

COLLEGE OF ENGINEERING VADAKARA

(Under CAPE, Established by The Government of Kerala)

KURUNTHODI, MANDARATHUR (PO), VADAKARA, KOZHIKODE - 673 105

PHONE: 0496 - 2536125, 2537225 E-Mail : citvcape@gmail.com

An ISO 9001 : 2015 Certified & NAAC Accredited B + Graded institution

NOTICE INVITING TENDERS

No. VDA/46/2022 – A (P)

Dated: 16.02.2023

Sealed competitive tenders are invited from registered Contractors /Authorized dealers for the supply and Installation of Lab equipments for Diploma Programme as detailed below:

Sl.No	Name of items	EMD	Time of Supply and Installation	Last date of submission
1	Supply and Installation of lab Equipments for Mechanics of Robotics lab and Basic Robotics lab to the Diploma Programme. (Specification attached)	Rs.4,875/-	Two weeks	24.02.2023 at 2.00 PM

Conditions:

1. On site Installation
2. Tender Form can be had from College Website www.cev.ac.in
3. Cost of Tender Form is Rs. 1,175/- (Including GST 18%) and the same is to be remitted by the Tenderer along with the duly filled tender form as DD drawn in favour of Principal, College of Engineering, Vadakara
4. The tenderer should send along with his tender an initial agreement executed and signed in Kerala Stamp Paper of value Rs.200/-
5. The successful tenderer before signing the Agreement within the period specified in the letter of acceptance of his tender, deposit a sum equivalent to 5% of the value of the contract as Security deposit.
6. Firm Period of Tender is fixed as Two weeks.
7. The rate should be inclusive of all taxes and nothing extra shall be admissible over and above the rate quoted
8. Payment will be made through account payee cheque and no advance payment will be sanctioned
9. Received tenders will be opened on 24-02-2023 at 2.30 PM.

Details of Tender can be had from the Office on all working days up to 4 pm . The Principal, College of Engineering, Vadakara reserves the right to reject any of the tenders or all the tenders without assigning any reason whatsoever.

1. Notice Board.
2. Website.
3. Mathrubhumi Daily

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College of Engineering Vadakara

Mandarathur (P.O), Vadakara-673105



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No. VDA/46/2022 – A (P)

Dated: 16.02.2023

TENDER NO.02/2023

Supply and installation of Lab equipment's for Mechanics of Robotics lab and Basic Robotics lab to the Diploma Programme.




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Mandarathur (P.O), Vadakara-673105



FORM OF TENDER

Name of item :

Date of issue :

Name of Tender :

Address :
.....


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Mandarathur (P.O), Vadakara-673105

ANNEXURE 2

FORM OF TENDER

From

To

Sir,

I/We hereby tender to supply, under the annexed general conditions of contract; the whole of the articles referred to and described in the attached specification and schedule, or any portion thereof, as may be decided by Government, at the rates quoted against each item. The articles will be delivered within the time and at the places specified in the schedule. *I/We am/are remitting/have separately remitted the required amount of ` (Rupees only) as earnest money.

Yours faithfully

Signature

Address...

..... Date:

*(To be scored in cases where no earnest money deposit is furnished) (General Conditions on the reverse) 165

GENERAL CONDITIONS

Sealed tenders are invited for the supply of the materials as specified in the schedule below/attached.

1) The tenders should be addressed to the officer mentioned below in a sealed cover with the tender number and name shown below duly super scribed on the cover.

2) The tenders should be in the prescribed form which can be obtained from the officer mentioned below on payment of the price which is also noted below. Duplicate copies of tender forms will also be issued at the rate specified below. The cost of tender forms once paid will not be refunded. Tenders which are not in the prescribed form are liable to be rejected. The rates quoted should be only in Indian currency. Tenders in any other currency are liable to rejection.



3 Intending tenderers should send their tenders so as to reach the Officer mentioned below, on due date and time (noted below). No tender received after the specified date and time will be accepted on any account. The rates will be considered firm for acceptance till the date mentioned below. Tenders not stipulating period of firmness and tenders with price variation clause and/or 'subject to prior sale' condition are liable to be rejected.

