

**OFFICE OF THE DIRECTOR, STUDENTS' WELFARE
GAUHATI UNIVERSITY, GUWAHATI-781014, ASSAM**

Email Id : dsw@gauhati.ac.in

NOTICE INVITING QUOTATION

Sealed quotations are invited from reputed firms for supply of the following equipments, items with financial support of BRNS, Govt. of India. The quotations will be received at the office of the Director of Students' Welfare, Gauhati University, Guwahati, Assam -781014 up to 2 p.m. on 19.12.2015 and will be opened on the same day at 2.30 p.m. The firm to be selected will be chosen on the basis of the specifications of the equipments and items and subject to satisfaction of the committee only.

Sd/-
Director, Students' Welfare
Gauhati University

Memo No. GU/BRNS Project/NIT/2016/ 10

Dated 08.12.15

Copy for information and necessary action to:

1. The Treasurer, Gauhati University.
2. The Secretary to the Vice-Chancellor, G.U.
3. The Secretary to the Registrar, G.U.
4. The Joint Registrar, G.U. with a request to place the 'NIQ' notice in GU website.
5. Notice Board.



Director, Students' Welfare
Gauhati University

1. Specifications for GPS device

Physical & Performance:	
Unit dimensions, WxHxD:	not more than 7 x20 x 4 cm
Display size, WxH:	at least 4 x 5.5 cm
Display resolution, WxH:	160 x 240 pixels
Display type:	transflective, 65-K color TFT
Weight:	less than 275 g with batteries
Battery:	2 AA batteries
Battery life:	20 hours or higher
Waterproof:	yes (IPX7)
High-sensitivity receiver:	yes
Interface:	high-speed USB and NMEA 0183 compatible
Maps & Memory:	
Base map:	yes
Ability to add maps:	yes
Built-in memory:	At least 1.5 GB
Compatible data cards:	microSD™ card
Waypoints/favorites/locations:	More than 2000
Routes:	More than 200
Track log:	More than 10,000 points, 200 saved tracks

Estimated cost: ≤ Rs 45,000/- (with India map)

2. Specifications for pocket Gamma survey meter:

Application	Gamma exposure meter for wide range gamma dose rate
Detector	Geiger-Muller counter
Measurement range	0.01 μ Sv/h – 130 mSv/h
Energy range (\pm 30%)	0.04 – 3 MeV
Operating condition Temp: RH :	-10 to 50 $^{\circ}$ C Upto 95% at 35 $^{\circ}$ C
Weight	not more than 300 gm
Size	not more than 150 X 100 X 50 mm
Power requirement	Battery operated
Battery life	Typically six months
Communication with computer	USB interface

Estimated cost: \leq Rs 50,000/-

3. Specifications of passive equipment

3.1 Technical data of the pin holes type twin cup dosimeters

- Simultaneous measurement of radon and thoron using LR-115 (type-II) detector
- Single entry face for both radon and thoron diffusion.
- Discrimination of radon/thoron should be carried out by pin-holes. No additional membrane should be required for radon-thoron discrimination. Thoron entry into the radon chamber through pin-holes should be within 2 %.
- Material: Light weight plastic such ABS with inside metal coating
- Materials should be free from radon/thoron absorption
- Outside coating by a decorative colour preferably wooden
- Easy fixing metal holder for LR-115 detectors of minimum size of 3 cm x 3 cm with suitable number of pin holes for thoron cut off.
- Provision for dosimeter numbering as per user request
- Sensitivity should be at least 0.017 track/cm²/day/(Bq/m³) for radon and 0.01 track/cm²/day/(Bq/m³) for thoron detection
- Proper sealing should be provided at each threading using Neoprene 'O' ring. Maximum allowable leakage in sealed condition is 0.0005 h⁻¹
- Deployment arrangement: vertically with chain lock system at top with gas entry face downward
- Design should be approved by RP&AD, BARC

Estimated cost: \leq Rs. 800/- per unit

3.2 Fabrication of the badge-holders for DTPS/DRPS

Specifications:

1. The badge should be of dimensions ~6cm x 3 cm.
2. It should have two slots to accommodate two detectors each of dimension 3x3 cm².

