



# ABHEDANANDA MAHAVIDYALAYA

SAINTHIA, BIRBHUM, WEST BENGAL, PIN 731234

Founder: Srimat Satyananda Dev (1965)

(Affiliated to the University of Burdwan and Accredited by NAAC)

Phone: 9434182461 E-mail: abhedanandamahavidyalaya@gmail.com Website: www.abhedanandamahavidyalaya.ac.in

Ref. No. GEN/9/2022

Date: 14.01.2022

From: The Principal

## SEMESTER III INTERNAL পরীক্ষা সংক্রান্ত বিজ্ঞপ্তি:

বিশ্ববিদ্যালয়ের নির্দেশক্রমে তৃতীয় সেমিস্টারের BA/BSC HONOURS INTERNAL পরীক্ষার জন্য ছাত্রছাত্রীদের Home Assignment (১০ নম্বরের) দেওয়া হল।

১। প্রশ্ন পাওয়া যাবে Whatsapp Group ও website-এ। উত্তরপত্রের প্রথম পাতা কেমন হবে তা প্রশ্নের সাথে দেওয়া হল। বাড়ীতে নিজের হাতে উত্তর লিখে নিচে দেওয়া তারিখ অনুসারে mail id-তে উত্তরপত্র জমা দিতে হবে।

২। উত্তরপত্র স্ক্যান করার সময় file name হবে "SUBJECT/PAPER CODE/UNIVERSITY ROLL NO. অনুযায়ী।  
উদাহরণস্বরূপ, university roll no. 123456789-এর কারোর বাংলা CC5 পরীক্ষার স্ক্যান করা উত্তরপত্রের file name হবে "BENGALI/CC5/123456789"।

৩। Mail করার সময়ও mail-এর subject field-এ "BENGALI/CC5/123456789" লিখতে হবে।

	SUBJECT	MAIL ID
<b>ANSWERSCRIPT SUBMISSION DATES FOR ALL HONOURS SUBJECTS:  17/01/2022, 18/01/2022 and 19/01/2022</b>	BENGALI HONS.	CC 5: benghons3@gmail.com
		CC 6: hons3bengali@gmail.com
		CC 7: bengalisem3h@gmail.com
		SEC 1: bengalisem3h@gmail.com
	ENGLISH HONS.	CC 5: pritam2k7@yahoo.co.in
		CC 6: rita731236@gmail.com
		CC 7: pritam2k7@yahoo.co.in
		SEC 1: onlinegsenexam@gmail.com
	HINDI HONS.	hindihons301@gmail.com
	SANSKRIT HONS.	sanskrit3rdhons@gmail.com
ECONOMICS HONS.	CC 5: shrabanibanerjee9@gmail.com	
HISTORY HONS.	CC 5: historysem21@gmail.com	
	CC 6: historyhons444@gmail.com	
	CC 7: historyhons301@gmail.com	
	SEC 1: historyhons444@gmail.com	



# ABHEDANANDA MAHAVIDYALAYA

SAINTHIA, BIRBHUM, WEST BENGAL, PIN 731234

*Founder: Srimat Satyananda Dev (1965)*

(Affiliated to the University of Burdwan and Accredited by NAAC)

Phone: 9434182461 E-mail: abhedanandamahavidyalaya@gmail.com Website: www.abhedanandamahavidyalaya.ac.in

Ref. No. GEN/9/2022

Date: 14.01.2022

From: The Principal

	GEOGRAPHY HONS.	ashamukul1980@gmail.com
	PHILOSOPHY HONS.	philosophyhons301@gmail.com
	POL. SC. HONS.	sem3polhonsabhm@gmail.com
	PHYSICS HONS.	301physhons@gmail.com
	MATHEMATICS HONS.	301mathhons@gmail.com
	CHEMISTRY HONS.	CC 5: 301chemhons@gmail.com
		CC 6: 301chemhons@gmail.com
		CC 7: gcm79@rediffmail.com
	BOTANY HONS.	ambotsem3hons@gmail.com
ZOOLOGY HONS.	abmzoologydept@gmail.com	



# ABHEDANANDA MAHAVIDYALAYA

SAINTHIA, BIRBHUM, WEST BENGAL, PIN 731234

*Founder: Srimat Satyananda Dev (1965)*

(Affiliated to the University of Burdwan and Accredited by NAAC)

ASSIGNMENT FOR INTERNAL EXAMINATION, JANUARY 2022

SESSION: 2021–22

SEMESTER 3

SUBJECT: ..... COURSE CODE: .....