4) (a) Every tenderer who has not registered his name with the state Government (Stores Purchase Department), should send along with his tender, an earnest money of one per cent of the total cost of the articles tendered for (rounded to the nearest rupee) subject to a minimum of ` 1500, if the amount calculated at one per cent of the value of the articles tendered for falls below ` 1500. The amount may be paid by DD infavour of Principal, College of Engineering, Vadakara, duly countersigned by the officer mentioned below or by Demand Drafts (crossed) on the local branch of State Bank of Travancore/State Bank of India drawn in favour of the officer mentioned below. In the case of remittance into the treasury, challan receipt should be forwarded along with the tender. Cheques will not be accepted. The earnest money of the unsuccessful tenderers will be returned within a period of one month after the tenders are settled; but that of the successful tenderers will be adjusted towards the security that will have to be deposited for the satisfactory fulfillment of the contract. "If the Earnest Money Deposit of the successful tenderer is not refunded within three months of finalization 166 of the contract interest at the rate of interest paid for S.B. accounts by nationalized banks will be paid on the Earnest Money Deposit".

5. The tenders will be opened on the appointed day and time in the office of the undersigned, in the presence of such of those tenderers or their nominees who may be present at that time.

6. If any tenderer withdraws from his tender before the expiry of the period fixed for keeping the rates firm for acceptance, the earnest money if, any, deposited by him will be forfeited to Government or such action taken against him as Government think fit.

7. Tenderers shall invariably specify in their tenders the delivery conditions including the time required for the supply of articles tendered for.

8. (a) The tenderer shall clearly specify whether the articles offered bear Indian Standards Institution Certification Mark or not. In such cases, they shall produce copies of Certification mark along with their tender in support of it. (b) Tenderers shall clearly specify whether the goods are offered from indigenous sources, from imported stocks in India or from foreign sources to be imported under a license. Government reserves the right to reject offers for import of goods if the Import Trade Control Policy in force at the time of award of the contract prohibits or restricts such imports.



9. The final acceptance of the tenders rests entirely with the Government who do not bind themselves to accept the lowest or any tender. But the tenderers on their part should be prepared to carry out such portion of the supplies included in their tenders as may be allotted to them.

10. In the case of materials of technical nature the successful tenderer should be prepared to guarantee satisfactory performance for a definite period under a definite penalty. 168

11. Communication of acceptance of the tender normally constitutes a concluded contract. Nevertheless, the successful tenderer shall also execute an agreement for the due fulfillment of the contract within the period to be specified in the letter of acceptance. The contractor shall have to pay all stamp duty, lawyer's charges and other expenses incidental to the execution of the agreement. Failure to execute the agreement within the period specified will entail the penalties set out in para 12 below.

12. (a) The successful tenderer shall, before signing the agreement and within the period specified in the letter of acceptance of his tender deposit a sum equivalent to 5 per cent of the value of the contract as security for the satisfactory fulfillment of the contract less the amount of money deposited by him along with his tender. The amount of security may be deposited in the manner prescribed in clause 4 supra or in Government Treasury Savings Bank and the Pass Book pledged to Purchasing Officer or in Fixed Deposit Receipts of State Bank of Travancore/State Bank of India endorsed in favour of the above officer. Letters of guarantee in the prescribed form for the amount of security from an approved Bank will also be considered enough at the discretion of government. If the successful tenderer fails to deposit the security and execute the agreement as stated above, the earnest money deposited by him will be forfeited to Government and contract arranged elsewhere at the defaulter's risk and any loss incurred by Government on account of the purchase will be recovered from the defaulter who will, however, not be entitled to any gain accruing thereby. If the defaulting firm is a registered firm their registration is liable to be cancelled.

(b) In cases where a successful tenderer, after having made partial supplies fails to fulfil the contracts in full, all or any of the materials not supplied may at the discretion of the Purchasing Officer, be purchased by means of another tender/ quotation or by negotiation or from the next higher tenderer who had offered to supply already and the loss, if any, caused to the Government shall thereby together with such sums as may be fixed by the Government towards damages be recovered from the defaulting tenderer.