3. The badge should have two parts. The lower part should have a clip for suspension. The upper part should have two brackets to make the detector grip tight.
4. The material of the badge should be acrylic/hard plastic.
5. The weight should be ~ 20 gms.

Estimated Cost: ≤ Rs. 200/- per unit (including taxes)

3.3. Fabrication of the Wire-mesh capped holders for Direct Thoron Progeny Sensor (DTPS) and Direct Radon Progeny Sensor (DRPS)

Specifications:

1. The Wire-mesh capped holder will have two parts.
2. The upper part will have two sections having wire-mesh, such that each section will have the dimension of 22 x 22 mm².
3. The total dimension of the upper part will be: length 66 mm, thickness 12 mm, breadth 34 mm.
4. The base will have dimensions: length 66 mm, thickness 2 mm, breadth 34 mm.
5. The distance between the wire-mesh and the detector should be 1 cm.
6. The upper part should fit in tightly on the base.
7. The material of the badge should be acrylic/hard plastic.
8. A clip should be fitted at the back-side of the base to use it as personal dosimeter.
9. The weight should be ~ 20 gms.

Estimated Cost: Rs. 400/- per unit (including taxes)

3.4. Fabrication of integrated sampler (DTPS/DRPS WL monitor)

Specifications:

1. The material of the sampler should be light metal/aluminium.
2. One end of the sampler should be open-faced and the other end should be close-faced for attachment to pump.
3. Distance between the wire-mesh and the detector and that between the Filter-paper and the detector should be 3 mm.
4. The diameter of the sampler should be ~5.5 cm, and height ~1.5 cm.

Estimated Cost: ≤ Rs. 50,000/- per unit (including taxes)

4. Technical Specification of Spark Counter

Detector Type	Solid State Nuclear track detector
Count Capacity	99999 counts
Count Display	On the LCD display
Dead Time	Less than 10 μ for spark registration Sparking Head area = 1 Sq.cm(±0.1% accuracy)
EHT Range	100 Volts to 1000 volts, user settable
EHT Display	4 Digit display on LCD Module
EHT Setting	Independent setting of Pre-sparking & counting Voltage through keys using two digital potentiometers
Counting Gate/Window time	1 to 10 sec. User –settable through keys
Display	32 character backlit LCD Module

Parameters Displayed	Counts and EHT
Operating Keys	5 Nos.
Data Transfer	Through RS 232 serial port for data transfer to a PC
Downloading Software	Provided on a CD
Power	Mains 230 V AC \pm 10%
Dimensions	23 cm x 20 cm x 28 cm
Accessories	Microprocessor based control system

Estimated cost: \leq Rs 60,000/-

5. Specification of Constant Temperature Water Bath:

- Heating: 5 to 99 °C
- Dimension : not more than 20x15x10 cms
- Voltage (V) : 170 - 240.0 V AC
- Rating (Watt) : 2.0
- Accuracy in (°C): \pm 0.5

Estimated cost: \leq Rs. 30,000/-

6. Specifications of radon-thoron monitor and accessories

6.1. SPECIFICATIONS OF PORTABLE RADON-THORON MONITOR

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1. Detector type : ZnS:Ag scintillation detector
 2. Scintillation volume : ~ 0.15 L
 3. Sensitivity : > 1 CPH/(Bq/m³) for Radon
> 0.7 CPH/(Bq/m³) for Thoron
 4. Sampling type : Both Diffusion and Flow with interchangeable sampler
 5. Sampling pump : Inbuilt noiseless pump with Auto / manual control of power to pump
 6. Sampling volume : 0.5 to 1 L/min
 7. Measured quantity and its measurement interval : Radon mode : User selectable 15 / 60 min
Thoron mode : User selectable 15 /30 / 60 min
Alpha mode : User settable 1 to 999 min
 8. Response time for Radon and thoron measurement : 95% of radon value is to be attained within an hour
95% of Thoron value is to be attained within 5 minutes
 9. Minimum detection limit : 15 Bq/m³ at 1 σ and 1 h cycle for radon / thoron
 10. Upper detection limit : 10 MBq/m³
 11. Thoron interference in radon : < 5% with sniffing mode of sampling
 12. Display : LCD touch screen display indicating the current measurement process and also capable of displaying the past measurements with a on-screen key press during on-going measurement.
 13. Date storage memory : Memory with storage capacity of at least 30,000 readings
 14. Data communication : 2-wire RS 485 data communication with USB data port at PC end.
 15. Inbuilt sensor : Temperature and Relative humidity sensor inside monitor