Course Title: .....

FULL MARKS: 10

DATE OF SUBMISSION: .....

NAME OF THE STUDENT: .....

UNIVERSITY ROLL NO.: .....

GIVE ANSWERS IN THE SPACE BELOW:

MODEL ANSWERS SCRIPT



# ABHEDANANDA MAHAVIDYALAYA

SAINTHIA, BIRBHUM, WEST BENGAL, PIN 731234

Founder: Srimat Satyananda Dev (1965)

(Affiliated to the University of Burdwan and Accredited by NAAC)

QUESTIONS/TOPICS FOR INTERNAL EXAMINATION, JANUARY 2022

SESSION: 2021—22

SEMESTER 3

SUBJECT: BENGALI HONOURS / COURSE CODE: CC 5 (বাংলা সাহিত্যের ইতিহাস (১৮০১-১৯৫০))

১/ যেকোনো একটি প্রশ্নের উত্তর দাও:

১০

ক/ বাংলা ছোটগল্পের ক্রমবিকাশের ধারায় মানিক বন্দ্যোপাধ্যায়ের অবস্থান চিহ্নিত কর।

খ/ বাংলা গদ্য সাহিত্যের ইতিহাসে নব্বা জাতীয় রচনায় প্যারীচাঁদ মিত্রদের কৃতিত্ব আলোচনা কর।

SUBJECT: BENGALI HONOURS / COURSE CODE: CC 6 (ভাষাতত্ত্ব)

১/ যে কোনো একটি প্রশ্নের উত্তর দাও।

১০

ক/ কামরূপী উপভাষা কোন্ কোন্ অঞ্চলে প্রচলিত? এই উপভাষার বৈশিষ্ট্য গুলি উদাহরণ সহ আলোচনা কর। ২+৮=১০

খ/ পিচাচ-পিচাশ-কোন ধরণের ধ্বনিপরিবর্তনের বলে এমনটি হয়েছে? বাংলা ধ্বনিপরিবর্তনের কারণ গুলি লেখ।

২+৮=১০.

SUBJECT: BENGALI HONOURS / COURSE CODE: CC 7 (উনিশ শতকের কাব্য)

১/ একটি প্রশ্নের উত্তর দাও।

১০

ক/ "মৈত্রীবিরহ, প্রীতিবিরহ, সরস্বতীবিরহ যুগপৎ ত্রিবিধ বিরহে উন্মত্তবৎ হইয়া আমি সারদা মঙ্গল রচনা করি"-কবি তাঁর পত্রে কাকে এই কথাগুলি জানিয়েছিলেন? উদ্ধৃত বক্তব্যের আলোকে সারদা মঙ্গল কাব্যটি বিশ্লেষণ কর।

খ/ বীরাঙ্গনা কাব্যে একমাত্র জানাই বীরাঙ্গনা- 'নীলধ্বজের প্রতি জনা' অবলম্বনে বিচার কর।

SUBJECT: BENGALI HONOURS / COURSE CODE: SEC 1 (বাংলা ব্যাকরণ)

১/ একটি প্রশ্নের উত্তর দাও।

১০

ক/ কর্তৃকারক কাকে বলে? কর্তৃকারকের বিভিন্ন প্রকারভেদ সম্পর্কে সংক্ষেপে আলোচনা কর।

খ/ সন্ধি কাকে বলে? সন্ধি কয় প্রকার ও কী কী? প্রত্যেক প্রকার সন্ধির সংক্ষিপ্ত পরিচয় দাও।



# ABHEDANANDA MAHAVIDYALAYA

SAINTHIA, BIRBHUM, WEST BENGAL, PIN 731234

Founder: Srimat Satyananda Dev (1965)