(c) Even in cases where no alternate purchases are arranged for the materials not supplied, the proportionate portion of the security deposit based on the cost of the materials not supplied at the rate shown in the tender of the defaulter shall be forfeited and balance alone shall be refunded.

(d) If the contractor fails to deliver all or any of the stores or perform the service within the time/period(s) specified in the contract, the purchaser shall without prejudice to its other remedies under the contract, deduct from the contract price as liquidated, damages, a sum equivalent to 0.5% or 1% of the delivered price of the delayed stores or unperformed services for 169 each week of delay until actual delivery or performance, up to a maximum deduction of 10% of the contract prices of the delayed stores or services. Once the maximum is reached, the purchaser may consider termination of the contract at the risk and cost of the contractor.

13. The security deposit shall, subject to the conditions specified herein, be returned to the contractor within three months after the expiration of the contract, but in the event of any dispute arising between the Department concerned and the contractor, the Department shall be entitled to deduct out of the deposits or the balance thereof, until such dispute is determined the amount of such damages, costs, charges and expenses as may be claimed. The same may also be deducted from any other sum which may be due at any time from Government to the contractor. In all cases where there are guarantee for the goods supplied the security deposit will be released only after the expiry of the guarantee period. If the Security is not released even after the completion of one year, from the date of expiry of the period of contract provided there are no complaints against the contractor. Interest at the rate of interest paid for S.B. accounts by nationalized banks will be paid on the Security Deposit.

(a) "If the Earnest Money Deposit/Security Deposit is not released within the period specified for no fault of the Contractor, the loss incurred to Government shall be made good from the Officer responsible for the belated release of the Earnest Money deposit/Security Deposit."

14. (a) All payments to the contractors will be made by the Purchasing Officer in due course:-

1. either by Departmental cheques payable at the Kerala Government Treasuries; or
2. by cheques or drafts on the Reserve Bank of India, State Bank of India and State Bank of Travancore (at any of their Principal Branches in India).
3. In the case of supplies from abroad by drafts as may be, arranged between the contracting parties.

(b) All incidental expenses incurred by the Government for making payments outside the district in which the claim arises shall be borne by the contractor.



15. The tenderers shall quote also the percentage of rebate (discount) offered by them in case the payment is made promptly within fifteen days/within one month of taking delivery of stores.

16. Ordinarily payments will be made only after the supplies are actually verified and taken to stock but in exceptional cases, payments against satisfactory shipping documents including certificates of Insurance will be made up to 90 percent of the value of the materials at the discretion of Government. Bank charges incurred in connection with payment against documents through bank will be to the account of the contractor. The firms 170 will produce stamped pre-receipted invoices in all cases where payments (advance/final) for release of railway receipts/shipping documents are made through banks. In exceptional cases where the stamped receipts of the firms are not received for the payments (in advance) the unstamped receipt of the Bank (i.e., counterfoils of pay-in-slips issued by the Bank) alone may be accepted as a valid proof for the payment made.

17. The contractor shall not assign or make over the contract on the benefits or burdens thereof to any other person or body corporate. The contractor shall not underlet or sublet to any person or persons or body corporate the execution of the contract or any part thereof without the consent in writing of the purchasing officer who shall have absolute power to refuse such consent or to rescind such consent (if given) at any time if he is not satisfied with the manner in which the contract is being executed and no allowance or compensation shall be made to the contractor or the sub-contractor upon such rescission. Provided always that if such consent be given at any time, the contractor shall not be relieved from any obligation, duty or responsibility under this contract.

