It is hereby notified to all concerned students that the Internal Examinations (Semester I and Semester III) of UG courses for B.A. / B.Sc. / B.Com. (Hons. and Gen) under CBCS pattern of Vidyasagar University will be conducted as per the following schedule.

COMMERCE DEPARTMENT (HONS. & GE.): As per the discretion of the respective department.

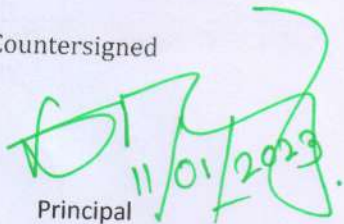ARTS & SCIENCE DEPARTMENTS (HONOURS): As per the discretion of the respective departments.

Semester-I

DATE	SUBJECT	COURSE	TIME	ROOM NO	Name of Teacher
16.01.2023 Monday	Chemistry, Physics Mathematics Botany,	GE1	11:00-11:30 AM	CH10	Tapas Ghosh,Chandrani Roy, Manowar Ali
	Philosophy, Sanskrit		11:00-11:30 AM	LH7	Milan Kumar Mal,Dr. Sudip Kumar Das Debasis Manna,Sridam Ghosh
	Physiology, Political Science		01:00-01:30 PM	LH7	Chandrani Roy, Manowar Ali, Sankhadip Maity
	Bengali, Mathematics	DSC	02:00-02:30 PM	LH2	Milan Kumar Mal,Dr. Sudip Kumar Das Debasis Manna
				LH5	Subhadip Sau,Tarun Mistri, Tapas Ghosh
				LH7	Sankhadip Maity,sikandar Ansari, Arobinda samanta,Sridam Ghosh
				CH10	Dilip Rout,Md Bodruddoza Arefin,Sanchayita Adikari
	Political Science, Physics		03:00-03:30 PM	LH2	Sridam Ghosh, Tarun Mistri, Naba Kumar Mondal, Subhadip Sau
17.01.2023 Tuesday	Sanskrit, Botany	DSC	11:00-11:30 AM	CH10	Subhasree Pradhan, Satabdi Das
	Physical Education		12:00-12:30 PM		Debashis Manna, Abhoy De
	History		01:00-01:30 PM	LH7	Prabir Das Ajoy Gopal Bera, Chandrani Roy, Debashree Mahapatra,
	Philosophy, Chemistry		02:00-02:30 PM		
	English, Physiology, Zoology		03:00-03:30 PM	LH2	Debanjan Das Koushik Sen, Subhadip Sau Tarun Mistri
20.01.2023 Friday	English-1 (B.A./B.Com. Gen.)	AECC-Core	11:00-11:30 AM	CH10,	Sourav Pal Sankhadip Maity Sreejit Ghosh Sayantan Roy
				LH7,	Chattradhar Dey,Biswajit Dutta Bhabesh Mahata Oindrila Sen
				LH2	Ranjit Kumar Kapat Dalia Mahata Rajesh Kumar Pandey,Debanjan Das
				LH5	Susovan Mondal, Baisakhi Kundu Prabir Das
20.01.2023 Friday	English (B.A./B.Sc./B. Com- Hons.)	AECC Elective	01:30-02:00 PM	CH10,	Sourav Pal, Susovan Mondal, Sreejit Ghosh , Sayantan Roy
20.01.2023 Friday	Bengali (B.A/, B.Sc./ B.Com. Gen)		02:30-03:00 PM	LH7,	Chattradhar Dey Biswajit Dutta Bhabesh Mahata,Krishnendu Sinha
				LH2	Ranjit Kumar Kapat, Dalia Mahata, Rajesh Kumar Pandey, Debanjan Das
				LH5	Susovan Mondal, Baisakhi Kundu Prabir Das

Semester-III

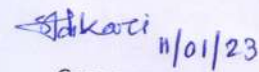| DATE	SUBJECT	COURSE	TIME	ROOM NO	Name of Teacher
18.01.2023 Wednesday	Bengali, English,	GE3	11:00-11:30 AM	CH10	Debashree Mahapatra Ajoy Gopal Bera Manowar Ali, Naba Kumar Bera
	History,		11:00-11:30 AM	LH2	Chandrani Roy Aboy De, Koushik Sen
	Mathematics, Chemistry, Physics		12:00-12:30 PM	CH10	Debashree Mahapatra Ajoy Gopal Bera Manowar Ali
	Physiology, Zoology	DSC, SEC	01:00-01:30 PM	LH7	Bhabesh Mahata Chatradhar Dey
	Bengali, Mathematics		02:00-03:00 PM		Sanchita Pan Momijul Haque
	Political Science, Physics		03:00-04:00 PM	LH2	Chandrani Roy Pravanjan Jana Aboy De, Koushik Sen
19.01.2023 Thursday	Sanskrit, Botany	DSC, SEC	11:00-12:00 NOON	CH10	Biswajit Dutta Sanjib Kumar Das Krishnendu Sinha, Naba Kumar Bera
	Physical Education, Zoology		12:00-01:00 PM	LH7	Sanjib Kumar Das Satabdi Das Dalia Mahata Dr. Sudip Kumar Das
	History		01:00-02:00 PM	CH10	Momijul Haque, Oindrila Sen, Bodruddoza Arefin, Subhasree Pradhan
	Philosophy, Chemistry		02:00-03:00 PM	LH7	Ranjit Kumar Kapat Milan Kumar Mal Sridam Ghosh
	English, Physiology		03:00-04:00 PM	LH2	Dalia Mahata Sourav Barai Md Bodruddoza Arefin, Tapas Ghosh
20.01.2023 Friday	English-2 (B.A./B.Com. Gen.)	AECC-Core	12:00-12:30 PM	CH10	Sourav Pal Sankhadip Maity Sreejit Ghosh Sayantan Roy
				LH2	Ranjit Kumar Kapat Dalia Mahata Rajesh Kumar Pandey Debanjan Das
				LH7,	Chattradhar Dey Biswajit Dutta Bhabesh Mahata Krishnendu Sinha
				LH5	Prabir Das, Sourav Barai

N.B. Examinations date may change in case of any unavoidable circumstances.
For any query students are instructed to contact to their respective departments.