(Affiliated to the University of Burdwan and Accredited by NAAC)

## QUESTIONS/TOPICS FOR INTERNAL EXAMINATION, JANUARY 2022

SESSION: 2021—22

SEMESTER 3

### SUBJECT: ENGLISH HONOURS / COURSE CODE: CC 5 (American Literature)

1. Assess and analyse Anne Bradstreet's "The Prologue" as her humble yet firm statement on creative freedom. 10

### SUBJECT: ENGLISH HONOURS / COURSE CODE: CC 6 (Popular Literature)

1. *Tintin in Tibet* is a story about human courage and admirable spirit of friendship, but is not without traces of racial tension. Do you agree? Substantiate your argument. 10

### SUBJECT: ENGLISH HONOURS / COURSE CODE: CC 7 (British Poetry and Drama)

1. Write a note on Satan's character based on your reading of his speeches from *Paradise Lost*, Book 1. 10

### SUBJECT: ENGLISH HONOURS / COURSE CODE: SEC 1 (Translation Studies)

1. Answer any one of the following questions: 10
  - a. Discuss the significance of the knowledge of language varieties in Translation.
  - b. Discuss the problems in translating poetry.



# ABHEDANANDA MAHAVIDYALAYA

SAINTHIA, BIRBHUM, WEST BENGAL, PIN 731234

*Founder: Srimat Satyananda Dev (1965)*

(Affiliated to the University of Burdwan and Accredited by NAAC)

## QUESTIONS/TOPICS FOR INTERNAL EXAMINATION, JANUARY 2022

SESSION: 2021—22

SEMESTER 3

### SUBJECT: ECONOMICS HONOURS / COURSE CODE: CC 5 (Intermediate Microeconomics)

1. Define oligopoly? Explain Cournot model of oligopoly ? 10
- OR
- Explain equilibrium under Monopoly?. 10

### SUBJECT: ECONOMICS HONOURS / COURSE CODE: CC 6 (Intermediate Macroeconomics)

1. Explain Marginal Efficiency of Capital. 10
- OR
- Explain NET Present Value (NPV) criterion of investment. 10

### SUBJECT: ECONOMICS HONOURS / COURSE CODE: CC 7 (Mathematical Economics II)

- Answer any two questions: 5+5=10
1. Define Linear Programming. Explain its nature.
2. What is the Basic Concept of Input-Output analysis?
3. What is Two person zero sum game? Explain the limitations of Game Theory.

### SUBJECT: ECONOMICS HONOURS / COURSE CODE: SEC 1 (Indian Official Statistics)

- Answer any two questions: 5+5=10
1. What is Official statistics?
2. What is Economic Census?
3. What is Economic Survey?
4. Explain Sources of Demographic Data.



# ABHEDANANDA MAHAVIDYALAYA

SAINTHIA, BIRBHUM, WEST BENGAL, PIN 731234

*Founder: Srimat Satyananda Dev (1965)*

(Affiliated to the University of Burdwan and Accredited by NAAC)

QUESTIONS/TOPICS FOR INTERNAL EXAMINATION, JANUARY 2022

SESSION: 2021—22

SEMESTER 3

SUBJECT: GEOGRAPHY HONOURS / COURSE CODE: CC 5 (Climatology)

1. Briefly describe layering atmosphere. 10

SUBJECT: GEOGRAPHY HONOURS / COURSE CODE: CC 6 (Statistical Methods in Geography)

1. Describe cumulative frequency. 10

SUBJECT: GEOGRAPHY HONOURS / COURSE CODE: CC 7 (Geography of India)

1. Explain physiography division in India. 10

OR

2. Write a short discussion on the industrial development since Independence. 10



# ABHEDANANDA MAHAVIDYALAYA

SAINTHIA, BIRBHUM, WEST BENGAL, PIN 731234

Founder: *Srimat Satyananda Dev (1965)*

(Affiliated to the University of Burdwan and Accredited by NAAC)