18. (a) In case the contractor becomes insolvent or goes into liquidation, or makes or proposes to make any assignment for the benefit of his creditors or proposes any composition with his creditors for the settlement of his debts, carries on his business or the contract under inspection on behalf of or his creditors, or in case any receiving order or orders, for the administration of his estate are made against him or in case the contractor shall commit any act of insolvency or case in which under any clause or clauses of this contract the contractor shall have rendered himself liable to damages amounting to the whole of his security deposits, the contract shall, thereupon, after notice given by the purchasing Officer to the contractor, be determined and the Department/ Government may complete the contract in such time and manner and by such persons as the Department/Government shall think fit. But such determination of the contract shall be without any prejudice to any right or remedy of the Government against the contractor or his sureties in respect of any breach of contract therefore committed by the contractor. All expenses and damages caused to Government by any breach of contract by the contractor shall be paid by the contractor to Government, and may be recovered from him under the provisions of the Revenue Recovery Act in force in the State. (b) The persons/contractors submitting tenders should produce a solvency certificate, clearly indicating to what extent they are solvent from the Tahsildar of the Taluk where they reside along with their tenders.



NOTE: The solvency certificate referred to above will apply only in the case of supply of the following articles viz., dietary articles, fuels, raw materials like roots, creepers, flowers etc., and provisions to hospitals and hostels, sundry articles etc. 171

19. (a) In case the contractor fails to supply and deliver any of the said articles and things within the time provided for delivery of the same, or in case the contractor commits any breach of any of the covenants, stipulations and agreements herein contained, and on his part to be observed and performed, then and in any such case, it shall be lawful for Institution (if they shall think fit to do so) to arrange for the purchase of the said articles and things from elsewhere or on behalf of the Institution by an order in writing under the hand of the Purchasing Officer put an end to this contract and in case the Government shall have incurred, sustained or been put to any costs, damages or expenses by reason of such purchase or by reason of this contract having been so put an end to or in case any difference in price, compensation, loss, costs, damages, expenses or other money shall then or any time during the continuance of this contract be payable by the contractor to the Government under and by virtue of this contract, it shall be lawful for the Government from and out of any moneys for the time being payable or owing to the contractor from the Government under or by virtue of this contract or otherwise to pay and reimburse to the Government all such costs, damages and expenses they may have sustained, incurred or been put to by reason of the purchase made elsewhere or by reason of this contract having been so put an end to as aforesaid and also all such difference in price, compensation, loss, costs, damages, expenses and other moneys as shall for the time being be payable by the contractor aforesaid. (b) In case any difference or dispute arises in connection with the contract, all legal proceeding relating to the matter shall be instituted in the Court within whose jurisdiction the Purchasing Officer voluntarily resides.

20. Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the Purchasing Officer or Principal or any other person authorized by Principal and set off against any claim of the Purchasing Officer or Principal for the payment of a sum of money arising out of or under any other contract made by the contractor with the Purchasing Officer or Government or any other person authorized by Government. Any sum of money due and payable to the successful tenderer or contractor from Government shall be adjusted against any sum of money due to Government from him under any other contracts.

21. Every notice hereby required or authorized to be given may be either given to the contractor personally or left at his residence or last known place of abode or business, or may be handed over to his agent personally, or may be addressed to the contractor by post at his usual or last known place of abode or business and if so addressed and posted, shall be deemed to have been served on the contractor on the date on which, in the ordinary course of post, a letter so addressed and posted would reach his place of abode or business. 22.



22. The tenderer shall undertake to supply materials according to the standard sample and/or specifications. 172

23. (a) No representation for enhancement of rates once accepted will be considered. However, in exceptional cases if Government is convinced of any compelling need for enhancement of rate, it may do so. (b) In the case of imported goods, when the price accepted is the ex-site price quoted by the tenderer, the benefit of any reduction in the c.i.f. price should accrue to the purchasing Department of Government.

24. Any attempt on the part of the tenderers or their agents to influence the Department/Stores Purchase Department in their favour by personal canvassing with the Officers concerned will disqualify the tenderers.

25. Tenderers should be prepared to accept orders subject to the penalty clause for forfeiture of security in the even of default in supplies or failure to supply within the stipulated period.

