60	100
Practical							
AGP-501-P	Formation Evaluation	1	1		20	30	50
AGP-502-P	Seismic Data Interpretation and Basin Analysis	1	1		20	30	50
AGP-503-P	Sequence Stratigraphy	1	1		20	30	50
AGP-504-P	Simulation modelling in environmental science	1	1		20	30	50
Discipline Specific Elective Courses (DSE)							
AGP-5D-1	Advanced Seismology	4		4	40	60	100
AGP-5D-2	Geomagnetism	4	-	4	40	60	100
Ability Enhancement Courses (AEC) [offered by the department]							
AGP-5A-1	Research Methodology & Science Writing	2	-	2	20	30	50
Ability Enhancement Courses (AEC) [offered by other departments]							
AGP-5A-2	Industrial Management	2	-	2	20	30	50

Total Marks for Semester-V: 750

Total Credits: **22(Minimum)**

SEMESTER- VI

Course No.	Course	L P Cr	Marks		
			IS	ES	Total
Core Courses					
AGP-601	Dissertation/Project Work	12			500
AGP-602	Seminar	4			100
AGP-603	Grand Comprehensive Test	4			100
AGP-604	Comprehensive Viva Voce	2			50

Total Marks for Semester-VI: 750
Total Credits: **22**

Cumulative Total Marks (I+II+III+IV+V+VI semesters)

=600+600+750+750+750+750=4200

Cumulative Total Credits (I+II+III+IV+V+VI semesters)

=**19+19+22+22+22+22=126 (Minimum)**

Semester	Courses with Credits					
	Core (Fixed)		Elective (minimum one)		AEC (minimum)	Total (Minimum)
	Theory	Practical	DSE	GE		
I	4 Courses × 3 Credits=12	1 Course ×1 Credit =1	1 Course × 4 Credit =4	1 Course × 4 Credit =4	1 Course × 2 Credit =2	19
II	4 Courses × 3 Credits=12	1 Course ×1 Credit =1	1 Course × 4 Credit =4		1 Course × 2 Credit =2	19
III	4 Courses × 3 Credits=12	4 Courses ×1 Credit = 4	1 Course × 4 Credit =4	1 Course × 4 Credit =4	1 Course × 2 Credit =2	22
IV	4 Courses × 3 Credits=12	4 Courses ×1 Credit = 4	1 Course × 4 Credit =4	1 Course × 4 Credit =4	1 Course × 2 Credit =2	22
V	4 Courses × 3 Credits=12	4 Courses ×1 Credit = 4	1 Course × 4 Credit =4		1 Course × 2 Credit =2	22
VI	Dissertation/Project work (12)		Seminar (4)	Grand Composite Test (4)	Composite Viva Voce (2)	22

Note:

Core: Core Courses (Compulsory) / Credits: 3 (Only Theory) / Credits: 4 (Theory + Practical)

DSE: Discipline Specific Elective (Intra-Departmental / Credit: 4)

GE: Generic Elective (Inter-Departmental / Inter-Disciplinary / Credits: 4)

AEC: Ability Enhancement Courses (Inter-Disciplinary / Credits: 2)

L: Numbers of weekly lectures (Each of 1 hr duration and 1 Credit)

P: Numbers of weekly practical (Each of 2hrs duration and 1 Credit)

IS: In-semester marks/ ES: End-semester Marks/ TM: Total Marks

Appendix-II-Model questions for the Entrance Test

Model questions for the DUPGET Exam for the Program 3yr. MSc. Tech (Applied Geophysics)

Note: Generally, above the question papers, following instructions are given.

Read the following instructions carefully and then answer.

You have to write the correct answer below each of the question for one option only.

For example, if Q.101 having the fourth option as the correct answer write **d**.

You need not write the whole sentence.

There will be negative marking. For four wrong answers 1 mark will be deducted.

Questions 1-50: Physics

Questions 51-100: General

1. Here are three vectors:

$$\vec{d}_1 = -3.0 \hat{i} + 3.0 \hat{j} + 2.0 \hat{k}$$

$$\vec{d}_2 = -2.0 \hat{i} - 4.0 \hat{j} + 2.0 \hat{k}$$

$$\vec{d}_3 = 2.0 \hat{i} + 3.0 \hat{j} + 1.0 \hat{k}$$

What results from $\vec{d}_1 \cdot (\vec{d}_2 + \vec{d}_3)$?

- (a) 1 (b) 3 (c) -9 (d) 52

Answer:

2. Why do passengers in a moving car suddenly feel a jerk in the forward direction when the car stops abruptly?

- (a) The back of the seat pushes passengers forward.
 (b) The inertia of rest stops the car and takes the passengers forward.
 (c) The upper body of passengers continues to be in the state of motion while the lower part of the body which is in contact with the seat comes to rest.
 (d) Nothing can be said due to insufficient data.

Answer:

3. A deer being preyed upon by a lion runs at a speed of 9 m/s. If the lion's speed is 10 m/s and the separation between the deer and the lion is 100 m, how long would it take the lion to catch the deer?