QUESTIONS/TOPICS FOR INTERNAL EXAMINATION, JANUARY 2022

SESSION: 2021—22

SEMESTER 3

**SUBJECT: HISTORY HONOURS / COURSE CODE: CC 5 / History of India III (1206—1525)**

1. ইলতুংমিসকে কি তুমি দিল্লি সুলতানির প্রকৃত প্রতিষ্ঠাতা বলে মনে করো? 10  
অথবা  
বাংলার সাংস্কৃতিক অগ্রগতিতে ইলিয়াস শাহী বংশের অবদানের মূল্যায়ন করো। 10

**SUBJECT: HISTORY HONOURS / COURSE CODE: CC 6 / Rise of Modern West 1(15<sup>th</sup> & 16<sup>th</sup> Centuries)**

1. সামন্ততন্ত্র থেকে ধনতন্ত্রে উত্তরণের বিতর্ক সম্বন্ধে আলোচনা করো 10  
অথবা  
পঞ্চদশ শতকের অর্থনৈতিক অবস্থা ইউরোপে কীভাবে সংকট সৃষ্টি করেছিল? 10

**SUBJECT: HISTORY HONOURS / COURSE CODE: CC 7 / History of India (1526—1757)**

1. হুমায়ুন কি নিজের দুর্ভাগ্যের জন্য নিজেই দায়ী ছিলেন? 10  
অথবা  
আকবরের রাজপুত নীতি পর্যালোচনা করো। 10

**SUBJECT: HISTORY HONOURS / COURSE CODE: SEC 1 / Archives & Museums in India**

1. জাতীয় গ্রন্থাগার সম্পর্কে আলোচনা করো। 10





# ABHEDANANDA MAHAVIDYALAYA

SAINTHIA, BIRBHUM, WEST BENGAL, PIN 731234

Founder: Srimat Satyananda Dev (1965)

(Affiliated to the University of Burdwan and Accredited by NAAC)

QUESTIONS/TOPICS FOR INTERNAL EXAMINATION, JANUARY 2022

SESSION: 2021—22

SEMESTER 3

**SUBJECT: POLITICAL SCIENCE HONOURS / COURSE CODE: CC 5 (Comparative Politics)**

1. Write a short note on Rule of Law in U.K. 10
- OR
1. Discuss the causes of centralization of power in U.S. federal system. 10

**SUBJECT: POLITICAL SCIENCE HONOURS / COURSE CODE: CC 6 (Public Administration)**

1. জনপ্রশাসনের বিবর্তনের পর্যায়গুলি সম্পর্কে সংক্ষেপে আলোচনা কর। 10
- অথবা
2. হারবার্ট সাইমনের সিদ্ধান্তগ্রহণ তত্ত্ব নিয়ে সংক্ষেপে আলোকপাত কর। 10

**SUBJECT: POLITICAL SCIENCE HONOURS / COURSE CODE: CC 7 (Local Government in India)**

1. ৭৩তম সংবিধান সংশোধনের মূল বৈশিষ্ট্য গুলি আলোচনা কর। 10
- অথবা
1. পশ্চিম বঙ্গ Municipal Corporation গঠন ক্ষমতা ও কার্যাবলী আলোচনা কর। 10

**SUBJECT: POLITICAL SCIENCE HONOURS / COURSE CODE: SEC 1 (Legislative Support)**

1. Discuss the power and function of the Members of Parliament or State Legislative Assembly. 10



# ABHEDANANDA MAHAVIDYALAYA

SAINTHIA, BIRBHUM, WEST BENGAL, PIN 731234

*Founder: Srimat Satyananda Dev (1965)*

(Affiliated to the University of Burdwan and Accredited by NAAC)

## QUESTIONS/TOPICS FOR INTERNAL EXAMINATION, JANUARY 2022

SESSION: 2021—22

### SEMESTER 3

**SUBJECT: BOTANY HONOURS / COURSE CODE: CC 5 (Plant Ecology and Phytogeography)**

1. Who gave the concept of Ecological pyramid? What do you mean by that? Write down a short note " pyramid of number " with proper diagram. 10

