Samskrita Level II (Līlāvatī of Bhāskarācārya) Final Exam

Total points 20/50

जयतु संस्कृतम्। जयतु भारतम्॥

सर्वेभ्यो नमो नमः, Welcome to the final exam conducted by IIT Indore for the AICTE Sponsored QIP course on "Understanding Classical Scientific Texts of India in an Immersive Sanskrit Environment".

This course was designed to be a tough to eliminate non-serious participants. You have made it this far indicating your seriousness as a sincere sadhaka and we are happy to have you in our class. धन्यवादः। We are so happy that you could be with us on this wonderful journey to explore our scientific texts. We wish you the very best and look forward to your presence in future courses as we continue our journey of studying scientific texts of India in Samskrutam.

As our Shruti says, may our students exceed the standards we set!
शुभं भूयात्।
जयतु संस्कृतम्। जयतु भारतम्॥

Email address *

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0 of 0 points

Guidelines (Please read these carefully, no exceptions to these guidelines will be entertained.)

1. Please enter the email address you had used for registrations below (This is the same ID you have been receiving the class slides daily This may not be the same ID you use to sign in here).
2. You can attempt the exam only once. Incase of multiple attempts, only the first attempt will be considered.
3. The duration of the exam is 2:00 hours. You can take the exam anytime before 12:00 pm on 2nd Oct. (IST).
4. You can attempt the exam even if you have not registered for the course. However you will receive the certificate only if you have registered.
5. The grades will be displayed on your certificates. Grading criteria are: A+ >90%, A 80-90%, B 70-80%, C 50-70%, D(Participation) <50%

Name *

HARI PRASAD THAPLIYAL

Email (NOTE: Please use the email you registered for the course) *

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Institution *

Vedavit Project Solutions

Country of Residence *

India

Highest Educational qualification *

- ○ High School
- ○ Bachelor's Degree
- ◉ Master's Degree
- ○ PhD
- ○ Other:

Have you studied Samskrit before this course?

- (●) Yes
- ( ) No

Did you know spoken Samskritam before this course?

- (●) Yes
- ( ) No
- ( ) Maybe

Section 1 (10 x1 = 10 points) 8 of 10 points

✓ 1. भास्कराचार्यस्य जन्मसंवत्सरः (शकः) कः? 1/1

- ( ) गुणरसमहीपूर्ण
- ( ) रसगुणमहीपूर्ण
- (●) रसगुणपूर्णमही ✓
- ( ) महीपूर्णगुणरस

✓ 2. मङ्गलश्लोके भास्कराचार्यः कस्य वन्दनं करोति? 1/1

- मतङ्गस्य
- गजाननस्य ✓
- शिवस्य
- नागस्य

✓ 3. लीलवत्यां प्राधान्येन प्रतिपादितो विषयः 1/1

- a. बीजगणितम्
- b. ग्रहगणितम्
- c. गोलगणितम्
- d. पाटीगणितम् ✓

✓ 4. Arithmetic इति अर्थे प्रयुज्यमानं पदम्? 1/1

- a. गोलगणितम्
- b. अव्यक्तगणितम्
- c. व्यक्तगणितम् ✓
- d. ग्रहगणितम्

✓ 5. छेदं गुणं गुणं छेदं .... इति पद्ये प्रतिपाद्यमानो विधिः 1/1

- a. गुणनविधिः
- b. भागहारः
- c. व्यस्तविधिः ✓
- d. गुणकर्म

✓ 6. अधः प्रदत्तात् पदसमूहात् असम्बद्धं पदं चिनुत (Pick the odd one out among the following) 1/1

- a. बुद्धिविलासिनी
- b. निसृष्टार्थदूती
- c. क्रियाक्रमकरी
- d. करणकुतूहलम् ✓

✗ 7. भास्करस्य दुर्भग-पुत्रीरूपेण लीलावत्याः (अप्रस्तुतं) चित्रणं कः अकरोत्? Who has been the source for the implausible narrative that Līlāvatī is named after Bhāskara's ill-fated daughter? 0/1

- a. Bāpudeva Śāstrī ✗
- b. Munīśvara
- c. Henry Thomas ColebrookeFaizi)
- d. Abu al-Faiz ibn Mubarak (Faizi)

Correct answer

- d. Abu al-Faiz ibn Mubarak (Faizi)

✓ 8. अधोनिर्दिषेषु गणानन्तपातिपदं चिनुत (Pick the odd one out) 1/1

- a. 1 vaṃśa
- b. 1 daṇḍa
- c. 1 hasta
- d. 1 aṅgula
- e. 1 nivartana ✓

✗ 9. घनमूलनविधौ अङ्कानाम् अङ्कनप्रकारः (In cube root computation, we mark) 0/1

- a. घनं वर्गद्वयं च (1 ghana & 2 varga) ✗
- b. अघनं घने द्वे च (1 aghana & 2 ghana)
- c. घनं अघनद्वयं च (1 ghana & 2 aghana)
- d. घनद्वयं वर्गद्वयं च (2 ghana & 2 varga)

