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“Education through Self – Help is our motto” – KARMAVEER



Rayat Shikshan Sanstha's  
**Karmaveer Bhaurao Patil Mahavidyalaya, Pandharpur, Dist.-Solapur (Maharashtra) -**  
**413304**  
**(Autonomous College)**

**Board of Studies in Physics**  
**Meeting Notice**

Meeting of BOS in B.Sc.III Physics for the academic year 2021-22 is scheduled on 13<sup>th</sup> July 2021 at 11.30 a.m. by meeting chairman Prof. Dr. Sou. L. K. Bagal. All the BOS members are invited for the meeting of **Board of Studies in Physics for B.Sc.III** of Karmaveer Bhaurao Patil Mahavidyalaya, Pandharpur. All are requested to attend the meeting.

**Meeting Mode: Online Zoom platform.**

**Agenda of the BOS third meeting**

1. Welcome
2. Presentation of B.Sc.III curriculum
3. Presentation of Skill Enhancement Course
4. To take sanction of BOS body for the syllabus of B.Sc. III
5. To take sanction of BOS body for the revised nature of question papers (Theory and Practical) and evaluation pattern of B.Sc.III.
6. To take sanction of BOS body for Add-on-Self Learning-SWAYAM (Online Platform) & Skill Enhancement Course.
7. Any other.
8. Vote of thanks.

**Dr. Sou. L.K. Bagal**  
**Chairman, BOS in Physics**  
**Karmaveer Bhaurao Patil Mahavidyalaya,**  
**Pandharpur.**

**Rayat Shikshan Sanstha's  
KARMAVEER BHAURAO PATIL MAHAVIDYALAYA, PANDHARPUR**

**Board of Studies in Physics  
MINUTES OF THE MEETING**

**Date: 13/03/2021**

The meeting of BOS in Physics was held on 13<sup>th</sup> July 2021. Following members were present.

Following members are present on online zoom platform

Sr. No.	Name	Designation	Sr. No	Name	Designation
1.	Prof. Dr. Sou. L. K. Bagal	Professor	8.	Dr. R. V. Dhekale	Technical Director
2.	Prof. Dr. K. Y. Rajpure	Professor	9.	Mr. A. R. Patil	Asso. Professor
3.	Dr. V. L. Mathe	Asso. Professor	10.	Mr. R. J. Kawade	Asso. Professor
4.	Prin. Dr. D. J. Salunkhe	Principal	11.	Dr. S. G. Chavan	Asst. Professor
5.	Dr. S. H. Mujawar	Asst. Professor	12.	Mr. D. P. Shinde	Asst. Professor
6.	Dr. A. A. Yadav	Asst. Professor	13.	Mr. P. S. Pise	Asst. Professor
7.	Dr. N. G. Deshpande	Brain Pool Scientist	14.	Mr. U. V. Khaire	Asst. Professor

Following resolutions are unanimously made

1. Revised syllabus of **B.Sc.-III (Physics)** Semester V and VI, Paper- IX- to Paper XVI is discussed and approved with minor corrections. The **corrected copy** of the revised syllabus of B.Sc.-III (Physics) is attached herewith. This syllabus is recommended for further consideration. Copy of syllabus is attached herewith.
2. Evaluation pattern of the college is noted.
3. Nature of Question Paper given by the college is noted.



**Dr. Sou. L. K. Bagal**  
[Chairman, BOS in Physics]

**Dr. Sou. L. K. Bagal [Chairman, BOS in Physics] extended welcome to all the members of BOS.**

**Reading of Agenda:**

**Motion** from Dr. Sou. L. K. Bagal: To approve the agenda of BOS meeting to be held on 13<sup>th</sup> July 2021.

**Vote:** All in favour.

**Resolved:** Motion carried.

Agenda of BOS meeting to be held on 13<sup>th</sup> July 2021 approved without notification.

**Business:**

**Motion 1: Presentation of B.Sc.-III Syllabus**

**Discussion:**

**Semester-V: Paper-IX: KBP-S-PHY-3509: Mathematical Physics & Statistical Physics**

At the beginning of the discussion, referring to UGC-Guidelines, the BOS has privileged to make changes up to 20 % in the prescribed syllabus of the Punyashlok Ahilyadevi Holkar Solapur University, Solapur. Then all the members of the BOS read the university syllabus carefully and put their suggestions one by one.

- In all units, no change was required as per the discussion. Then the mode of discussion turned to Paper-X.