OR

What is lithosphere? Describe the soil profile with proper diagram. 10

**SUBJECT: BOTANY HONOURS / COURSE CODE: CC 6 (Plant Systematics)**

1. Write the function of herbarium. Describe the classification of Takhtajan (1997) system. 4+6=10

**SUBJECT: BOTANY HONOURS / COURSE CODE: CC 7 (Economic Botany)**

1. Write the morphology and economic importance of wheat, sugarcane and jute. 10

OR

What is the scientific name of saffron and black pepper? Write down the processing of tea. 2+8=10

**SUBJECT: BOTANY HONOURS / COURSE CODE: SEC 1 (Medicinal Botany)**

1. Write short notes on-(1) Ayurveda (2) Panchamahabhutas (3) Saptadhatu (4) Tridosha. 10



# ABHEDANANDA MAHAVIDYALAYA

SAINTHIA, BIRBHUM, WEST BENGAL, PIN 731234

*Founder: Srimat Satyananda Dev (1965)*

(Affiliated to the University of Burdwan and Accredited by NAAC)

QUESTIONS/TOPICS FOR INTERNAL EXAMINATION, JANUARY 2022

SESSION: 2021–22

SEMESTER 3

SUBJECT: ZOOLOGY HONOURS / COURSE CODE: CC 5 (CHORDATES)

1. 1. What is Metamorphosis? Describe the biting mechanism of Snake with suitable diagram. 10

SUBJECT: ZOOLOGY HONOURS / COURSE CODE: CC 6 (Animal Physiology: Controlling and Coordinating System)

1. Describe how Nerve impulse propagate through nerve fibre with graphical presentation. 10

SUBJECT: ZOOLOGY HONOURS / COURSE CODE: CC 7 (Physiology and Biochemistry)

1. What is ketogenic amino acid? Describe Pentose Phosphate Pathway. 10



# ABHEDANANDA MAHAVIDYALAYA

SAINTHIA, BIRBHUM, WEST BENGAL, PIN 731234

*Founder: Srimat Satyananda Dev (1965)*

(Affiliated to the University of Burdwan and Accredited by NAAC)

QUESTIONS/TOPICS FOR INTERNAL EXAMINATION, JANUARY 2022

SESSION: 2021–22

SEMESTER 3

SUBJECT: CHEMISTRY HONOURS / COURSE CODE: CC 5 (Physical Chemistry-II)

1. Briefly discuss about the Oswald's Dilution Law. 10

SUBJECT: CHEMISTRY HONOURS / COURSE CODE: CC 6 (Inorganic Chemistry)

1. What is VSEPR theory? Give its all rules for determination of shape of covalent molecules. 10

SUBJECT: CHEMISTRY HONOURS / COURSE CODE: CC 7 (Organic Chemistry)

1. Write a short note on a. hydroboration reaction b. Nucleophilic substitution reaction on olefinic carbon-carbon double bond. 10

Internal Assessment 2022  
Abhedananda Mahavidyalaya  
Semester – III (Honours)  
Subject: Sanskrit  
Course Code: CC-5  
Course Title: *Classical Sanskrit Literature(Drama)*

‘कालिदास प्रकृतिर कवि’ - अभिज्ञानशकुन्तलम् नाटकेर प्रेक्षापटे उक्त  
बाक्येर यथार्थता विचार कर। १०

**अथवा,**

‘अभिज्ञानशकुन्तलम्’ नाटके वर्णित दुर्वासार अभिशापेर नाटकीय तात्पर्य  
विश्लेषण कर। १०

Internal Assessment 2022  
Abhedananda Mahavidyalaya  
Semester – III (Honours)  
Subject: Sanskrit  
Course Code: CC-6  
Course Title: *Poetics and Literary Criticism*

चरण विश्लेषण पूर्वक निम्नलिखित छन्दुगुलर उदाहरणसह संज्ञा ऒ लक्षण  
लेखु - मालिनी, वसन्ततिलक।

**अथवा,**

नीचेर अलङ्कारगुलर उदाहरणसह संज्ञा दाऒ - निदर्शना, रूपक।

Internal Assessment 2022  
Abhedananda Mahavidyalaya  
Semester – III (Honours)  
Subject: Sanskrit  
Course Code: CC-7  
Course Title: *Indian Social Institution and Polity*

