KENDRIYAVIDYALAYASANGATHAN

**ZONAL INSTITUTEOFEDUCATION ANDTRAINING, BHUBANESWAR**

Brief Report

**THREE DAY WORKSHOP ON “CAPACITY BUILDING IN PHYSICS”FOR PGT(PHYSICS)**

**AT ZIET BHUBANESWAR FROM 16TH TO 18TH OF OCTOBER 2019**

 

Zonal Institute of Education &Training Bhubaneswar

**2019**

Venue: ZIET Bhubaneswar

CourseDirector

**Shri Chandrapida Neelap**

Deputy Commissioner & Director

ZIET Bhubaneswar

 Training Coordinator

 K.RATHINA KUMAR

ZIET Bhubaneswar

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| 1. Sh. Bhimsen Panda

PGT (Phy)No.1 BBSRBBSR |
|  2. Sh. N. Sen PGT (Phy)Barrackpore(Army) Kolkata |

Resource Person

SupportingTrainingAssociates

ShriAshokKumarGupta ShriNabaghanNayak ShriParsuramShukla

Dr. Abhijit Saha

Shri Sibaranjan Sahoo

&

Staff of ZIET Bhubaneswar

**CONTENT OF THE COURSE**

**1.INTRODUCTION**

**2.AIM**

**3.OBJECTIVES**

**4.GUEST LETURES/Resource Person (WRITEUPS)/group work**

**5.DAILY REPORT**

**6.TIME TABLE**

**7.LIST OF PARTCIPANTS**

**8.SUMMARY FEEDBACK**.

[9.ALL DOCUMENTS](GROUP%20WORK.ZIET%20WORKSHOP.16-18%20OCT.2019)

 INTRODUCTION:

This workshop “3- day workshop on “capacity building in Physics “for PGT(Physics) is approved by KVS to conduct at ziet ,Bhubaneswar from 16th to 18th of October 2019 as per the scheduled of KVS training calendar issued by KVS.

To enhance the potential of the Post Graduate Teachers in physics”,

Especially for the xii physics to nurture the future need of the society, and to meet the need of students and the parents, think of high performance in the board exam, this kind of workshop will enable teachers to meet the present new challenges in the teaching and learning process.

In this workshop group activity is made to prepare the average, standard and high order level of question papers which will be used for the practice for the Board Exam for the coming year.

**Aim**: To increase and update the capacity of the PGT (Physics) teacher in KVS for excel the best result in coming years in XII CBSE examination.

OBJECTIVES:

**TO PARTICPANTS:**

* **Gain efficiency and competency in teaching the Physics.**
* **Improve in quality of teaching and learning process in class room situation.**
* **Change the attitude of the teachers**
* **Will be able to make best passing Percentage in Physics CBSE result**

GroupWork: The participants are divided into 9 groups and tasks aqre given as below.(ctrl+click to folloe the link.

[Group 1.docx](Group%201.docx)

[GROUP 2.docx](GROUP%202.docx)

[ZIET GROUP 3](ZIET%20GROUP%203)

[group 4](group%204)

[GROUP 5](GROUP%205)

[group 6.docx](group%206.docx)

[Paper G 7](PaperG%207)

[Group 8.docx](Group%208.docx)[Group 9.docx](Group%209.docx)

WRITUP OF PEDAGOGICAL SHIFT IN TEACHINF PHYSICS

 BY K.RATHINA KUMAR,TA(PHY)ZIET,BBSR

**Pedagogical shift:( Learners, learning and teachers)**

INTRODUCTION:-

**For an effective pedagogical design, a teacher has to take care of the existing ideas of the learners and the difference in nature of their ideas with the scientific explanation of those ideas.** NCF-2005,
(child-centered pedagogy ),Child centered pedagogy means giving primacy to children’s experiences, their

voices, and their active participation.

Shift in teaching:-

Now,learners’ capabilities and potentialities are seen not as fixed,but dynamic and capable of development through self experiences. Therefore, they should be encouraged to reflect and test their ideaswith peers and teachers. To achieve this, multiple learning contexts are recommended which draws illustrations from life situations.

 A constructivist teacher must be therefore trained as a critical analyser of syllabi, textbooks and a reflective practitioner of her own teaching-learning practices.