**Semester-V: Paper X: KBP-S-PHY-3510: Solid State Physics**

- Prof. Dr. K. Y. Rajpure suggested that insert the articles, “space group”, “symmetry operations” in Unit –I. Also he suggested that give details of reference books w.r.t to publications and edition.
- Dr. V. L. Mathe suggested that insert the article “seven crystal system details” in Unit-I.
- Dr. A. A. Yadav suggested that insert the article “Ewald Construction” to make continuity in the content of Unit –II.
- Dr. V. L. Mathe suggested that increase the number of lectures for Unit –III by reshuffling the lectures of Unit -VI.
- In remaining units, no change was required as per the discussion. Then the mode of discussion turned to Paper-XI.

**Semester-V:**

**Paper-XI: KBP-S-PHY-3511: Classical Mechanics, Relativity and Electrodynamics**

- Dr. A. A. Yadav suggested that eliminate the article “Minimum surface of revolution” form Unit –II.

- Prof. Dr. K. Y. Rajpure Suggested that eliminate the articles “Coulomb’s Law. Gauss Law in differential form” from Unit -V. Also he suggested to add the article “central force problem”, but it is already studied at B.Sc.-I Physics Paper No.-III.
- In remaining units, no change was required as per the discussion. Then the mode of discussion turned to Paper No. XII (DSE-1A).

**Semester-V: DSE- 1 A**

**Paper-XII: KBP-S-PHY-3512: Electronics**

- In all units, no change was required as per the discussion. Then the mode of discussion turned to Paper-XII (DSE-2A).

**Semester-V: DSE- 2 A**

**Paper-XII: KBP-S-PHY-3512: Instrumentation**

- Dr. N. G. Deshpande suggested that merge Unit –V into Unit-III. Also he suggested that change the name of Unit IV (replace “X-ray Diffraction” by “X-ray Techniques”). Also he suggested to add the article “X-ray Absorption Spectroscopy”.
- In remaining units, no change was required as per the discussion. Then the mode of discussion turned to Paper Code: KBP-S-PHY-35 (SWAYAM).

**Semester-V:**

**Paper Code: KBP-S-PHY-35-SWAYAM**

Add-on- Self Learning (Online Platform)

- All BOS members have recommended to take SWAYAM course rigorously.
- Then the mode of discussion turned to Semester VI: Paper XIII.

**Semester-VI**

**Paper XIII: KBP-S-PHY-3613: Quantum Mechanics**

- Prof. Dr. K.Y. Rajpure and Dr. A. A. Yadav suggested that change the name of Unit –I (replace “Compton Effect” by “Origin of Quantum Physics”). They also suggested to add the articles, “Black Body Radiation”& “Photoelectric Effect”.
- In remaining units, no change was required as per the discussion. Then the mode of discussion turned to Paper- XIV.

**Semester-VI**

**Paper XIV: KBP-S-PHY-3614: Materials Science**

- Prof. Dr. K.Y. Rajpure suggested that add the reference book, “Materials Science and Engineering: An Introduction” by William D. Callister and David G. Rethwisch: John Wiley and Sons, Inc.-8<sup>th</sup> edition.

- Prof. Dr. K.Y. Rajpure, Dr. S. H. Mujawar and Dr. A. A. Yadav suggested that eliminate the articles “Chemical Methods and Hybrid Methods” from Unit –VI and they suggested that add the article “Applications of Nanomaterial”.
- In remaining units, no change was required as per the discussion. Then the mode of discussion turned to Paper- XV.

#### **Semester-VI**

#### **Paper XV: KBP-S-PHY-3615: Atomic, Molecular Physics and Astrophysics**

- Prof. Dr. K.Y. Rajpure suggested that reshuffle the number of lectures of Unit I, III & V.
- In remaining units, no change was required as per the discussion. Then the mode of discussion turned to Paper- XVI (DSE-1B).

#### **Semester-VI**

#### **DSE – 1 B**

#### **Paper XVI: KBP-S-PHY-3616: Nuclear Physics.**

- In all units, no change was required as per the discussion. Then the mode of discussion turned to Paper- XVI (DSE-2 B).

#### **Semester-VI**

#### **DSE – 2 B**

#### **Paper XVI: KBP-S-PHY-3616: Energy Studies**

- Dr. A. A. Yadav Suggested that give the publication and edition of each reference book.
- Prin. Dr. D. J. Salunkhe suggested that inspire the students to use the reference books.
- In remaining units, no change was required as per the discussion. Then the mode of discussion turned to Paper Code: KBP-S-PHY-36-SC

#### **Semester-VI**

#### **Paper Code: KBP-S-PHY-36-SC: Skill Enhancement Course**

#### **Title: Thin film deposition, substrate cleaning and characterization techniques**

- Prof. Dr. K.Y. Rajpure suggested that eliminate the word “substrate cleaning” from the title of this Paper.
- Dr. A. A. Yadav Suggested that eliminate the word “preparation” and add the word “deposition” in the name of Unit-I.
- Dr. A. A. Yadav Suggested that eliminate the word “choosing” and add the word “selection” in the name of Unit-III and reshuffle the name. Also he suggested that eliminate the word “preparation” add the word “deposition” in the content of Unit-III.
- Dr. A. A. Yadav Suggested that use the word “To Prepare” in lab-work.
- In remaining units, no change was required as per the discussion. Then the mode of discussion turned to Practical Course (P-3).