मनुसंहितार सप्तम अध्याय अवलम्बने राजार उ०पति ० कार्याकारिता  
सम्पर्के आलोचना कर। १०

**अथवा,**

अर्थशास्त्रानुसारे परराष्ट्रे दूतेर कार्यावली सम्पर्के आलोचना कर। १०

Internal Assessment 2022  
Abhedananda Mahavidyalaya  
Semester – III (Honours)  
Subject: Sanskrit  
Course Code: SEC 1  
Course Title: *Basic Sanskrit*

सम्पूर्ण शब्दरूप लेख- मुनि **अथवा** पति।

**अथवा,**

धातुरूप(लट् ओ लङ् एर रूप) - गम् **अथवा** श्रु।



**ABHEDANANDA MAHAVIDYALAYA**

**INTERNAL EXAM 2022**

**HINDI**

**SEMESTER-III**

**CC-5 (हिन्दी भाषा का विकास)**

**MARKS -10**

1. अपभ्रंश भाषा का सामान्य परिचय दीजिए |

अथवा

2. अवधी भाषा का सामान्य परिचय दीजिए |

**CC-6 (हिन्दी नाटक एवं एकांकी)**

1. 'अंधेर नगरी' नाटक की समीक्षा अपने शब्दों में लिखिए |

अथवा

2. 'आधे- अधूरे' नाटक की समीक्षा अपने शब्दों में लिखिए |

**CC-7 (प्राचीन एवं मध्ययुगीन काव्य)**

1. तुलसीदास की भक्ति- भावना पर प्रकाश डालिए |

अथवा

2. कबीर को वाणी का डिक्टेटर क्यों कहा जाता है ?

**ABHEDANANDA MAHAVIDYALAYA**

**INTERNAL EXAM 2022**

**HINDI**

**SEMESTER-III**

**PAPER- SEC-1**

**विज्ञापन और हिन्दी**

**MARKS -10**

1. विज्ञापन का सामाजिक और आर्थिक जीवन पर क्या प्रभाव पड़ता है ?

अथवा

2. विज्ञापन का उपभोक्ताओं के लिए क्या महत्व है ? समझाए ।

**DEPARTMENT OF PHILOSOPHY**

**SEMESTER-III(HONOURS)**

**INTERNAL**

<b>COURSE TITLE &amp; CODE</b>	<b>QUESTIONS</b>
<b>CC-V (INDIAN ETHICS)</b>	ঋত সম্পর্কে বৈদিক ধারণাটি ব্যাখ্যা করো। <b>অথবা</b> বৌদ্ধসম্মত পঞ্চশীল ব্যাখ্যা করো।

**DEPARTMENT OF PHILOSOPHY**

**SEMESTER-III(HONOURS)**

**INTERNAL**

<b>COURSE TITLE &amp; CODE</b>	<b>QUESTIONS</b>
<b>CC-VI (WESTERN ETHICS)</b>	উপযোগিতাবাদের মিলের ভাষ্যটি ব্যাখ্যা করো। অথবা স্বস্তিমৃত্যুর বিরুদ্ধে যুক্তিগুলি ব্যাখ্যা করো।

DEPARTMENT OF PHILOSOPHY

SEMESTER-III(HONOURS)

INTERNAL

COURSE TITLE & CODE	QUESTIONS
CC-VII (INDIAN LOGIC)	<p>বিরুদ্ধ হেত্বাভাস উদাহরণসহ ব্যাখ্যা করো।</p> <p><b>অথবা</b></p> <p>তর্কসংগ্রহ প্রদত্ত প্রমার লক্ষণটি ব্যাখ্যা করো। 'ঘটে ঘটত্ব' এই প্রমা জ্ঞানে লক্ষণটি কীভাবে সম্বন্ধিত হয় তা দীপিকাটীকা অনুযায়ী দেখাও।</p>