* Activity) Develop a concept map on any one topic each taken from secondary and higher secondary stage textbooks. Share and discuss your work with your friends.
* (ii) How will you use the above concept map to identify – (a) Gaps in the knowledge of the student on this topic (b) Misconceptions and naive concepts on the topic

Major shifts in pedagogy

|  |  |
| --- | --- |
| **l1 Teacher centered, fixed** **l2. Teacher’s direction and****3l Teacher’s guidance and monitoring of learning****4. Passive reception in learning l** **5l Knowledge as ‘given’ and FIXED****l 6.Disciplinary focus l l****7.Learning within the four walls****of the classrooms****8.Linear exposure****9.Assessment—short, few** | **l Learner centered, flexible process****l Learner’s autonomy****l Teacher’s facilitation, support and encouragement for learning****l Active participation in learning****l Learning in the wider social context****l Knowledge as it evolves and is created****l Multidisciplinary, educational focus****l Multiple and divergent exposure****continuoust****Assessment—multifarious,** |

2.WRITEUP

ELECTROSTATICS

N.SEN.PGT PHYSICS

Electrostatics

ElectricChargesandFields

The detailed discussion was on

1.Electric Charges; Conservation of charge,

2.Coulomb'slaw-forcebetweentwo pointcharges, forcesbetweenmultiplecharges;superpositionprincipleand continuouschargedistribution.

3.Electricfield,electricfielddue toa pointcharge,electricfieldlines,electric dipole,electricfielddue toadipole,torque onadipoleinuniformelectricfleld.

4.Electricflux,statementofGauss'stheoremand itsapplicationstofindfield due toinfinitelylongstraightwire,uniformlychargedinfiniteplanesheet and uniformlychargedthinsphericalshell(fieldinsideandoutside).

ElectrostaticPotentialandCapacitance

5.Electricpotential,potentialdifference,electricpotentialdue toapointcharge, a dipoleand systemofcharges;equipotentialsurfaces,electricalpotential energy of a system of two point charges and of electric dipole in an electrostaticfield.

6.Conductorsand insulators, free charges and bound charges inside a conductor.Dielectricsand electricpolarisation,capacitorsand capacitance, combinationofcapacitorsinseriesand inparallel,capacitanceofa parallel platecapacitorwithand withoutdielectricmediumbetweentheplates,energy storedinacapacitor.

CurrentElectricity

7.Electric current, flow ofelectriccharges inametallicconductor,driftvelocity, mobility and their relation with electric current;

8.Ohm'slaw, electrical resistance,V-I characteristics(linearand non-linear),electricalenergyand power, electricalresistivityand conductivity,

9.Carbonresistors,colourcode for carbonresistors;seriesand parallelcombinationsofresistors;temperature dependenceofresistance.10.Internalresistanceofacell,potentialdifferenceandemfofacell,combination ofcells inseries andin parallel, Kirchhoff'slaws andsimpleapplications, Wheatstonebridge,metrebridge.

11.Potentiometer-principleand itsapplicationstomeasure potentialdifference and forcomparingEMFoftwocells;measurementofinternalresistanceofa cell.

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3.writeup by B.Panda,PGT,KV.NO.1

MagneticEffectsofCurrentandMagnetism

1.Moving ChargesandMagnetism

2.Conceptofmagneticfield,Oersted'sexperiment.

3.Biot-Savartlawanditsapplicationtocurrent carryingcircularloop.

4.Ampere'slawand itsapplicationstoinfinitelylongstraightwire.

5.Straightand toroidalsolenoids(onlyqualitativetreatment),forceon a movingchargein uniformmagneticandelectricfields,Cyclotron.

6.Force on a current-carrying conductor in a uniform magnetic field, force betweentwoparallelcurrent-carryingconductors-definitionofampere, torque experiencedbyacurrent loopinuniformmagnetic field;

7.Movingcoil galvanometer-itscurrent sensitivityandconversiontoammeterandvoltmeter.

6.MagnetismandMatter

Current loopas amagneticdipoleand itsmagneticdipolemoment,magnetic dipole moment of a revolving electron, magnetic field intensity due to a magneticdipole (bar magnet)along its axisand perpendicular to its axis,

7Torque on a magneticdipole(bar magnet)ina uniformmagneticfield;bar magnetasanequivalentsolenoid,magneticfieldlines;earth'smagneticfield andmagneticelements.