### B.Sc. Part-III: PHYSICS PRACTICAL (P-3)

- Prof. Dr. K. Y. Rajpure suggested that mention specific method for thin film preparation- here "Electrodeposition" method (Experiment No.6 in Group-II).
- Dr. R. V. Dhekale suggested that mention specific method-"Owen's Method" for experimental determination of Self-inductance (Experiment No.7 in Group-II).
- In remaining practical's, no change was required as per the discussion. Then the mode of discussion turned to "Nature of Question Paper".

**Vote:** All in favour.

**Resolved:** Motion carried.

#### **Motion 2: Paper setter, Examiner and Moderator panels**

- Dr. Sou. L. K. Bagal was kept Nature of Question Paper in front of the BOS committee. The committee members approved the pattern.
- Dr. Sou. L. K. Bagal was kept Paper setter, Examiner and Moderator panels in front of the BOS committee. The committee members approved the panels.

#### **Panel of Paper setters:**

Sr. No.	Name of Teacher	College
1.	Dr. T. R. Mane	Sangola College, Sangola
2.	Mr. R. A. Bugad	Sangola College, Sangola
3.	Mr. A. M. Kambale	Vidnyan Mahavidyalaya, Sangola
4.	Dr. J. V. Thombare	Vidnyan Mahavidyalaya, Sangola
5.	Dr. C. S. Pawar	SMM, Akulj
6.	Dr. S. S. Karande	Sangmeshwar College, Solapur
7.	Dr. S. D. Chavan	DBF Dayanand College, Solapur
8.	Dr. A. A. More	K. N. Bhise College, Kurduwadi
9.	Dr. S. G. Holikatti	Walchand College, Solapur
10.	Prof. Dr. Sou. L. K. Bagal	K.B. P. Mahavidyalaya, Pandharpur
11.	Mr. P. A. Ghadage	K.B. P. Mahavidyalaya, Pandharpur
12.	Dr. S. G. Chavan	K.B. P. Mahavidyalaya, Pandharpur
13.	Mr. P. S. Pise	K.B. P. Mahavidyalaya, Pandharpur
14.	Mr. D. P. Shinde	K.B. P. Mahavidyalaya, Pandharpur
15.	Mr. U. V. Khaire	K.B. P. Mahavidyalaya, Pandharpur

**Panel of Examiners/Moderators:**

Sr. No.	Name of Teacher	College
1.	Dr. T. R. Mane	Sangola College, Sangola
2.	Dr. J. V. Thombare	Vidnyan Mahavidyalaya, Sangola
3.	Dr. C. L. Jambhale	Sangola College, Sangola
4.	Dr. S. S. Dhasade	Vidnyan Mahavidyalaya, Sangola
5.	Dr. A. R. Babar	SMM, Akluj
6.	Dr. Mrs. P. G. Metry	Sangmeshwar College, Solapur
7.	Dr. S. G. Pawar	DBF Dayanand College, Solapur
8.	Dr. A. A. More	K. N. Bhise College, Kurduwadi
9.	Dr. S. G. Holikatti	Walchand College, Solapur
10.	Prof. Dr. Sou. L. K. Bagal	K.B. P. Mahavidyalaya, Pandharpur
11.	Mr. P. A. Ghadage	K.B. P. Mahavidyalaya, Pandharpur
12.	Dr. S. G. Chavan	K.B. P. Mahavidyalaya, Pandharpur
13.	Mr. P. S. Pise	K.B. P. Mahavidyalaya, Pandharpur
14.	Mr. D. P. Shinde	K.B. P. Mahavidyalaya, Pandharpur
15.	Mr. U. V. Khaire	K.B. P. Mahavidyalaya, Pandharpur