**SEMESTER-III(HONOURS)**

**INTERNAL**

**SUBJECT-PHILOSOPHY**

<b>COURSE TITLE &amp; CODE</b>	<b>QUESTIONS</b>
<b>SEC-I (PHILOSOPHY IN PRACTICE)</b>	ভারতীয় 'দর্শন' ও পাশ্চাত্যে 'Philosophy' মধ্যে মূল পার্থক্যসূচক বৈশিষ্ট্য কী?  অথবা  ভারতীয় জ্ঞানতত্ত্বের আলোচ্য বিষয়ের সংক্ষিপ্ত পরিচয় দাও।

INTERNAL ASSESSMENT

MATHEMATICS (HONS) SEM-III

COURSE : BMH3CC05 (Theory of Real functions and  
Introduction to Metric Space)

Answer the following questions :- (2 × 5 = 10)

1. Let  $[a, b]$  be a closed and bounded interval and a function  $f : [a, b] \rightarrow \mathbb{R}$  be continuous on  $[a, b]$ . If  $f(a) \neq f(b)$  then prove that  $f$  attains every value between  $f(a)$  and  $f(b)$  at least once in the open interval  $(a, b)$ .
2. Prove that  $\frac{x}{1+x} < \log(1+x) < x$  for all  $x > 0$ .

ABHEDANANDA MAHAVIDYALAYA

INTERNAL ASSESSMENT

MATHEMATICS (HONS)      SEM-III

COURSE : BMH3CCOG      (Group Theory-I)

Answer the following questions :-      (2x5 = 10)

1. Define center of a Group. Show that the center of a group is a normal subgroup.
2. State and prove Lagrange's theorem.



Abhedananda Mahavidyalaya  
Dept. of Mathematics  
Sem. III (Hons), Code: CC07  
Course Title: Numerical methods

Answer the following questions,

F.M-10

① Construct your own example to demonstrate the fact that Newton-Raphson method may diverge if  $x_0$  is not properly chosen.

② For each of the following function, find an interval and iteration function  $x = g(x)$  so that the fixed point iteration:

$$x_{k+1} = g(x_k)$$

will converge for any choice of  $x_0$  in the interval. Then apply two iterations to approximate a zero in that interval choosing a suitable initial approximation  $x_0$ .

a)  $f(x) = x - \cos x$

b)  $f(x) = x - e^{-x}$

INTERNAL ASSESSMENT

MATHEMATICS (HONS) SEM-III

COURSE: BMH3SEC11 (Logic and Sets)

Answer the following questions: (2 x 5 = 10)

1. Define a difference and Symmetric difference of two sets. Which one of these two operations is commutative? Support your answer with proper justification. [2+3]
2. (i) Show that every partition of a set induces an equivalence relation on that set. [3]  
(ii) Give an example of a relation which is reflexive and symmetric but not transitive. [2]

**ABHEDANANDA MAHAVIDYALAYA**  
**SAINTHIA BIRBHUM**  
**B.Sc. SEM-III Phys(H) Internal Examination, 2021**  
**Subject: Physics**  
**PAPER: CC-V (Mathematical Methods of Physics)**

Answer any two questions from the following:

1. Legendre Polynomials  $P_n(x)$  are defined by the generating function 2x5 = 10

$$\phi(x, z) = (1 - 2xz + z^2)^{-1/2} = \sum_{n=0}^{\infty} P_n(x) z^n, \quad |z| < 1,$$

Hence find the following recurrence relations:

(i)  $(2n+1)x P_n(x) = (n+1)P_{n+1}(x) + nP_{n-1}(x)$

(ii)  $P_{n+1}'(x) + P_{n-1}'(x) = 2xP_n'(x) + P_n(x), \quad n=1, 2, 3, \dots$

2. Expand  $f(x) = x^2$  in the interval  $0 < x < 2\pi$  in a Fourier series when the period is  $2\pi$  to show

that

$$f(x) = \frac{4\pi^2}{3} + \sum_{k=1}^{\infty} \left( \frac{4}{k^2} \cos kx - \frac{4\pi}{k} \sin kx \right)$$

3. Prove that

i)  $\beta(m, n) \beta(m+n, l) = \beta(n, l) \beta(k+l, m)$

ii)  $\frac{d}{dx} [\operatorname{erf}(ax)] = \frac{2a}{\sqrt{\pi}} e^{-a^2 x^2}$