Countersigned

Principal
Jhargram Raj College

11/01/2023

Convener
Internal Examination Sub-Committee (UG CBCS)

11/01/23

Cir. No. 90   10.06.2022

JHARGRAM RAJ COLLEGE

It is hereby notified to all concerned students that the Internal Examinations (Semester II and Semester IV) of UG courses for B.A. / B.Sc. / B.Com. (GE and DSC) under CBCS pattern of Vidyasagar University will be conducted in online mode as per the following schedule.

COMMERCE DEPARTMENT (HONS. & GE.): As per the discretion of the respective department.
ARTS & SCIENCE DEPARTMENTS (HONOURS): As per the discretion of the respective departments.

SCIENCE DEPARTMENTS (GE & DSC COURSES)

Date and Day	Subject	Course	Semester	Time
14.06.2022 (Tues day)	Physics, Botany and Economics	GE, DSC GE, DSC, SEC 2	II IV	10.00 am to 1.00 pm
15.06.2022 (Wed day)	Chemistry	GE, DSC GE, DSC, SEC 2	II IV	10.00 am to 1.00 pm
16.06.2022 (Thurs day)	Mathematics and Zoology	GE, DSC GE, DSC, SEC 2	II IV	10.00 am to 1.00 pm
17.06.2022 (Fri day)	Physiology	GE, DSC GE, DSC, SEC 2	II IV	10.00 am to 1.00 pm

ARTS DEPARTMENTS (All GE COURSES FOR HONOURS Students)

Date and Day	Subject	Course	Semester	Time
14.06.2022 (Tues day)	Bengali, English, Sanskrit, History, Philosophy and Political Science	All GE courses	II, IV	10 am to 12.00pm

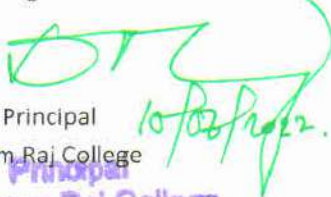## ARTS DEPARTMENTS (GENERAL Students)

Date and Day	Subject	Course	Semester	Time
14.06.2022 (Tues day)	Bengali	DSC DSC, SEC 2	II IV	10:00 am to 12:00 noon 10.00 am to 1.00 pm
	English	DSC DSC, SEC 2	II IV	12:30 pm to 2:30 pm 12:30 pm to 3:30 pm
	Sanskrit	DSC DSC, SEC 2	II IV	3:00 pm to 4:00 pm 4.00 pm to 5.00 pm
15.06.2022 (Wednesday)	History	DSC DSC, SEC 2	II IV	10:00 am to 12:00 noon 10.00 am to 1.00 pm
	Philosophy	DSC DSC, SEC 2	II IV	12:30 pm to 2:30 pm 12:30 pm to 3:30 pm
	Political Science	DSC DSC, SEC 2	II IV	3:00 pm to 5:00 pm 3.00 pm to 6.00 pm
16.06.2022 (Thurs day)	Physical Education	DSC DSC, SEC 2	II IV	10:00 am to 12:00 noon 10.00 am to 1.00 pm

ALL STUDENTS (HONS & GENERAL)

Date and Day	Subject	Course	Semester	Time
18.06.2022 (Saturday)	Science/Arts/ Commerce (HONS & GEN) Arts/ Commerce (GEN) Arts/ Commerce (GEN)	AECC ENVS BENG MIL -1 BENG MIL -2	II II IV	10.00 am to 01:00 pm 1:00 pm to 02:00 pm 01:00 pm to 02:00 pm

Countersigned

Principal
Jhargram Raj College
Principal
Jhargram Raj College

Ushasi Dutta
Convener
Internal Examination Sub-Committee (UG CBCS)

INSTRUCTIONS FOR STUDENTS

It is hereby notified to all concerned students that the Internal Examinations (GE/DSC) for Semester II & IV B.A. / B.Sc. under CBCS pattern of Vidyasagar University will be conducted from June 14th to The examination will be held through **online mode..**

- The Link will be shared fifteen minutes (15 minutes) before the commencement of the examination.
- The link *will be displayed in the college website under the Examination Notification of Students' Zone* .
- For B.A. / B.Sc. students will obtain their question papers by clicking

Semester → Paper (GE/DSC) → Required Subject

Instruction for submission of answer script

- Students must write their **Name, Previous Semester Roll No or current semester roll no (if available) along with Previous Semester or current semester Registration No with year, Subject and Paper Code** on the top of their answer script.
- Students are directed to send the answer scripts in PDF format to the e-mail ID or as specified in the question paper.

- Subject of Email must be as File Name: Full Roll No._Subject_Paper Code.
- PDF File name must be as follows: Full Roll No._Subject_Paper Code.
- ❖ Students should be extremely careful during submission of answer scripts in wrong e-mail ID is subjected to be cancelled.

JHARGRAM RAJ COLLEGE

It is hereby notified to all concerned students that the Internal Assessment of Semester V of UG courses for B.A. / B.Sc. / B.Com. (GE, DSE and SEC)-2022, under CBCS pattern of Vidyasagar University will be conducted as per the following schedule.

COMMERCE DEPARTMENT (Hons. and Gen.) As per the discretion of the respective department.
ARTS & SCIENCE DEPARTMENTS (Hons.): As per the discretion of the respective departments.

SCIENCE DEPARTMENTS- (GE, DSE and SEC COURSES)

Date	Subject	Paper	Room No	Time
13.12.2022 (Tuesday)	Botany Physics	DSE DSE	CH10	11:30 am to 12:00
14.12.2022 (Wednesday)	Zoology Mathematics	DSE, SEC DSE, SEC	CH10	11:30 am to 12:30 pm
15.12.2022 (Thursday)	Physiology Chemistry	DSE, SEC DSE, SEC	CH10	11:30 am to 12:30 pm 01:00 pm to 02:00 pm

ARTS DEPARTMENTS (GENERAL Students)

Date and Day	Subject	Course	Room No	Time
13.12.2022 (Tuesday)	Bengali	GE , DSE, SEC	LH2	11:00 am to 12.30 pm
	Political Science	GE, DSE	LH7	01:00 pm to 02.00 pm
14.12.2022 (Wednesday)	Philosophy	GE, DSE	LH2	11:00 am to 12:00 noon
	History	GE, DSE	LH7	12:30 pm to 01.30 pm
15.12.2022 (Thursday)	English	GE , DSE, SEC	LH2	11:00 am to 12.30 pm
	Physical Education	GE, DSE, SEC	LH2	01:00 pm to 2:30 pm
	Sanskrit	GE, DSE	LH7	01:00 pm to 2:00 pm

N.B.   Examinations date may change in case of any unavoidable circumstances.
         For any query students are instructed to contact to their respective departments.