Correct answer

- c. घनं अघनद्वयं च (1 ghana & 2 aghana)

✓ 10. “इष्टकृतिरष्टगुणिता व्येके" त्यादिपद्यं कीदृशे कर्मणि आयाति? 1/1

- a. इष्टकर्म
- b. वर्गकर्म ✓
- c. गुणकर्म
- d. भागहारः

Section 2 (4 x 2 + 4 x 1 =12 points) 7 of 12 points

Multiple answers possible!

✗ 11. Gaṇakacakracūdāmaṇi is the title bestowed by _____ on _____ 0/1

- a. Caṅgadeva, Bhāskarācārya
- b. Bhāskarācārya, Jiṣṇujā
- c. Brahmagupta, Bhāskarācārya
- d. Munīśvara, Bhāskarācārya ✗

Correct answer

- b. Bhāskarācārya, Jiṣṇujā

✓ 12. त्रैराशिके आद्यन्त्ययोः के भवतः? 2/2

- a. प्रमाणं प्रमानफलं च
- b. इच्छा प्रमाणं च
- c. प्रमाणम् इच्छा च ✓
- d. प्रमाणफलम् इच्छाफलं च

✓ 13. भास्कराचार्यस्य जनकपौत्रयोः नामनी 1/1

- मुनीश्वर महेश्वरौ
- महेश्वर चङ्गदेवौ ✓
- ब्रम्ह्मगुप्त महेश्वरौ
- मुनीश्वर चङ्गदेवौ

✗ 14. Which of the following statements are true? 0/2

- [ ] a. In रूपविभागः we subtract the multiplier from a desired quantity
- [ ] b. स्थानगुणनम् is similar to the current method of multiplication taught
- [x] c. इष्टोनयुक्-गुणनम् involves modifying the multiplier by splitting and factoring the multiplier ✗
- [x] d. In उत्सारणविधिः the various products dictate how many steps the numbers have to be slided ✓

Correct answer

- [x] b. स्थानगुणनम् is similar to the current method of multiplication taught
- [x] d. In उत्सारणविधिः the various products dictate how many steps the numbers have to be slided

✓ 15. "राशिं वेत्सि हि चञ्चलाक्षि विमलां बाले विलोमक्रियाम्" इति पद्यपादः कस्मिन् छन्दसि रचितः ? 1/1

- ( ) a. स्रग्धरा
- ( ) b. उपजातिः
- ( ) c. इन्द्रवज्रा
- (•) d. शार्दूलविक्रीडितम् ✓

✓ 16. The phrase "साङ्घ्रि त्रयं" and "अङ्घ्रिः स्वत्र्यंशयुक्तः" respectively refer to 2/2

- (•) a. 3+¼, ¼+ (¼ * ⅓) ✓
- ( ) b. ¾, ¼ + ⅓
- ( ) c. 3+4 , ¼+¾
- ( ) d. 3.14, ¼+ 4/3

✓ 17. In doing the process " पञ्चांशपादत्रिलवार्धषष्ठान् एकीकृतान्" the resultant number is: 1/1

- a. ⅕+¼ +3+6/2
- b. 29/30
- c. 29/20 ✓
- d. ⅕+¼ +3/2+6

✗ 18. Among the following which represents तच्छेदं 0/2

- [ ] a. शून्यर्णयोः खधनयोः
- [ ] b. खशून्ययोर्वा वधः
- [x] c. खोद्धृतमृणं धनं ✓
- [ ] d. खमृणधनविभक्तं

Correct answer

- [x] c. खोद्धृतमृणं धनं
- [x] d. खमृणधनविभक्तं

Section 3 (2 x 6 points = 12 points) 2 of 12 points

19. In the introductory lecture, the names of a few important astronomers and mathematicians along with their works were highlighted. Among the following identify all the correct pairs of authors along with his commentator

	सत्यम्	असत्यम्	Score	
(Āryabhaṭa I, Bhāskara II)	☐	☑	0/0	✓
(Āryabhaṭa I, Bhāskara I)	☐	☑	0/0	✓
(Āryabhaṭa I, Āryabhaṭa II)	☑	☐	0/0	✗
(Bhāskara I, Āryabhaṭa II)	☑	☐	1/1	✓
(Brahmagupta, Pṛthūdakasvāmin)	☐	☐	0/1	✗
(Bhāskara II, Bhāskara II)	☐	☐	0/2	✗
(Bhāskara I, Govindasvāmin)	☐	☐	0/1	✗
(Āryabhaṭa II, Someśvara)	☐	☐	0/0	✗
(Bhāskara I, Udayadivākara)	☐	☐	0/1	✗
(Āryabhaṭa I , Bhaṭṭotpala)	☐	☐	0/0	✗

Correct answers

	सत्यम्	असत्यम्
(Āryabhaṭa I, Āryabhaṭa II)	☐	☑

20. As per the procedure outlined in the text Lilavati, find out the square root of 3 and answer the following questions.