16. Operating power : Internal DC Battery operated with backup up to 30 hr Continuous use with 110- 240 V AC 50 Hz main supply.
17. Dimension and weight : portable equipment having dimensions within 35 cm x 20 cm x 14 cm and weight less than 4 Kg
18. Carrying case : Instrument carry case with sufficient cushioning for safe transport of equipment during field use.
19. Software : PC end software with following functions & features:
 RS485 based data communication with radon monitor
 Display of current readings and trend from multiple units
 Data downloading in online and offline mode
 Long distance data communication range
 Remote operation of radon monitor through software
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6.2 Accessory name:	Mass exhalation chamber
Used for:	To measure radon mass exhalation rate (per unit mass) /thoron surface exhalation rate (per unit exposed surface area) from Powder samples
Internal dimensions:	100 mm Diameter X 50 mm height
Volume:	0.4 Litre
Sampling	Both diffusion and flow mode
Lid sealing to chamber:	Threaded
Lid sealing to detector:	Threaded compatible to SRM detector and flow mode sampling lid.
Material:	Aluminium
Flow mode sampler:	Threaded disc with two 5 mm nozzles (or std. size)

Apprx cost: ≤ 20,000/-

6.3 Accessory name:	Radon accumulator
Used for:	To measure in situ radon flux (per unit area of ground surface) from ground.
Internal dimensions:	200 mm Diameter X 105 mm height
Volume:	3 Litre
Surface area	314 cm ²
Sampling	Both diffusion and flow mode
Connection to detector:	Threaded compatible to SRM detector
Material:	Aluminium double walled
Flow mode sampler:	Threaded disc with two 5 mm nozzles (or std. size)

Apprx cost: ≤35,000/-

6.4. Accessory name:	Water Bubbler Kit
Used for:	To measure radon/thoron dissolved in water/liquid sample (per unit liquid volume)
Kit contents	sampling bottles – 10 nos, Bubbler – 2 Nos. 500 ml capacity syringe with 10 cm long nozzle – one No. packed in a hard carry case
Sample capacity:	50 ml
Head space volume:	50 ml
Material:	Borosilicate glass

Apprx cost: ≤25,000/-

6.5. Accessory name:	Soil probe
Used for:	To measure in-situ radon/thoron in pore space of soil.
Probe length	1 meter
Hammering tool:	500 gm hammer.
sampling connector	5 mm size nozzle – one No.
probe handle:	detachable handle for removing the probe from ground
Material:	Hard S.S.

Apprx cost: ≤25,000/-

6.6. Accessory name:	Thoron accumulator
Used for:	To measure in situ thoron flux (per unit area of surface)

Internal dimensions:	60 mm Diameter X 40 mm height
Volume:	100 ml approx.
Surface area	28 cm ²
Sampling	flow mode by two nozzles attached on the chamber walls at 2 cm and 4 cm from bottom and opposite to each other.
Insertion depth mark:	Marking at one cm height along perimeter for indicating insertion depth of accumulator in soil.
Material:	Aluminium
Sealing on surface	Soft gasket (removable) at edge for mounting on plane surface

Aprx Cost: ≤5000/-

6.7. Accessory name:	Geo station for continuous radon emission measurement
Used for:	Radon anomaly detection by measuring in situ radon flux (per unit area of ground surface) from ground continuously.
Power	solar powered with battery back up
Sampling	Both diffusion and flow mode
Material:	Stainless Steel
Pressure relief vent:	0.5 inch size auto shut-off valve connection (2 Nos)

Aprx cost: ≤1,00,000/-

7 Camera Sony (Model No SLT A77V or comparable model)