Countersigned

Principal
Jhargram Raj College

Joint-Convener
Internal Examination Sub-Committee (UG CBCS)

JHARGRAM RAJ COLLEGE

This is to notify for all concerned students that due to unavoidable circumstances, the internal examination (Semester-I) of UG Courses for B.A./B.Sc./B.Com. (Hons. & Gen.) under CBCS pattern of Vidyasagar University scheduled on **16.01.2023 (notified by Cir. No. 05, dated 05.01.2023) has been rescheduled and will be conducted on 30.01.2023.**

The other details related to examination schedule will remain same.

Countersigned

Principal
Jhargram Raj College

Convener
Internal Examination Sub-committee (UG CBCS)

Copy to:
1. IQAC Coordinator
2. Secretary, Teachers' Council
3. All HODs
4. Guard File
5. Convener, Website Sub Committee

Cir. No. 90   26.05.23

JHARGRAM RAJ COLLEGE

It is hereby notified to all concerned students that the Internal Examinations, 2023 (Semester VI) of UG courses for B.A. / B.Sc. / B.Com. (DSC) under CBCS pattern of Vidyasagar University will be conducted as per the following schedule.

SCIENCE DEPARTMENTS (GENERAL STUDENTS)

Date and Day	Subject	Course	Semester	Room No	Time
05.06.2023 (Monday)	Physics, Botany and Economics	DSE, SEC 4	VI	CH-10	11.30 am to 12.00 pm 12.00 pm to 12.30 pm
06.06.2023 (Tuesday)	Chemistry and Physiology	DSE ,SEC 4	VI	LH 7	11.30 am to 12.00 pm 12.00 pm to 12.30 pm
07.06.2023 (Wednesday)	Mathematics and Zoology	DSE ,SEC 4	VI	CH 10	11.30 am to 12.00 pm 12.00 pm to 12.30 pm

ARTS DEPARTMENTS (GENERAL STUDENTS)

Date and Day	Subject	Course	Semester	Room No	Time
05.06.2023 (Monday)	Bengali	GE 2, DSE, SEC 4	VI	LH 2	11:00 am to 11:30 pm 11.30 pm to 12.00 pm 12.00 pm to 12.30 pm
	English	GE 2, DSE	VI	CH 10	1:00 pm to 1:30 pm 1:30 pm to 2:00 pm
	Sanskrit	GE 2, DSE	VI	LH 2	2:30 pm to 3:00 pm 3.00 pm to 3.30 pm
06.06.2023 (Tuesday)	History	GE 2, DSE, SEC 4	VI	LH 2	11:00 am to 11:30 pm 11.30 pm to 12.00 pm 12.00 pm to 12.30 pm
	Political Science	GE 2, DSE,	VI	CH 10	12.30 pm to 1.00 pm 1:00 pm to 1:30 pm
	Philosophy	GE 2, DSE, SEC 4	VI	LH 2	1:30 pm to 2:00 pm 2.30 pm to 3.00 pm 3.00 pm to 3.30 pm
07.06.2023 (Wednesday)	Physical Education	GE 2, DSE, SEC 4	VI	LH 2	11:30 am to 12:00 pm 12.00 pm to 12.30 pm 12.30 pm to 1.00 pm

N.B.   Examinations date may change in case of any unavoidable circumstances.
          For any query students are instructed to contact to their respective departments.

Countersigned

Principal
Jhargram Raj College

for Chy
26/05/23
Convener
Internal Examination Sub-Committee (UG CBCS)

ঝাড়্গ্রাম রাজ কলেজ
দর্শন বিভাগ

Internal Examination 2022
3rd Semester Philosophy (General)
DSC 1/2 Logic

উত্তরপত্রে পরীক্ষাথীর নাম, কলেজ রোলনম্বর ও বিশ্ব বিদ্যালয়ের রেজিস্ট্রেশন নাম্বার স্পষ্টভাবে উল্লেখ করতে হবে।

নিম্নলিখিত যে কোন পাঁচটি প্রশ্নের উত্তর দাও।   ৫x২= ১০

1. অনুমান বলতে কি বোঝ ?

2. অমাধ্যম অনুমান কাকে বলে ?

3. বচনে রূপান্তর কর-
   কবিরা কদাচিৎ বাস্তববাদী হয়, শিশুরা সরল ।

4. মিশ্র প্রাকল্পিক ন্যায়যুক্তি উদাহরণ সহযোগে ব্যখ্যা কর ।

5. বিরুদ্ধ বিরোধীতার সংজ্ঞা কি ?

6. নিচের বচনটির আবর্তনের বিবর্তন কর ঃ
   ছাত্ররা উপস্থিত

7. অবৈধ সাধ্য দোষ কাকে বলে ?

8. নিরপেক্ষ ন্যায়ের যে কোন দুটি নিয়ম লেখ ।

9. ভেন চিত্রের সাহায্যে নিম্নের যুক্তির বৈধতা বিচার কর
   EAO-3

10. যথার্থ প্রকল্পের মানদন্ডগুলি কি কি ?

___

INTERNAL EXAMINATION – 2022- 2023

SEM: III   SUBJECT: MATHEMATICS   PAPER: DSC 1C (REAL ANALYSIS)

Maximum Marks: 10

ANSWER ANY FIVE OF THE FOLLOWING

1. Let $a, b \in R$ and $ab > 0$. Prove that either $a > 0$ and $b > 0$, or $a < 0$ and $b < 0$.

2. Let S be a non – empty subset of R, bounded below and $T = \{-x : x \in S\}$. Prove that the set T is bounded above and $\sup T = -\inf S$.