8.Para-,dia-andferro-magneticsubstances,withexamples.Electromagnets andfactorsaffectingtheirstrengths,permanentmagnets.9.ElectromagneticInductionandAlternatingCurrents

ElectromagneticInduction

 Electromagneticinduction;Faraday'slaws,inducedEMFandcurrent; Lenz's

 Law,Eddycurrents. Selfandmutualinduction.

10.AlternatingCurrent

Alternating currents, peak and RMS value of alternating current/voltage; reactanceand impedance;LCoscillations(qualitativetreatmentonly),LCR seriescircuit,resonance;powerinACcircuits,powerfactor,wattlesscurrent.

ACgeneratorandtransformer.

Electromagneticwaves

Chapter–8:ElectromagneticWaves

Basicideaof displacementcurrent, Electromagneticwaves, their characteristics,theirTransversenature(qualitativeideasonly).

Electromagneticspectrum (radiowaves, microwaves,infrared,visible, ultraviolet,X-rays,gammarays)includingelementaryfactsabout theiruses.

Optics

RayOpticsandOpticalInstruments

Ray Optics:Reflectionoflight,sphericalmirrors,mirrorformula,refractionof light,totalinternalreflectionand itsapplications,opticalfibers,refractionat spherical surfaces, lenses, thin lens formula, lensmaker'sformula, magnification, power of a lens, combination of thin lenses in contact, refractionoflightthrough aprism.

Scatteringoflight-bluecolourofsky and reddishappearanceofthesunat sunriseand sunset.

Opticalinstruments:Microscopesandastronomicaltelescopes(reflectingand refracting)andtheirmagnifyingpowers.

Wave optics:Wave frontand Huygen'sprinciple,reflectionand refractionof planewave ataplanesurfaceusingwave fronts.Proofoflawsofreflection andrefraction usingHuygen'sprinciple.Interference,Young'sdoubleslit experimentand expressionforfringewidth, coherent sourcesand sustained interferenceoflight,diffractiondue toasingleslit,widthofcentralmaximum, resolving power of microscope and astronomical telescope, polarisation, plane polarisedlight, Brewster's law, uses of plane polarisedlight and Polaroids.

DualNatureofRadiationandMatter

DualNatureofRadiationandMatter

Dualnatureofradiation,Photoelectriceffect,Hertzand Lenard'sobservations; Einstein'sphotoelectricequation-particlenatureoflight.

Matter waves-wavenatureofparticles,de-Broglierelation,Davisson-Germerexperiment(experimentaldetailsshould beomitted; only conclusionshouldbe explained).

Atoms

Alpha-particlescatteringexperiment;Rutherford'smodelofatom; Bohrmodel, energylevels,hydrogenspectrum.

Compositionand sizeof nucleus,Radioactivity,alpha,beta and gamma particles/raysandtheirproperties;radioactivedecay law.

Mass-energy relation,mass defect;bindingenergy per nucleonand its variationwithmassnumber;nuclearfission,nuclearfusion.

ElectronicDevices

SemiconductorElectronics:Materials,DevicesandSimple

CircuitsEnergybandsinconductors,semiconductorsand insulators(qualitativeideas only)Semiconductordiode-I-Vcharacteristicsinforwardand reversebias,diodeas arectifier;Specialpurposep-n junctiondiodes:LED,photodiode,solarcelland Zenerdiodeand theircharacteristics,zenerdiodeasavoltageregulator.

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**THREE DAY WORKSHOP ON “CAPACITY BUILDING IN PHYSICS”FOR PGT(PHYSICS)**

**AT ZIET BHUBANESWAR FROM 16TH TO 18TH OF OCTOBER 2019**

**REPORT (DAY 1)**

**Date 16/10/19**

The day started with the lightening of lamp by ZIET DIRECTOR MR.C .Neelap followed by the devotional prayer of the almighty which had enlightened the spiritual shadow of our personality. After the prayer director sir addressed the participants with his motivational words and encouraged the participants to modify the teaching methodology. Before starting the session formation of group was taken for group work by Mr. N. Sen.Post tea, the session was taken byMr. N.Sen PGT physics Kv Barrackpore, Kolkata Region on the topic HOTs and MCQs in electrostatics and current electricity.He had discussed various types of objective type questions which included types of MCQs ,fill in the blanks and very short answer type questions along with interactive discussion with the participants.