← 0 →

AbhedanandaMahavidyalaya

B. Sc. SEM-III (Honours) Internal Examination, 2022

Subject: Physics

Paper: CC-VI (Thermal Physics)

Time: 1 Hour

Full Marks: 10

*The figures in the margin indicate full marks.*

SECTION-I

*Answer any two questions.*

5×2 = 10

1. i. Name three transport phenomena which take place in a gas.  
ii. Obtain an expression for the thermal conductivity of an Ideal gas.
2. Prove that the fall in temperature by the gas during adiabatic expansion from pressure P1 and P2 at temperature T is given by

$$dT = \frac{T}{C_p} \left( \frac{\partial V}{\partial T} \right)_p dP = \frac{TV\alpha}{C_p} dP$$

[Symbols have their usual meanings.]

[5]

3. Prove thermodynamic relation

$$\left( \frac{\partial S}{\partial V} \right)_T = \left( \frac{\partial P}{\partial T} \right)_V$$

And hence prove that

$$\frac{dP}{dT} = \frac{L}{T(V_2 - V_1)}$$

[Symbols have their usual meanings.]

[3+2=5]

4. Write down the Van Der Waals' equation of states for a real gas. Define critical constants and find their values.

[2+3=5]

5. What do you mean by mean free path of the molecules in a gas? Obtain an expression for the law of distribution of free paths.

The mean free path of the particles of a gas at a temperature  $T_0$  and pressure  $P_0$  has a value  $\lambda_0$ . If the pressure is increased to  $1.5P_0$  and the temperature is reduced to  $0.75T_0$ . Find the mean free path in terms of  $\lambda_0$ .

[3+2=5]

6. (i) 0.202 kg sample of neon gas expanded from  $0.10 \text{ m}^3$  to  $0.20 \text{ m}^3$  at constant temperature (500.0 K). Calculate the entropy change in the gas during this process. The molar mass of the neon is 20.18 g/mol.

(ii) A particular system gains 200 kJ of heat and results in a change in the Internal energy of 129 kJ. Calculate the value of work done.

[3+2=5]

**ABHEDANANDA MAHAVIDYALAYA**  
**SAINTHIA BIRBHUM**  
**B.Sc. SEM-III Phys(H) Internal Examination, 2021**  
**Subject: Physics**  
**PAPER: CC-VII (*Digital System and Applications*)**

**Time: 1 hour**

**F.M. - 10**

**1. Answer any five questions from the following:**

**5 x 2**

- a) Convert  $(247.625)_{10}$  into its octal equivalent.
- b) Convert the decimal number  $(2478)_{10}$  to a hexadecimal number. Convert the hexadecimal number  $(C5E2)_{16}$  to a binary number.
- c) State and explain De Morgan's theorem.
- d) Show by algebraic manipulation that  $\overline{AB} + \overline{A} + AB = 1$ .
- e) Explain how the logic function  $\overline{AB} + \overline{A}B$  can be realized by using NAND only.
- f) NOR gate is called 'universal gate' – why?
- g) Write down the full form of RAM and ROM. Why RAM is called volatile memory?
- h) Write down two names of input and two names of output device of computer system.

**ABHEDANANDA MAHAVIDYALAYA**  
**SAINTHIA BIRBHUM**  
**B.Sc. SEM-III Phys(H) Internal Examination, 2021**  
**Subject: Physics**  
**PAPER: SEC-1 (Renewable energy and energy harvesting)**

**Time: 1 hour**

**F.M. - 10**

*Answer any 5 questions. ( 5x2=10)*

1. What do you mean by renewable energy? Explain with example. 2
2. What do you mean by non-renewable energy? Explain with example. 2
3. What are the difference between renewable and non-renewable energy? 2
4. What do you mean by wind power energy? 2
5. What do you mean by geo-thermal energy? 2
6. What are ocean energy? 2
7. What do you mean by solar energy? Why it is so important? 2
8. What are fossil fuel? Explain with example. 2
9. What do you mean by Pizo-electric energy? Explain with example. 2
10. Write are thermo-nuclear energy? Explain with example. 2

-----