3. Give an example of a set $S \subset R$ such that the set S is neither open nor closed in R.

4. If S be a non – empty bounded subset of R prove that $\sup S \in \bar{S}$ and $\inf S \in \bar{S}$.

5. Give an example of a sequence of rational numbers that converges to an irrational number.

6. Determine the limit of the sequence $\{x_n\}$ where $x_n = \frac{1}{2+n^2}$.

7. Prove that the following series is convergent –

$$1 - \frac{1}{2} + \frac{1}{3} - \cdots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$$

8. If $\{x_n\}$ is a sequence of real numbers and $\sum x_n^2$ is convergent, prove that $\sum {x_n}/{n}$ is absolutely convergent.

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B.A. General Internal Examination 2022 (under CBCS)
1st Semester
HISTORY
Paper: DSC-1A/2A
(Ancient India)
Full Marks: 10
Time: 30 minutes

Answer *any ten* questions: 10x1=10

1. What do you know about the Harappan script?
2. Mention any two Harappan archaeological sites in Gujarat.
3. What do you know about Kalibangan?
4. Mention any one archaeological evidence related to the Harappan religion.
5. Mention two probable causes of the decline of the Harappan culture.
6. Name any four *mahajanpadas* of the sixth century B.C.E.
7. Write a short note: Megasthenes' *Indica*.
8. What are the historical sources for the Maurya period?
9. What was *Dhamma*?
10. Who were the *Dhammamahamatyas*?
11. What are the major historical sources for the Gupta period?
12. What is the significance of Allahabad Prasasti?
13. What is *grahana-moksha-anugraha*?
14. Which Gupta ruler assumed the title of *Shakari* and why?
15. Name the Chinese traveller who came to India during the Gupta period. What is the name of the book authored by him?

Bengali Version

1. হরপ্পীয় লিপি সম্পর্কে কি জানো ?

2. গুজরাতে অবস্থিত দুটি হরপ্পীয় প্রত্নক্ষেত্রের নাম লেখ।

3. কালিবঙ্গান সম্বন্ধে কি জান ?

4. হরপ্পীয় ধর্মের একটি প্রত্নতাত্ত্বিক সাক্ষের উল্লেখ কর।

5. হরপ্পীয় সংস্কৃতির পতনের দুটি সম্ভাব্য কারণ উল্লেখ কর।

6. খ্রীষ্টপূর্ব ষষ্ঠ শতকের যে কোন চারটি মহাজনপদের নাম লেখ।

7. সংক্ষিপ্ত টীকা লেখঃ মেগাস্থিনিসের 'ইন্ডিকা'।

8. মৌর্য যুগের ঐতিহাসিক উপাদানগুলি কি কি ?

9. 'ধম্ম' কি?

10. ধম্মমহামাত্য কারা ছিল?

11. গুপ্ত যুগের প্রধান ঐতিহাসিক উপাদানগুলি কি কি ?

12. এলাহাবাদ প্রশস্তির গুরুত্ব কি ?

13. 'গ্রহণ-মোক্ষ-অনুগ্রহ' কি ?

14. 'শকারি' উপাধি কোন গুপ্ত শাসক গ্রহণ করেন এবং কেন ?

15. গুপ্ত যুগে কোন চৈনিক পর্যটক ভারতে আসেন ? তাঁর রচিত গ্রন্থের নাম কি ?

প্রথম ষন্মাস সাধারণ বাংলা অন্তর্বর্তী মূল্যায়ন ২০২২
ঝাড়গ্রাম রাজ কলেজ

বাংলা বিভাগ

পূর্ণমান ৫   সময় ৩০ মিনিট

AECC (Elective) - MIL (Bengali)

বাংলা ভাষা প্রসঙ্গ, অনুবাদ ও কথনদক্ষতা

যেকোন **একটি** প্রশ্নের উত্তর দাও।   ৫ X ১ = ৫

(১) ইংরেজি থেকে বাংলায় অনুবাদ করো:

He had left his village without any previous thought or plan. If he had continued there he would have carried on the work of his forefathers—namely, tilling the land, living, marrying and ripening in his cornfield and ancestral home. But that was not to be. He had to leave home without telling anyone, and he could not rest till he left it behind a couple of hundred miles. To a villager it is a great deal, as if an ocean flowed between.

(২) বাংলা থেকে ইংরেজিতে অনুবাদ করো:

বাংলা ভাষায় বিজ্ঞানচর্চার ক্ষেত্রে সত্যেন্দ্রনাথ বসুর অমূল্য অবদান রয়েছে। তাঁর নেতৃত্বে কলকাতায় ১৯৪৮ খ্রিষ্টাব্দে বঙ্গীয় বিজ্ঞান পরিষদ গঠিত হয়। এই পরিষদের মুখপাত্র হিসাবে বাংলা ভাষার বিজ্ঞান পত্রিকা 'জ্ঞান ও বিজ্ঞান' প্রকাশিত হয়। ১৯৬৩ খ্রিষ্টাব্দে 'জ্ঞান ও বিজ্ঞান'-এ কেবলমাত্র মৌলিক গবেষণা নিবন্ধ নিয়ে 'রাজশেখর বসু সংখ্যা' প্রকাশ করে তিনি দেখান, বাংলা ভাষায় বিজ্ঞান বিষয়ক মৌল নিবন্ধ রচনা করা সম্ভব।

Department of Botany
Jhargram Raj College
B.Sc. General (Semester -I)
Internal Assessment- 2022-2023
Sub- Botany (GE); Paper: GE 1T

- **Answer any five of the following questions**   **Time 30 min: 2×5=10**
    1. What is virulent phage?
    2. What is plasmid?
    3. Write the pigment composition of brown algae.
    4. What is cystocarp? Where it is found?
    5. What is mushroom? Give an example of it.
    6. What are amphibians of the plant kingdom?
    7. What is heterospory? Where it is found?
    8. Write the scientific name of two antibiotic producing organisms?

Department of Political Science

Jhargram Raj College

Jhargram, Midnapur.