The next session was taken by Mr. K. RATHINA KUMAR. Training associate PHYSICS ZIET,BHUBANESWAR on the topic Teaching methods/CBSE question paper design and sample paper 2020 at a glance in which he had discussed about pedagogical shifts, learnercentered classroom and major shifts in teachers role. He concluded by emphasizing the fact that the best way of teaching physics is the active involvement of the students by showing brain storming activities.

Post lunchsession was on drilling approach on diagrammatical concepts on ray optics and optical instruments which was taken by Mr. Bhimsen panda PGT Physics KV No. 1(2nd shift)Bhubneshwer. He had explored some focus areas in ray optics which includes important formulae, diagrams on image formations, difference between lens makers formula and thin lens formula, refraction and dispersion in prism ,normal adjustment and adjustment for least distance of distinct vision.

In the last session we had discussion on allotted group work followed by preparation of question papers. Overall, the day was interesting and participants enjoyed the day with the gain of knowledge.

Submitted by-  **Group-1**

1. SAVITRI NEGI, Kv Tinsukia

2. Rajanikanta Behera, KvKendrapara

3. S.N. Panda, KvBhadrak

4. Sunil Kumar, KvBarrakpore AF Station

5. VidyaNandJha, KvBalliganjue

**GROUP 2 DAY 2 REPORT**

Yesterday, MsSavitri briefed the session which was conducted on 16 Oct, 2019. Then Mr Panda, resource person briefed yesterday’s work. It was followed by Mr Sen resource person conducting the session to discuss the previous year question paper of Kolkata region. The participants interacted actively during the session. We got to know different ways of answering the questions with other possible answers. The teachers who have just joined the CBSE curriculum, they got to know to make the students score better. Sir made the participants solve a few question to see the different approach towards the solutions.

Further the session was made joyful by Mr N Nayak cracking jokes, giving very useful pieces of information and told us how to deal with issues related with romantic problems.

MrNayak made us about Adolescent Education Program. He shared his own experience by giving real examples of career. That may help us to come out of odd situations. How to come out of mental stress was beautifully explained by him giving some references.

Post lunch,MrRathina Kumar discussed the concepts of mind mapping to memorize the basic concepts giving examples by making the algorithm of atom.

Post that MrBheemsen Panda discussed activity based concept formation about Meter Bridge and Potentiometer.

He discussed following questions as well.

1.Why is Wheat stone bridge called Meter Bridge?

2. What is end error meter bridge? How to come to overcome it?

3. Various applications are there of Potentiometer.

Then session was taken further preparing most probable questions for class XII.

At last all the groups submitted their work to the person concerns.

Then all dispersed.

**REPORT on Day-3(18-10-2019)**

The day started with the prayer conducted by second group. The second day report was presented by Sh. Pradeep Kumar from Tinsukia region. Our resource person Sh. Bhimsen Panda, PGT Physics from KV No.1 Bhubaneswar (2nd shift) has taken up the session on “interaction on skill based questions”. There sir highlighted the concepts like applications of junction diode, graphs related questions of lens and mirrors, relationship between angle of incidence and angle of deviation of prism. The session became fruitful and eventful by the involvement of newly joined teachers.

 After the tea break session was taken by the resource person Sh. N.Sen PGT Physics from KV Barrackpur on “How to deal with slow learners”. He gave some valuable suggestions to the participants regarding getting better results and PI in board exams.

Post lunch session started with group work. The material prepared during these three days workshop has been presented by members of the group.

 Valedictory function has started at 3.30 pm with the august presence of Sh.C.Neelap, Director ZIET (Bhubaneswar).After that our chief guest distributed the certificates to all the participants and addressed them with his inspiring words. Vote of thanks was proposed by our training coordinator Mr. K.RathinaKumar. (Training Associate in Physics). With this 03 days workshop for capacity building for PGT Physics came to an end.