26. Samples should be forwarded if called for and unapproved samples go back by the tenderers at their own cost. Samples sent by V.P. Post or 'freight to pay' will not be accepted. The approved samples may or may not be returned at the discretion of the undersigned. Sample sent by post, railway or plane should be so despatched as to reach the Purchasing Officer not later than the date on which the tenders are due. In the case of samples sent by railway the receipt should be sent separately and not along with the tender since the tender will be opened only on the appointed day and demurrage will have to be paid if the railway parcels are not cleared in time. Government will not be responsible if any sample is found missing at any time due to the non-observance of the provisions of this clause. Tenderers whose samples are received late will not be considered. Samples should be forwarded under separate cover duly listed and the corresponding number of the item in the tender schedule should also be noted in the list of samples. Tenders for the supply of materials are liable to be rejected unless samples, if called for, of the materials tendered for are forwarded.

27. Telegraphic quotations will not be considered unless they give details of prices and are immediately followed by confirmation with full relevant details posted before the due date of the tender.

28. (a) The prices quoted should be inclusive of all taxes, duties cesses, etc., which are or may become payable by the contractor under existing or future laws or rules of the country of origin/supply or delivery during the course of execution of the contract. (b) In case payment of customs/excise duty is to be made by the Purchasing Officer, the Purchasing Officer will pay the duty on the "unloaded invoice price" only in the first instance, any difference being paid when the tenderer produces the final assessment orders later.



29. The tenderer will invariably furnish the following certificate with their bills for payment:-
173 "Certified that the goods on which sales tax has been charged have not been exempted under the Central Sales Tax Act or States Sales Tax Act or the Rules made thereunder and the charges on account of sales tax on these goods are correct under the provisions of the relevant Act or the rules made thereunder, Certified further that we (or our Branch or agent) (Address)..... are registered as dealers in the State of under Registration No. for purposes of sales tax."

30. Special conditions, if any, of the tenderers attached with the tenders will not be applicable to the contract unless they are expressly accepted in writing by the purchaser.

31. (This applies only to the case of supply contracts where works such as erection and construction have also to be done. This may be scored out when not applicable). In the event of any question or dispute arising under these conditions or any special conditions of this contract or in connection with this contract the same shall be referred to the award of an arbitrator to be nominated by the purchasing officer and an arbitrator to be nominated by the contractor or in case of the said arbitrators not agreeing then to the award of an umpire to be appointed by the arbitrators in writing before proceeding on the reference and the decision of the arbitration or in the event of their not agreeing of the umpire appointed by them shall be final and conclusive and the provision of the Indian Arbitration Act, 1940 and of the rules thereunder and any statutory modifications thereof shall be deemed to apply to and be incorporated in this contract. Upon every and any such reference the assessment of the costs incidental to their reference and award respectively shall be in the discretion of the arbitrators or in the event of their not agreeing of the umpire appointed by them. The venue of arbitration shall be the place from which the acceptance of tender is issued or such other place as the purchaser at his entire discretion may determine.

32. The tenderer should send along with his tender an agreement executed and signed in Kerala Stamp Paper of value Rs.200/- (as decided by the concerned Government Department from time to time) purchased in the Kerala State. Stamp Paper will be supplied to firms outside Kerala along with the tender forms on payment of Rs.205/- [200 being the value of the stamp paper and 5 incidental charges (as decided by the concerned Government Department from time to time)] which may be remitted by money order in advance. A specimen form of agreement is also given in this Annexure. Tenders without the agreement in stamped paper will be rejected outright. But in deserving cases where agreement has not been received, the purchasing officer may exercise his discretion and call upon such tenderer to execute the agreement within a period of ten days from the date of issue of such intimation, if the Purchasing Officer is satisfied that the omission to forward the agreement along with the tender



was due 174 to causes beyond the control of the tenderer and was not due to any negligence on his part. Agreement received from a tenderer after the above time limit will not be considered.

Superscription - Tender No ...VDA/46/2022-A (P) for Supply and installation of Lab Equipments for Mechanics of Robotics lab and Basic Robotics lab to the Diploma Programme.

