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জমা দিয়াৰ অন্তিম তাৰিখঃ ১০.০১.২০২৪

KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

Hiranya Kumar Bhuyan School of Science & Technology

Home Assignment

Bachelor of Arts (MATHEMATICS)

Classical Algebra & Trigonometry [UG MA S101(DSE)]

1st Semester, 2023-24

Total Marks 50

Assignments are required to be written in your own lanquage, copying in toto from the learning material will carry less score.

প্রদত্ত কর্ম নিজৰ ভাষাত লিখা বাঞ্ছনীয়। উত্তৰ লিখোতে বিশ্ববিদ্যালয়ৰ স্ব-শিক্ষণ সামগ্ৰী তথা লগৰ শিক্ষার্থীৰ পৰা হুবহু নকল নকৰিব, অন্যথা নম্বৰ কমাই দিয়া হ'ব।

1. Answer the following questions- **(3 X 10= 30)**

প্রশ্ন নং ১ ঃ তলৰ প্রশ্নবোৰৰ উত্তৰ উলিওৱাক ঃ

a. (i) Show that the equation $x^6-3x^2-x+1=0$ has at least two imaginary roots. 5

প্রমাণ কৰক যে $x^6-3x^2-x+1=0$ সমীকৰণটোৰ অতি কমেও দুটা কাল্পনিক মূল আছে।

(ii) Simplify: সৰল কৰক ঃ 5

$$\frac{(\cos\frac{\pi}{15}+i\sin\frac{\pi}{15})^{10}+(\cos\frac{\pi}{15}-i\sin\frac{\pi}{15})^{10}}{(\cos\frac{2\pi}{3}+i\sin\frac{2\pi}{3})^{3}}$$

b. (i) Separate into real and imaginary parts. বাস্তৱ আৰু কাল্পনিক অংশত পৃথক কৰক। 5

$$\text{cosec}(x+iy)$$

(ii) Find the sum of the following series. তলৰ শ্রেণীটোৰ যোগফল উলিওৱাক। 5

$$\sin\alpha+\frac{1}{3}\sin 3\alpha+\frac{1}{3^2}\sin 5\alpha+\cdots\infty$$

c. (i) Prove that প্রমাণ কৰক যে, 5

$$\begin{vmatrix} x+a & b & c \\ a & x+b & c \\ a & b & x+c \end{vmatrix} = x^2(x+a+b+c)$$

(ii) Calculate the values of the following symmetric function for the cubic 5
ত্রিঘাত সমীকৰণটোৰ প্ৰতিসাম্য ফলনৰ মানবোৰ নিৰ্ণয় কৰক।

$x^3+px^2+qx+r=0$ whose roots are α, β, δ. ইয়াৰ মূলকেইটা হ'ল α, β, δ.

i) $\sum \alpha^2$ ii) $\sum \alpha^3$

2. Answer the following questions within 75 words: (1 X 10= 10)

প্ৰশ্ন নং ২ ঃতলৰ প্ৰশ্নবোৰৰ উত্তৰ উলিওৱাক ঃ

a. What do you mean by pollution. 5

প্ৰদূষণ বুলিলে কি বুজা যায়

b. Write a short not on deforestation. 5

বননি ধ্বংসকৰণৰ ওপৰত এটা টোকা লিখক।

3. Answer the following questions- (In lieu of MCQ test) (1 X 10= 10)

প্ৰশ্ন নং ৩ ঃ তলৰ প্ৰশ্নবোৰৰ উত্তৰ উলিওৱাক ঃ

a.Find rank using elementary row operations : 5

প্ৰাথমিক শাৰী প্ৰক্ৰিয়াৰ সহায়ত কোটি নিৰ্ণয় কৰক :

$$\begin{pmatrix} 5 & 3 & 14 & 4 \\ 0 & 1 & 2 & 1 \\ 1 & -1 & 2 & 0 \end{pmatrix}$$

b. If $\sin(\theta+i\varphi)\sin(\alpha+i\beta)=1$, prove that 5

$\cosh^2\varphi\tanh^2\beta=\cos^2\theta$ and $\tanh^2\varphi\cosh^2\beta=\cos^2\alpha$.

যদি $\sin(\theta+i\varphi)\sin(\alpha+i\beta)=1$, প্ৰমাণ কৰক যে

$\cosh^2\varphi\tanh^2\beta=\cos^2\theta$ আৰু $\tanh^2\varphi\cosh^2\beta=\cos^2\alpha$.

Assignment Guidelines

A. Guidelines to Co-ordinators:

1. Assignments are parts of teaching-learning process and compulsory.
2. The spirit behind this is to help learners to understand the subject and prepare themselves better for the term-end examination.
3. Assignment responses are to be evaluated and feedback are required to becommunicated to the learners, by giving back the assignments with evaluators comments.Such assignments are to be collected at the time of issuing admit cards and be stored in the centre's office till the end of next semester.
4. Assignment marks are to be sent to the Controller of Examinations as soon as the examination routines are published.
5. Keeping the above points in mind *Co-ordinators will fix the time/date of submission of assignments by the learners as may be convenient to follow the guidelines in true spirits.*

B. **Guidelines to learners :**

1. As soon as the SLMs are received the learners will write the assignments in their own handwriting (assignment quiestions may be downloaded from the website, if necessary) to be submitted to Co-ordinators as per the dates fixed for the purpose.Timely submission of assignments at the Study Centres will help in quick processing of results of respective learners. Otherwise this will create unnecessary delay in declaration of results.
2. Writing of assignment (work) and submission of the same in time iscompulsory.

Registrar

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N.B. The learners will have to collect receipt after submitting the assignment with the signature and seal of the collector of study centre and will have to keep with him/her till the declaration of result.

✂ ……

Receipt

Received the assignment from Mr/Ms ……Enrollment number ……of **1st semester Mathematics(Classical Algebra & Trigonometry) UGMAS101(DSE)** on ……2023-24.