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| **3-Day Workshop on “CAPACITY BUILDING in PHYSICS”****for PGT (PHYSICS)from 16.10.2019 -18.10.2019** |
|  **TIME TABLE** |

# **KENDRIYA VIDYALAYA SANGATHAN-ZIETBHUBANESWAR**

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| **Day/ Date** | **.****9:00 to** **9:15 Hrs** | **Session 1** |  | **Session 2** | **Session 3****12.00-13. Hrs** |  | **Session 4** | **15.45-1600Hrs****T****E****A****B****R****E****A****K** | **Session 5** |
| **9:15 to 10.45Hrs.** | **10.45 11.00am 15****min****T****E****A****B****R****E****A****K** | **11:Hrs to 12.00 Hrs.** | **13:00** **to** **14:00** **Hrs.****L** **U****N****C****H****B****R****E****A****K** | **14.00-15.45 Hrs** | **16.00 to 17:30 Hrs.** |
| **Day-1****(16.10.2019)****Wednesday** | **Registration** |  **Inauguration /Aims and Objectives of the Workshop** **Director's Address****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****RK.TAPHY)ZIET,BBSR** | **ELECTROSTATICS****------------------------****MR.N.SEN** **(RP** | **CURRENT ELECTRICITY****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****RP-2****Mr.N.Sen.(RP)****PGT(PHY)****KV.BORACKPUR,****KALKATTA** | **“OPTICS”(Ray optics &Optical Instruments) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Mr.P.PANDA.****PGT(PHY),KV,NO.1,BBSR** | **Group Work:****On the allotted Topic****Supervision By:RPs** |
| **Day-2****(17.10.2019)****Thursday** | **Assembly** | **QUANTUM MECHANICS****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_RP-1KRK .TA (PHY)** **ZIET,BBSR** | **AEP** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Mr.N.Nayak****TA(Maths)****ZIET,BBSR** | **MAGNETIC EFFFECTS OF CURRENT AND MAGNETISM****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Mr.P.PANDA.****PGT(PHY),KV,NO.1,BBSR** | **EMI & AC****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****N.SEN** | **Group Work On the allotted Topic****Supervision By:RPs** |
| **Day-3****(18.10.2019)****Friday** | **Assembly** | **ATOMS AND NUCLEI.****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Mr.N.Sen.(RP)PGT(PHY),KV.BORACKPUR,KALKATTA** | **WAVE OPTICS****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Mr.P.PANDA.PGT (PHY),KV,NO.1,BBSR** | **ELECTRONIC DEVICES****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****MR.PANDA** | **Group Work:****On the allotted Topic****Supervision****By:RPs** |  **VALEDICTORY** |

**K.RATHINA KUMAR.**

 **TRAINING ASSOCIATE**

 **DIRECTOR**

**ZIET(BBSR)**

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| केविसं शिक्षा एवं प्रशिक्षण का आंचलिक संस्थान ( जेड आई ई टी) :भुवनेश्वर / KVS ZIET BHUBANESWAR |  |
|   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| **आवंटित प्रतिभागियों कीसूची / LIST OF PARTICIPANTS ALLOTTED**  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| कार्यशाला का नाम / NAME OF WORKSHOP : Capacity Building in Physics for PGT (Physics) |  |
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|  | **स्थान / VENUE: के विसं जेड आई ई टी भुवनेश्वर / KVS ZIET BHUBANESWAR** |  |  | **दिनांक : 16th-18th Oct. 2019** |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **S. NO** | **NAME OF PARTICIPANT** | **DESIGNATION** | **पद** | **NAME OF K.V.** | **के. वि. कानाम** | **REGION** | **संभाग का नाम** | **M/F** | **GEN/SC/ST/OBC** | **MOBILE NO.** |

|  |
| --- |
| **E-mail id** |

 | **Sign.** | **Remarks** |
| 1 | Sh. Prateek Kumar | PGT (Phy) | पीजीटी (भौतिकी) | Latehar | लातेहार | Ranchi | राँची | M | GEN | 8287698739 | pk16121992@gmail.com |   | kvlatehar2007@gmail.com |
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| 8 | Sh. Ayush Agrawal | PGT (Phy) | पीजीटी (भौतिकी) | Tarapur Silchar | तारापुरसिलचर | Silchar | सिलचर | M | GEN | 8299179206 | ayushagrawal174@gmail.com, kvayush2019@gmail.com |   | kvsilchar1@gmail.com |
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| 10 | Sh. Joydeep Das | PGT (Phy) | पीजीटी (भौतिकी) | CU Tezpur  | सी.यू.तेज़पुर | Guwahati | गुवाहाटी | M | SC | 9101510695 | j.das17@yahoo.in |   | cutezpur2250@gmail.com |
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