**Vote:** All in favour.

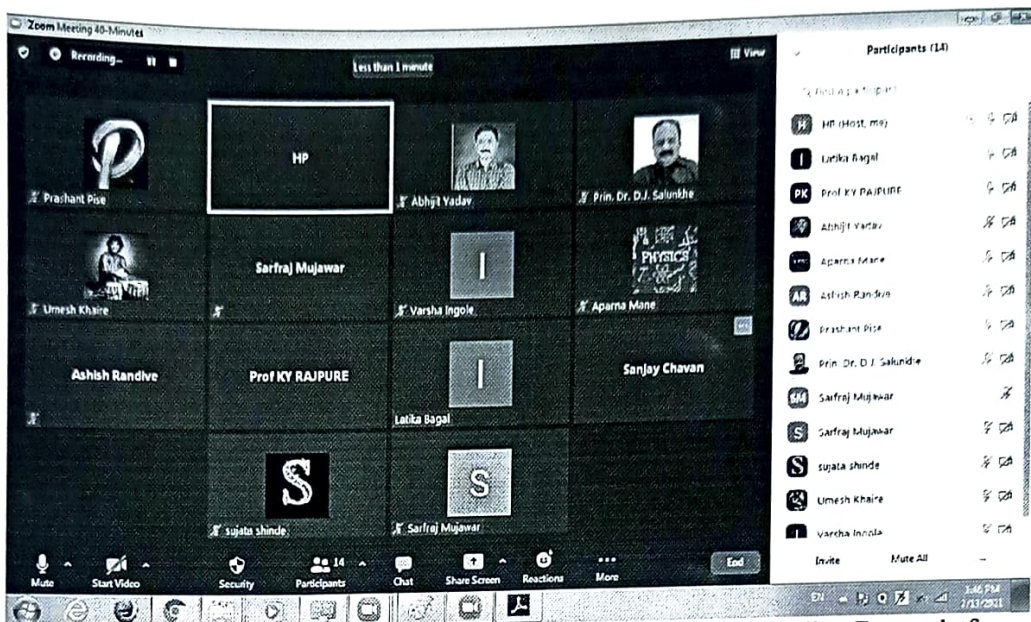
**Resolved:** Motion carried.

Vote of thanks was proposed by Dr. S. G. Chavan

**Meeting adjourned at 2:00 pm.**

**Minutes of meeting will be presented in the meeting of Academic Council.**

The attached syllabus was approved by the undersigned authority of BOS.



Members Present for BOS meeting in Physics on dated 13.07.2021 on Online Zoom platform.

**Rayat Shikshan Sanstha's**  
**Karmaveer Bhaurao Patil Mahavidyalaya, Pandharpur**  
**(AUTONOMOUS)**  
**Syllabus for B.Sc. Part - III Physics**  
**Choice Based Credit System (CBCS) Syllabus**  
**June, 2021**

**Structure of the Course:**

1. B.Sc. course in Faculty of "Science & Technology" has total of six (6) semesters for completion.
2. B.Sc.-III comprises of total two (2) semesters. Each semester will have Four (4) theoretical marks each for semester end examination (SEE) and 20 marks for continuous internal assessment (CIA) which includes one of the evaluation methods such as group discussion, social responsibility activity etc. in each semester.
3. Under "Skill Enhancement Course". SWAYAM course is for Semester-V and Semester -VI.
4. At the end of academic year i.e. semester VI the practical examination will be conducted (Annual).



Presentation of B.Sc.III (Physics) syllabus by BOS Chairman Prof. Dr. Sou. L. K. Bagal on dated 13.07.2021 on Online Zoom platform.



Lattice and Basis, Unit cell, Bravais lattices (2-D, 3-D), inter-planar spacing, Miller indices, X-ray diffraction and co-ordination number for BCC, SC, FCC & HCP structures.

**Unit II: X-ray Diffraction by Crystals**  
 Production of X-rays and its properties, Reciprocal Lattice and its properties, Bragg's Law, X-ray diffraction from crystal lattice, Powder method of X-ray diffraction for crystal structure.

**Unit III: Free electron Theory**  
 Properties of metals, Free electron model (Drude & Lorentz model), Electrical, thermal and thermoelectric properties of metals and Wiedemann-Franz relation, Sommerfeld's theory, Fermi-Dirac distribution, energy, degeneracy and non-degeneracy of metals

(12)

**Unit IV: Band theory of solids**  
 Formation of bands in solids (PE, KE and total energy of electron in isolated atom), Formation of energy bands (Valence band, conduction band and forbidden energy gap), Motion of electron in one dimensional periodic potential (Kronig Penny model), Effective mass of electron, Difference between metals, semiconductors and insulators, Hall Effect and its applications.

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**Unit V: Magnetic materials**  
 Magnetic Terminology, Classification of magnetic materials, Diamagnetic material, Paramagnetic

8.50 x 11.00 in

Discussion of BOS Members on draft of B.Sc.III (Physics) syllabus on dated 13.07.2021 on Online Zoom platform.