Due date and time for receipt of tender--- 24-02-2023 at 2.00 PM

Date and time for opening of tender --- 24-02-2023 at 2.30 PM

Date upto which the rates are to be firm--- One Month

Price of tender form ----- 1,175/- (Inclusive 18% GST)

Address of Officer from whom tender forms are to be obtained and to whom tenders are to be sent:-College of Engineering, Vadakara, Mandrathur-PO, Kurunthodi, Vadakara- 673 105

Name of Office:

(Name & designation of Purchasing Officer)

Station and date: Vadakara, 16-02-2023

SCHEDULE OF MATERIALS

Sl No	Specification	Quantity	Unit	Rate	Total	Remark

Whether samples essential:

Period within which goods should be delivered: Two Weeks

Rates should be quoted for delivery for
..... at Departmental Stores Other
special conditions:



Agreement

Articles of agreement executed on this the day of (month)(year) BETWEEN the Principal ,College of Engineering, Vadakara (hereinafter referred to as "The Principal") of the one part and Sri. (H.E. name and address of the tenderer) (hereinafter referred to as "The Bounden") of the other part.

WHEREAS in response to the Notification No. dated the Bounden has submitted to the Principal a Tender for the specified therein subject to the terms and conditions contained in the said Tender.

WHEREAS the Bounden has also deposited with the Institution a sum of Rs. as Earnest Money for execution of an agreement undertaking the due fulfillment of the contract in case his tender is accepted by the Principal

. Now THESE PRESENTS WITNESS and it is hereby mutually agreed as follows:-

1. In case the Tender submitted by the Bounden is accepted by the Principal and the contractor for is awarded to the Bounden, the Bounden shall within days of acceptance of his tender execute an agreement with the Principal incorporating all the terms and conditions under which the Principal accepts his Tender.

2. In case the Bounden fails to execute the agreement as aforesaid incorporating the terms and conditions governing the contract, the Principal shall have power and authority to recover from the Bounden any loss or damage caused to the Principal by such breach as may be determined by the Principal by appropriating the Earnest Money deposited by the Bounden and if the Earnest Money is found to be inadequate the deficit amount may be recovered from the Bounden and his properties movable and immovable in the manner hereinafter contained.

3. All sums found due to the Principal under or by virtue of this agreement shall be recoverable from the Bounden and his properties movable and immovable under the provisions of the Revenue Recovery Act for the time being in force as though such sums are arrears of land revenue and in such other manner as the Principal may deem fit.

In witness whereof Sri. (H.E. name and designation) for and on behalf of the Principal and Sri. the Bounden have hereunto set their hands the day and year shown against their respective signatures.

Signed by Sri. (date) In the presence of witnesses:

1.

2.

Signed by Sri. (date)

In the presence of witnesses: 1.

2.

Superscription ::: Tender No. VDA/46/2022 – A (P) for Supply and installation of Lab

Equipments for Mechanics of Robotics lab and Basic Robotics
lab to the Diploma Programme.

Due date and time for receipt of tender	: 24.02.2023 at 2.00 P M
Date and time for opening of tender	: 24.02.2023 at 2.30 P M
Date up to which the rates are to be firm	: 1 Month
Price of tender form	: Rs.1,175/-

Address of officer from whom tender forms are to be obtained and to whom tenders are to be sent

: Principal College of Engineering, Vadakara
Mandarathur- PO, Vadakara- 673 105



(Name & Designation of Purchasing Officer)


The Principal,
College of Engineering, Vadakara,
Mandarathur (PO), Vadakara- 673105 –Pin Kozhikode (Dist.), Kerala.
Whether sample essential Period within which goods should be delivered
Rates should be quoted for delivery Other special conditions

SCHEDULE OF MATERIALS

SL NO	Specifications	Quantity	Unit	Rate		Total	Remarks
				Rs	ps		
1	2	3	4	5	6	Rs ps	7
	Supply and Installation of lab Equipments for Mechanics of Robotics lab and Basic Robotics lab to the Diploma Programme						

Whether sample essential :
Period within which goods should be delivered:
Rates should be quoted for delivery :