Phone No. : 55022

S.T.D. : 03221
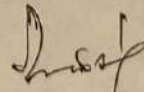
Ref.................................

Date 29.11.2022

Notice

It is notified that internal Examination of I, III & V Semester Honours Courses will be held on 29th and 30th November, 2022 as per the following schedule :

Date	Time	Courses
29.11.2022	11:00 AM onwards	CC-1, CC-II
29.11.2022	12:00 Noon onwards	CC-5, CC-6
30.11.2022	11:00 AM onwards	CC-7, CC-11, CC-

Head of Department
Department of Political Science
Jhargram Raj College

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Jhargram, Midnapur.

Phone No. : 55022
S.I D. : 03221

Ref.... ... ...

Date...24|04|2023...

This is notified to all 4th and 6th semester(H)students, that their Internal Assessment will be held on 27/04/2023 and 28/04/2023 at 11:00 a.m onward. Time of each paper should be 30 minutes

Schedule

Date → 27/04/2023

4th Semester — 8th and 9th paper
6th Semester — 13th and 14th papers

Date → 28/04/2023

4th Semester — 10th paper & SEC Pa[
6th Semester — DSE-3 & DSE-4 pa[

For

Bmahata
24/4/23.

Head of Department
Department of Political Science
Jhargram Raj College

Jhargram Raj College

Department of philosophy

<u>Notice</u>

This is to notify for all concerned that, the internal examination for 4th &2nd Semester students of Philosophy Honours course will be held on 29.06.2022 at Room no.U9. The schedule would be as follows ---

Paper	Date	Time	Year
CC 8, CC 9, CC10, SEC 2	29.06.2022	11.00 am to 2pm	4th Sem Hons
CC 3, CC4	29.06.2022	11.00 am to 2pm	2nd Sem Hons

Sudipta Mullick

Head

Department of Philosophy

JHARGRAM RAJ COLLEGE

Jhargram 721507

Department of History

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Ref. No.: JRC/HIST/T/5/2022   Date: 22.12.2022

NOTICE

It is hereby notified that a meeting of the faculty members of the Department of History will be held on 03.01.2023, at 02:00 p.m. to discuss the following agenda.

Agenda:

1. Modalities of Semester 5 (Honours) Supplementary Internal Examination (2022)
2. Modalities of Semester 5 (General) Supplementary Internal Examination (2022)
3. Modalities of Semester 1 & 3 (Honours) Internal Examination – I (2022-23)
4. Modalities of Semester 1 & 3 (General) Internal Examination (2022-23)
5. Departmental Seminar
6. Departmental Educational Tour

All the esteemed faculty members of the department are cordially requested to attend the aforesaid meeting.

Head
Department of History
Jhargram Raj College

JHARGRAM RAJ COLLEGE

JHARGRAM – 721 507

DEPARTMENT OF MATHEMATICS
2022-2023

08.09.2022

Notice

This is to inform all students of 5th semester B.Sc. (Honours in Mathematics) that the 1st internal examination (offline mode) for the academic year 2022-2023 has been scheduled to be held as per the following schedule :-

Sl. No.	Date & Day	Time	Paper Code
1.	20.09.2022 Tuesday	11.00 AM – 12.00 PM	C11, C12
2.	21.09.2022 Wednesday	11.00 AM – 12.00 PM	DSE1, DSE2

Syllabus for the upcoming Internal Examination

Sl. No.	Paper	Syllabus
1.	C11	Unit 1
2.	C12	Unit 1
3.	DSE1	LPP by Graphical Method
4.	DSE2	Introduction to Probability

Sandip Sarkar 18/09/2022

Head, Dept. of Mathematics
Jhargram Raj College

Head, Dept. of Mathematics
Jhargram Raj College
Govt. of West Bengal
Jhargram, PIN - 721507

JHARGRAM RAJ COLLEGE

JHARGRAM – 721507

Botany Department

Ref. No. **41**

Date: **24/u/22**

NOTICE

All concerned students are hereby directed to follow the given schedule of internal assessment of respective papers to fulfill course curriculum:

Internal Examination schedule: -

Sl. No	Paper Code	Semester	Date	Time
1	CC 1	I	19.12.22	11 A.M
2	CC 2	I	16.12.22	12 P.M
3	CC 5	III	15.12.22	12 P.M
4	CC 6	III	15.12.22	1 P.M
5	CC 7	III	14.12.22	12 P.M
6	SEC 1	III	22.12.22	12 P.M
7	CC 11	V	28.11.22	11 A.M
8	CC 12	V	28.11.22	12 P.M
9	DSE 1	V	30.12.22	12 P.M
10	DSE 2	V	29.11.22	11 A.M

Dr. Arghya Ghosh
Head of the Deptt., Botany
Jhargram Raj College

DR. ARGHYA GHOSH (W.B.E.S.)
H.O.D. & ASSISTANT PROFESSOR
DEPARTMENT OF BOTANY
JHARGRAM RAJ COLLEGE
JHARGRAM - 712507

Copy to: -
1. Academic file
2. Notice book

It is hereby notified that the internal examination of 4th semester CBCS (Hons) will be held as per following schedule.

Date	Paper	Time	Name
24/07/2023	C8T	11.45 am -12.15 pm	Mathematical Physics 1
	C9T	12.30 pm–1.00 pm	Elements of Modern Physics
25/07/2023	C10 T	11.45 am -12.15 pm	Analog Systems and Applications
	SEC 2	12.30 pm–1.00 pm	Applied Optics

Ushasi Dutta

Head

Department of Physics

Signature of the teachers:

Date :- 14. 07.23

Internal question paper setter

1. C8T   Subhadip Sau

2. C9T   Ushasi Dutta

3. C 10T Tapas Ghosh

4. SEC 2 Sourabh Mulhopadhyay

5. GE 4   Ushasi Dutta & Subhasree Pradhan

6. DSC 4 Manowar Ali

JHARGRAM RAJ COLLEGE
JHARGRAM – 721 507

DEPARTMENT OF MATHEMATICS
2022-2023

10.11.2022

Notice

This is to inform all students of 3rd semester B.Sc. (Honours in Mathematics) that the 1st internal examination (offline mode) for the academic year 2022-2023 has been scheduled to be held as per the following schedule :-