✗ a. Is the number 3 in vargasthāna or avargasthāna ? 0/1

- ○ vargasthāna
- ◉ avargasthāna ✗

Correct answer

- ◉ vargasthāna

✗ b. What is the first remainder after dividing by the first number in paṅkti ? 0/1

2 ✗

Correct answer

6

✗ c. After adding a zero to this remainder obtained, the square of which number is to be subtracted ? 0/1

4 ✗

Correct answer

7

✗ d. What is the value of the third paṅkti ? 0/1

6 ✗

Correct answer

346

✗ e. What is the remainder after dividing by the fourth paṅkti ? 0/1

6 ✗

Correct answer

1760

✓ f. To obtain a square root of the number 3 up to 3 decimals, how many zeros have to be appended to 3. 1/1

6 ✓

Section 4 (16 x 1 =16 points) 3 of 16 points

21. Match the appropriate element(s) from the following set provided to you and write across the respective words listed below. There may be multiple correct answers. Additional marks shall be provided for filling all correct entries (4 points).

	जाती	3*3	घनः	वर्गः	विभाजितम्	पदम्	10^4	Score	
A. घनहस्तः --		☑	☐	☐	☐	☐	☐	0/1	✗
B. पादः, ---		☐	☐	☐	☐	☐	☐	0/1	✗
C. तच्छेद, --		☐	☐	☐	☐	☐	☐	0/1	✗
D. शून्यम्, ---		☐	☐	☐	☐	☐	☐	0/1	✗
E. वर्गः, ---		☐	☐	☐	☐	☐	☐	0/1	✗
F. मूलम्, ---		☐	☐	☐	☐	☐	☐	0/1	✗
G. गुणनम्, ---		☐	☐	☐	☐	☐	☐	0/1	✗
H. विलोम --		☐	☐	☐	☐	☐	☐	1/1	✓
I. प्रमाणम् and इच्छा ---		☐	☐	☐	☐	☐	☐	0/1	✗
J. इच्छावृद्धौ फले ह्रासः ---		☐	☐	☐	☐	☐	☐	1/1	✓
K. अयुतम् ---		☐	☐	☐	☐	☐	☐	0/1	✗
L. हृतम् --		☐	☐	☐	☐	☐	☐	0/1	✗
M. a^2 - b^2 ---		☐	☐	☐	☐	☐	☐	0/1	✗
N. द्विकरणी ---		☐	☐	☐	☐	☐	☐	0/1	✗
O. समत्रिघातः ---		☐	☑	☐	☐	☐	☐	1/1	✓
P. समच्छेदविधानम् ---		☐	☐	☐	☑	☐	☐	0/1	✗

Correct answers

	चतुर्थांशः	आहतिः	खं	खारिका	खहरः	स्वघ्नः	गगनम्	चरणः	भागजाति
A. घनहस्तः --	☐	☐	☐	☑	☐	☐	☐	☐	☐
B. पादः, ---	☑	☐	☐	☐	☐	☐	☐	☑	☐
C. तच्छेद, --	☐	☐	☐	☐	☑	☐	☐	☐	☐
D. शून्यम्, ---	☐	☐	☑	☐	☐	☐	☑	☐	☐
E. वर्गः, ---	☐	☐	☐	☐	☐	☑	☐	☐	☐
F. मूलम्, ---	☐	☐	☐	☐	☐	☐	☐	☐	☐
G. गुणनम्, ---	☐	☑	☐	☐	☐	☐	☐	☐	☐
I. प्रमाणम् and इच्छा ---	☐	☐	☐	☐	☐	☐	☐	☐	☐
K. अयुतम् ---	☐	☐	☐	☐	☐	☐	☐	☐	☐
L. हृतम् --	☐	☐	☐	☐	☐	☐	☐	☐	☐
M. a^2 - b^2 ---	☐	☐	☐	☐	☐	☐	☐	☐	☐
N. द्विकरणी ---	☐	☐	☐	☐	☐	☐	☐	☐	☐
P. समच्छेदविधानम् ---	☐	☐	☐	☐	☐	☐	☐	☐	☑