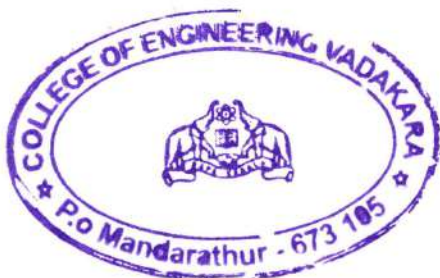




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Mechanics of Robotics Lab		
S.N	Items	Quantity
1	<u>Slider crank model</u> Specification: Easily movable linkages to illustrate working Model dimension- Min 400mm x 300mm Mount on good quality wooden or metallic board Parts stainless steel or MS with rust proof coating	1
2	<u>Four bar linkage model</u> Specification: Easily movable linkages to illustrate working Model dimension- Min 400mm x 300mm Mount on good quality wooden or metallic board Parts stainless steel or MS with rust proof coating	1
3	<u>Double Hook and Universal joint model</u> Specification: Shafts connected with double hooke joint which can be rotated Angle between shafts should be changed Parts stainless steel or MS with rust proof coating	1
4	<u>Rope drum and Chain drives</u> Specification: Easily movable parts to illustrate working Model dimension- Min 400mm x 300mm Mount on good quality wooden or metallic board Parts stainless steel or MS with rust proof coating	1
5	<u>Set of Cam model</u> Specification: Model illustrating different types of cam and follower sets Model dimension- Min 400mm x 300mm Mount on good quality wooden or metallic board Parts stainless steel or MS with rust proof coating	1
6	<u>Gear train model</u> Specification: Model illustrating different types of gears and gear trains Model dimension- Min 400mm x 300mm Mount on good quality wooden or metallic board Parts stainless steel or MS with rust proof coating	1
7	<u>Motorized gyroscope</u> Specification: Experiment set up to find the moments generated by gyroscopic effect by	1




	positioning counter weights of different weights Parts stainless steel or MS with rust proof coating	
8	<u>Balancing of masses</u> Specification: Equipment illustrating the effect of rotating unbalanced masses Parts stainless steel or MS with rust proof coating	1
9	<u>whirling of shaft apparatus</u> Specification: Model of a whirling of shaft apparatus of minimum length 800 mm, Electric 220V, SS metal part	1
10	<u>Spring - mass system</u> Specification: A simple spring mass system demonstrate the working of longitudinal vibration.	1




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Basic Robotics Lab		
S.N	Items	Quantity
1	<u>Photo reflective sensor</u> Specification: Reflective IR Sensor, Infrared Reflective Sensor module	2
2	<u>magnetic proximity sensor</u> Specification: highsensitivity magnetic proximity sensor	2
3	<u>LVDT kit</u> Specification: Built in source 2.5 KHz Sine(approx) Displacement Range +/- 15mm, one micrometer(for displacement), 3.5 Digital (mm)	1
4	<u>Biosensors</u> Specification: High-Sensitivity Pulse Oximeter, Heart rate monitor kit with AD8232 ECG, LM35D Analog temperature sensor module, VCNL4020C-GS08 Biosensor ,MLX90614 Infrared temperature sensor: Sensor module and Heart-Rate Sensor	3 or 4 type
5	<u>Aurdino kit</u> Specification: Arduino Uno Rev3 : Microcontroller Chip, ATmega328P and 37 In 1 Sensor Module Kit for Arduino	5
6	<u>Different sensors and motors</u> Specification: 200 RPM Dual Shaft BO Motor ,100RPM DC 3-12V L-Shape BO Gear Motor, Stepper motor and driver, DC 5V Motor	5
7	<u>Robotic Arm kit (2DOF)</u> Specification: Degrees of Freedom : 2 + Gripper	3
8	<u>Robotic Arm kit (6DOF)</u> Specification: Degrees of Freedom : 5 + Gripper Maximum reach from base : 350 mm. Power requirement : 7.4 VDC, Minimum 4 Amp. Maximum Payload : 100 grams	3




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