Sl. No.	Date & Day	Time	Paper Code
1.	22.11.2022 Tuesday	11.00 AM – 12.00 PM	C5, C6
2.	23.11.2022 Wednesday	11.00 AM – 12.00 PM	C7, SEC1

Syllabus for the upcoming Internal Examination

Sl. No.	Paper	Syllabus
1.	C5	Limit and Continuity
2.	C6	Groups, Sub Groups and Cyclic Groups
3.	C7	(a) System of Linear and Algebraic Equations (b) Transcendental and Polynomial Equations
4.	SEC1	Propositional Calculus

Sandip Soren 10/11/2022

Head, Dept. of Mathematics
Jhargram Raj College

JHARGRAM RAJ COLLEGE

Department of History

B.A. Honours Internal Examination 2022 (under CBCS)

3rd Semester

Paper: CC-5

(Delhi Sultanate)

Full Marks: 10

Time: 1 Hour

Answer **any one** question: [*Write within 1000 words*]   10x1=10

1. What do you mean by Historiography? Discuss the importance of literary sources in writing the history of the Delhi Sultanate.

2. How did Iltutmish consolidate his empire in the face of external and internal difficulties?

3. Was the Delhi Sultanate a theocratic state? Justify your answer.

4. Give an account of the agrarian production system during the Delhi Sultanate.

5. Analyze the causes of conflict between the Vijaynagara and Bahamani kingdoms.

6. Discuss the salient features of Sultanate Architecture.

JHARGRAM RAJ COLLEGE
Department of History
B.A. Honours Internal Examination 2022 (under CBCS)
3rd Semester
Paper: CC- 6
(The Feudal Society)

Full Marks: 10

Time: 1 Hour

Answer **<u>any one</u>** question: [*Write within 1000 words*]   10x1=10

1. Critically explain the Charlemagne debate.

2. Write a note on the Treaty of Verdun.

3. Discuss the features of the Cluniac Reform Movement.

4. Critically analyze the economic features of Feudalism.

5. How do you link "Chivalry" with "Romanticism"? Answer critically.

6. How do you explain the impact of the emergence of towns on Feudalism?

7. Discuss the various barbarian invasions in medieval Europe. Explain its impact on European society, religion and economy.

Jhargram Raj Collge

Department of Physics
Internal Assessment 2022
Third Semester Physics (Core Course) CBCS
Paper-CC-12T (Solid State Physics)
Full Marks -10

Attempt any **five** questions.   [5X2 = 10 Marks]

1. Show that for a simple cubic lattice d_{100} : d_{110} : d_{111} = $\sqrt{6}$: $\sqrt{3}$:$\sqrt{2}$ where d_{hkl} is the separation between the adjacent (hkl) parallel planes.
2. The density of bcc iron is 7.9 g/cm^3 and its atomic weight is 56. Calculate the length of the side of the cubic unit cell and its nearest neighbor distance.
3. The first order (100) reflection angle is 18° for a cubic crystal using X-rays of wavelength 1.54 A^0. Determine the distance between the (100) planes and the (111) planes of the crystal.
4. Explain different kinds of magnetism in solid with example.
5. What is paramagnetic Curie temperature?
6. Calculate the molar diamagnetic susceptibility of atomic hydrogen.
7. Apply Hund's rule to the ground state of a) Eu $^{3+}$ b) Yb $^{3+}$ c) Tb $^{3+}$.

Instructions:

ঝাড়গ্রাম রাজ কলেজ

দর্শন বিভাগ

Semester VI (Honours)

CC13 (Nayaya Logic & Epistemology II)

পূর্ণ মান: 10

উত্তরপত্র Name, College Roll Number, Registration Number with year অবশ্যই উল্লেখ করতে হবে।

নিচের প্রশ্নগুলোর যেকোনো পাঁচটির উত্তর দাও। ৫ x ২ =১০

১. তর্কসংগ্রহ অনুসারে অনুমতির লক্ষণ দাও।

২. ব্যাপ্তির প্রকৃতি অনুসারে অনুমান কয়টি ও কি কি?

৩. সদ হেতুর বৈশিষ্ট্য গুলি কি কি?

৪ 'পর্বত: ধুমবান বহ্নে ' - এই অনুমতির পাঁচটি অবয়ব নির্ণয় করে দেখাও।

৫. বিরুদ্ধ হেত্বাভাস উদাহরণ সহ লেখ।

৬. হেত্বাভাস নির্ণয় কর।

    ' শব্দ নিত্য শব্দত্বাৎ'

৭.একটি উদাহরণ সহ অর্থাপত্তি প্রমাণ বুঝিয়ে লেখ।

৮. স্বত:প্রামাণ্যবাদ কাকে বলে?

৯. আকাঙ্ক্ষা বলতে কি বোঝ?

১০. বাক্যার্থবোধের কারণগুলি লেখ।

Jhargram Raj College
Department of Botany
B.Sc. Hons. (Semester -III)
Internal Assessment- 2023
Paper: C5 T
Anatomy of Angiosperms

F.M. – 10   Time 30 min

- **Answer any five of the following questions**   **2×5=10**
1. Define bordered pits.
2. What are the anomocytic stomata? Give an example.
3. How amphivasal vascular bundle differs from amphicribal vascular bundle?
4. What is quiescent centre?
5. Write the significance of periderm.
6. What is Spring wood?
7. Define tyloses.
8. Elaborate the differences between cystolith and lithocyst.

Problem of the Week

Answer Any Two of the following:

1. Let f be an infinitely differentiable function from $\mathbb{R}$ to $\mathbb{R}$. Suppose that, for some positive integer n,

$$f(1) = f(0) = f^{/}(0) = f^{//}(0) = \cdots = f^{n}(0) = 0.$$

Prove that $f^{n+1}(x) = 0$ for some x in $(0,1)$.

2. Assume that f is twice continuously differentiable function on $(0, \infty)$, $\lim_{x \to \infty} x f(x) = 0$, $\lim_{x \to \infty} x f^{//}(x) = 0$. Prove that $\lim_{x \to \infty} x f^{/}(x) = 0$.