- (a) 1 s (b) 19 s (c) 90 s (d) 100 s

Answer:

4. A light and a heavy body have equal momentum. Which one has greater kinetic energy?

- (a) The light body
 (b) The heavy body
 (c) Both have equal kinetic energy
 (d) Data is incomplete

Answer:

5. The first law of thermodynamics states that energy cannot be
- (a) created only
 - (b) destroyed only
 - (c) converted
 - (d) created and destroyed

Answer:

6. A thermodynamic process where no heat is exchanged with the surroundings is
- (a) isothermal
 - (b) adiabatic
 - (c) isobaric
 - (d) isotropic

Answer:

7. Work done in a constant volume process is
- (a) negative
 - (b) zero
 - (c) positive
 - (d) none of the above

Answer:

8. The irreversibility of a process occurs due to
- (a) lack of equilibrium during the process
 - (b) involvement of dissipative effects
 - (c) either (a) or (b) or both
 - (d) none of the above

Answer:

9. The electromagnetic wave theory of light fails to explain:
- (a) Compton effect.
 - (b) Photoelectric effect.
 - (c) Neither (a) nor (b).
 - (d) Both (a) and (b).

Answer:

10. The fringe width (β) of a diffraction pattern and the slit width d are related as:
- (a) $\beta \propto d$
 - (b) $\beta \propto 1/d$
 - (c) $\beta \propto \sqrt{d}$
 - (d) $\beta \propto 1/d^2$

Answer:

11. When a Polaroid is rotated, the intensity of light varies but never reduces to zero. It shows that the incident light is:
- (a) Unpolarized.

- (b) Completely plane polarized.
 (c) Partially plane polarized.
 (d) None of the above.

Answer:

12. An unpolarized light is incident onto a medium of refractive index $\sqrt{3}$ at the polarizing angle of the medium then the angle of refraction is:

- (a) 30°
 (b) 45°
 (c) 60°
 (d) 90°

Answer:

51. Which of the following countries has agreed to accept the payment of export of oil and petroleum products to India, in rupee terms instead of dollar or any other currency?

- (a) KUWAIT (b) UAE (c) IRAN (d) IRAQ

Answer:

52. The sensitive index of National Stock Exchange of India is popularly known as

- (a) SENSEX (b) CRIS (c) CRE (d) NIFTY

Answer:

53. In the following question, choose the correct code form.

If 'air' is called 'green', 'green' is called red, 'red' is called 'sea', 'sea' is called 'blue', 'blue' is called 'water' and 'water' is called 'pink', then what is the color of grass?

- (a) green (b) air (c) red (d) pink

Answer:

54. Read the following information to answer the given question.

- ABCDEF are sitting in a row.
- E and F are in the center, A and B are at the ends.
- C is sitting on the left of A.

Who is sitting three places on the right of D?

- (a) B (b) C (c) A (d) E

Answer:

55. Technical writing demands _____ use of language.

- (a) figurative
 (b) factual
 (c) poetic
 (d) dramatic

Answer:

56. In a technical report, which of these must be avoided?

- (a) Facts
- (b) Logical conclusion
- (c) Subjective evaluation
- (d) Objective evaluation

Answer:

57. Convert the following sentence to active voice:

Our task had been completed before sunset.

- (a) We completed our task before sunset.
- (b) We have completed our task before sunset.
- (c) We complete our task before sunset.
- (d) We had completed our task before sunset.

Answer:

58. What is a list of items to be discussed at a formal meeting called?

- (a) Schedule
- (b) Agenda
- (c) Proceedings
- (d) Excerpt

Answer:

59. The average age of 30 students is 9 yr. If the age of their teacher is included, it becomes 10 yr. the age of the teacher (in yr) is

- (a) 27
- (b) 31
- (c) 35
- (d) 40

Answer:

60. Rajesh walked 25 m towards south. Then he turned to his left and walked 20 m. He then turned to his left and walked 25 m. He again turned to his right and walked-15 m. At what distance is he from the starting point and in which direction?

- (a) 35 m East
- (b) 35 m North
- (c) 30 m West
- (d) 45 m East

Answer:

61. Here are some words translated from an artificial language.

gorblflur means fan belt

pixngorbl means ceiling fan

arthtusl means tile roof

Which word could mean "ceiling tile"?

- (a) gorbtlusl
- (b) flurgorbl
- (c) arthflur
- (d) pixnarth

Answer:

62. The school principal has received complaints from parents about bullying in the school yard during recess. He wants to investigate and end this situation as soon as possible, so he has asked the recess aides to watch closely. Which situation should the recess aides report to the principal?

- (a) A girl is sitting glumly on a bench reading a book and not interacting with her peers.
- (b) Four girls are surrounding another girl and seem to have possession of her backpack.
- (c) Two boys are playing a one-on-one game of basketball and are arguing over the last basket scored.
- (d) Three boys are huddled over a handheld video game, which isn't supposed to be on school grounds.

Answer:

Answer key:

- | | |
|----------------|----------------|
| 1. (b) | 51. (c) |
| 2. (c) | 52. (d) |
| 3. (d) | 53. (c) |
| 4. (a) | 54. (b) |
| 5. (d) | 55. (b) |
| 6. (b) | 56. (c) |
| 7. (b) | 57. (d) |
| 8. (c) | 58. (b) |
| 9. (a) | 59. (d) |
| 10. (b) | 60. (a) |
| 11. (c) | 61. (d) |
| 12. (c) | 62. (b) |