3. Let f be a continuous function on $[0,1]$. Evaluate $\lim_{n \to \infty} \int_{0}^{1} x^{n} f(x) dx$.

Brief Solution of the Problem Posted on 03.03.22

1. By Rolle's Theorem $\exists\ x_1 \in (0,1)$ such that $f'(x_1) = 0$. Hence according to the given condition and by repeated application of Rolle's Theorem will tell us that $\exists\ x \in (0, x_n) \subset (0,1)$ such that $f^{n+1}(x) = 0$.

2. By Taylor's Theorem on $[x, x + 1]$ we get

   $$f(x + 1) = f(x) + f'(x) + \frac{1}{2}f''(\lambda)\ \text{where}\ \lambda \in (x, x + 1)$$

   Now, consider the expression

   $$xf'(x) = \frac{x}{x+1}(x + 1)f(x + 1) - xf(x) - \frac{1}{2}\frac{x}{\lambda}\lambda f''(\lambda)$$

   By taking the limit $x \to \infty$ both side we get the result.

3. Let $\varepsilon > 0, L = \max_{x \in [0,1]}(|f(x)| + 1)\ \&\ 0 < \delta < \min\{\frac{\varepsilon}{2L}, 1\}$
   Observe that $|\int_{1-\delta}^{1} x^n f(x)dx\ | \le \int_{1-\delta}^{1} |x|^n |f(x)|dx \le L\delta \le \frac{\varepsilon}{2}$
   Also $|\int_{0}^{1-\delta} x^n f(x)dx| \le \int_{0}^{1-\delta}(1 - \delta)^n |f(x)|dx \le L\delta^{n+1}$

   So, $\lim_{n\to\infty} \int_{0}^{1} x^n f(x)dx = 0$.

Problem of the Week

(SEM - IV)

Problem Posting Date: **24.03.22**   Due Date: **31.03.22**

Any One:

1. Show that for any irrational α $\lim_{n \to \infty} \sin n\alpha\pi$ does not exist.

2. Let α be irrational. Show that $A = \{m + n\alpha : m, n \in \mathbb{Z}\}$ is dense in $\mathbb{R}$.

3. Given a real number α and $x \in (0,1)$, calculate $\lim_{n \to \infty} n^\alpha x^n$.

……………………………………………………………………………………………………

Brief Solution of the Problem Posted on 24.03.22

1. If $\lim_{n \to \infty} \sin n\alpha\pi$ exists, then $\lim_{n \to \infty} \sin(n+2)\alpha\pi$ exists. It will imply that $\lim_{n \to \infty} (\sin(n+2)\alpha\pi - \sin n\alpha\pi) = 0$. Hence $\lim_{n \to \infty} \cos n\alpha\pi = 0$
   Similarly one can show that $\lim_{n \to \infty} \sin n\alpha\pi = 0$. But we know that $\sin^2 n\alpha\pi + \cos^2 n\alpha\pi = 1$ so we arrive at a contradiction.

2. We will show that in any interval (p, q) there exists at least one element of A.
   Let $\varepsilon = q - p$. We know that $\forall\, \alpha \in \mathbb{R} \setminus \mathbb{Q} \;\exists\, p_n\,, q_n \in \mathbb{N}$ such that
   $|\alpha - \frac{p_n}{q_n}| < \frac{1}{q_n{}^2}$ Since $\alpha \in \mathbb{R} \setminus \mathbb{Q}$ $\lim_{n \to \infty} q_n = \infty$ so $|q_n\alpha - p_n| < \frac{1}{q_n} < \varepsilon$
   for almost all n. Set $a = |q_n\alpha - p_n|\,,\; ma \in (p, q), m \in \mathbb{Z}$.

3. $\alpha \in \mathbb{R},\; x \in (0,1)$. Now $\lim_{n \to \infty} \frac{(n+1)^\alpha x^{n+1}}{n^\alpha x^n} = \lim_{n \to \infty} x(1 + \frac{1}{n})^\alpha = x < 1$.
   Hence the $\lim_{n \to \infty} n^\alpha x^n = 0$.

Problem of the Week

(SEM - VI)

Problem Posting Date: **24.03.22**   Due Date: **31.03.22**

Any One:

1. Let $f_1, f_2, \ldots, f_n$ be continuous real valued functions on $[a, b]$. Show that the set $\{f_1, f_2, \ldots, f_n\}$ is linearly dependent on $[a, b]$ if and only if

$$\det \left(\int_a^b f_i(x) f_j(x) dx \right) = 0$$

2. Let α & β be real numbers such that the subgroup Γ of $(\mathbb{R}, +)$ generated by α & β is a closed set. Prove that α & β are linearly dependent over $\mathbb{Q}$.

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Brief Solution of the Problem Posted on 24.03.22

1. Claim: $0 \notin \Gamma'$

   If $0 \in \Gamma'$ and Γ contains all integer multiples of its elements so Γ is dense in $\mathbb{R}$. But then $\Gamma = \mathbb{R}$, since Γ is closed in $\mathbb{R}$. But it is not possible as Γ is countable. So $0 \notin \Gamma'$. It implies $\exists \gamma > 0, \gamma \in \Gamma$. If $x \in \Gamma$ & n is the largest integer such that $n\gamma \leq x$ then $x - n\gamma \in \Gamma$ & $0 < x - n\gamma < \gamma$ hence $x - n\gamma = 0$.

2. Let $G = G_{ij} = \int_a^b f_i(x) f_j(x) dx$. If $\det G = 0$ then G is singular. Let a be a non- zero n-vector with

   $Ga = 0$ then $a^T Ga = 0 = \sum_{i=1}^n \sum_{j=1}^n \int_a^b a_i f_i(x) a_j f_j(x) dx =$
   $\int_a^b \left(\sum_{i=1}^n a_i f_i(x) \right)^2 dx$

   Hence the set is linearly dependent.

   The other part is an easy calculation.

Jhargram Raj College

Assignment-1
3rd semester Physics Honours
Paper : **CC-5**

✎ <u>Kronecker's method of integration.</u>

$$\int g(x)f(x)dx = g(x)F_1(x) - g'(x)F_2(x)$$
$$+ g''(x)F_3(x) + \cdots \qquad (1)$$

1. Sketch the periodic extension of $f(t) = t/\pi$, $-\pi < t < \pi$. Find its Fourier series.

2. Sketch the periodic extension of $f(t) = 0$ for $t < 0$, $f(t) = 1$ for $t > 0$, if the funcdamental interval is $(-1, 1)$.

3. A function $f(x)$ is defined only over the range $0 < t < 4$ as

$$f(x) = \begin{cases} t, & 0 < t < 2 \\ 4 - t & 2 < t < 4 \end{cases} \qquad (2)$$

Find the half range cosine and sine expansion of $f(x)$.

4. Obtain a Fourier series to represent the function

$$f(x) = |x| \quad for \quad -\pi < x < \pi \qquad (3)$$

and hence deduce $\dfrac{\pi^2}{8} = 1 + \dfrac{1}{3^2} + \dfrac{1}{5^2} + \cdots$

5. A periodic square wave has a period 4. The function generating the square is

$$f(t) = \begin{cases} 0 & for \quad -2 < t < -1 \\ k & for \quad -1 < t < 1 \\ 0 & for \quad 1 < t < 2 \end{cases} \qquad (4)$$

Find the Fourier series of the function.

6. If the Fourier series for $f(x)$ converges uniformly in $(-l, l)$, then show that

$$\frac{1}{l}\int_l^l \{f(x)\}^2 dx = \frac{a_0^2}{2} + \sum_{n=1}^{\infty}\left(a_n^2 + b_n^2\right)$$

where a_0, a_n, b_n are the Fourier's constants.

7. Find the Fourier series of the function $f(x)$ in the interval $-\pi < x < \pi$, where

$$f(x) = \begin{cases} 0 & when \ -\pi < x \leq 0 \\ \dfrac{\pi x}{4} & when \ 0 < x < \pi \end{cases}$$

and hence show that

$$\frac{\pi^2}{8} = 1 + \frac{1}{3^2} + \frac{1}{5^2} + \cdots$$

8. Show that the function $f(x) = x^3 - \pi^2 x$ has the Fourier series

$$f(x) = \sum_{n=1}^{\infty} \frac{12(-1)^n}{n^3} \sin nx \qquad (5)$$

Now show that $\sum_1^{\infty} \dfrac{1}{n^6} = \dfrac{\pi^6}{945}$

1

Jhargram Raj College

Problem Set - Special Functions
Code: Sem_3_Assignment_2
Batch: Semester_3, 2022 − 23
-by S.S

1. Show that

   (a)
   $$\int_0^1 \frac{x^{m-1}(1-x)^{n-1}}{(a+x)^{m+n}}\,dx = \frac{\Gamma(m)\Gamma(n)}{a^n(1+a)^m \Gamma(m+n)}$$

   (b)
   $$\int_0^1 \left(\ln \frac{1}{y}\right)^{n-1}\,dy = \Gamma(n)$$

   (c)
   $$\frac{1}{n}\int_0^\infty e^{-x^{1/n}}\,dx = \Gamma(n)$$

   (d)
   $$\int_0^1 \frac{dx}{\sqrt{1-x^n}} = \frac{\Gamma\left(\dfrac{1}{n}\right)}{\Gamma\left(\dfrac{1}{2}+\dfrac{1}{n}\right)}\frac{\sqrt{\pi}}{n}$$

   (e) $\Gamma\left(n+\dfrac{1}{2}\right) = \dfrac{1.3.5\cdots(2n-1)\sqrt{\pi}}{2^n}$

   (f)
   $$\int_0^{\pi/2}\sqrt{\tan\theta}\,d\theta = \frac{1}{2}\Gamma\left(\frac{1}{4}\right)\Gamma\left(\frac{3}{4}\right)$$

   (g) $2.5.8\ldots(3n-1) = 3n\dfrac{\Gamma\left(n+\dfrac{2}{3}\right)}{\Gamma\left(\dfrac{2}{3}\right)}$

2. Prove that $\beta(p,q) = \beta(q,p)$

3. Show that
   $$\int_0^1 \frac{x^{p-1}+x^{q-1}}{(1+x)^{p+q}}\,dx = \beta(p,q)$$

4. Show that
   $$\int_0^{\pi/2}\sin^p\theta\cos^q\theta\,d\theta = \frac{\Gamma\left(\dfrac{p+1}{2}\right)\Gamma\left(\dfrac{q+1}{2}\right)}{2\Gamma\left(\dfrac{p+q+2}{2}\right)}$$

5. Assuming $\Gamma(n)\Gamma(1-n) = \dfrac{\pi}{\sin n\pi}$ for $0 < n < 1$, show that
   $$\int_0^\infty \frac{x^{p-1}}{1+x}\,dx = \frac{\pi}{\sin p\pi}$$

6. (a) Show clearly that
   $$\int_0^1 x^{m-1}(1-x^n)^{p-1}\,dx = \frac{1}{n}\beta\left(\frac{m}{n},p\right)$$
   where $n \neq 0$

   (b) Hence, find the exact value of
   $$\int_0^1 x^5(1-x^3)^2\,dx$$

7. Show that
   $$\int_0^1 \left(1-x^{1/3}\right)^{1/11}\,dx = \frac{1331}{1564}$$

8. Show that
   $$I_n = \int_0^1 \left(1-\sqrt{x}\right)^n = \frac{2}{(n+1)(n+2)}$$

9. Show that
   $$\int_0^a \sqrt{x}\sqrt{a-x}\,dx = \frac{\pi a^2}{8}$$

10. Suppose $I_{m,n} = \int_0^{\pi/2}\sin^m\theta\cos^n\theta\,d\theta$, where $m \in \mathbb{N}, n \in \mathbb{N}$

    (a) Show that $I_{m,n} = \dfrac{m-1}{m+n}I_{m-2,n}$

    (b) Hence, show further that
    $$\beta(m,n) = \frac{(m-1)(n-1)}{(m+n-1)(m+n-2)}\beta(m-1,n-1)$$