Registration Number | | | | | | | |

INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY

Bargarh/Fulia/Guwahati/Jodhpur/Salem/Varanasi/Champa/Kannur/KHTI-Gadag/SPKM-Venkatagiri/KLB-IIHT-Hyderabad

Diploma in Handloom & Textile Technology

April/ May - 2026 Semester Examination

(Regulation-2021)

Semester : **I** Time:3 Hours

Course Code & Title : **BS101 - MATHEMATICS – I** Maximum Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Find the value of $cos\ 75^0$.
2. If $A + B + C = 180^0$ then find the value of $cos(A + B)$,
3. If $y = x^4 + 1$ find $\frac{dy}{dx}$.
4. Evaluate $\lim_{x \to -2} (2x + 5)$.
5. Prove that $\frac{nP_r}{nC_r} = r!$.
6. Find the value of $10C_3$.
7. If two dice rolled, what is the probability that the sum of the upturned faces will be equal to 7?
8. Write the definition of probability of an event.
9. Write the difference between defects and defectives.
10. Write formula to find the control limits of P- Chart.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. I $A + B = 45^0$ prove that $(1 + \tan A)(1 + \tan B) = 2$ and hence find the value of $\tan 2\,2\frac{1^0}{2}$. (6)

    B. Prove that $\sin 3A = 3sinA - 4sin^3A$. (10)

    (OR)

    C. Prove that $\frac{\sin 3A}{1+2\cos 2A} = \sin A$. (6)

    D. Prove that $\sin 20^0\ sin40^0\ sin60^0\ sin80^0 = \frac{3}{16}$ by using trigonometric formulae. (10)

12. A. If $y = log(\sec x + \tan x)$ find the value of $\frac{dy}{dx}$ (6)

    B. If $y = log\left(\frac{1-\cos x}{1+\cos x}\right)$ find the value of $\frac{dy}{dx}$ (10)

    (OR)

C. Evaluate: $\lim_{x\to -4}\left(\frac{\frac{1}{4}+\frac{1}{x}}{4+x}\right)$. (6)

D. Differentiate $y=\frac{x^3+3x}{x\cos x}$ (10)

13. A. Prove that $10C_2+(2\times 10C_3)+10C_4=12C_4$, (6)

B. Find the general term in the expansion of $\left(x^4+\frac{1}{x^6}\right)^{15}$. (10)

(OR)

C. An exam paper contains 8 questions, 4 in part A and 4 in part B. The students are required to answer 5 questions. If at least two questions from part A must be answered. How many ways can this be done? (6)

D. Find the middle term in the expansion of $(2x+y)^7$. (10)

14. A. Let A and B be the events such that $P(A)=\frac{7}{13}$, $P(B)=\frac{9}{13}$, $P(A\cap B)=\frac{4}{13}$. Find $(i)\ P(A/B)\ (ii)\ P(B/A)\ (iii)\ P(A\cup B)$ (6)

B. One card is drawn from a back of 52 cards. What is the probability that either a king or queen? (10)

(OR)

C. Two dice are rolled together. Find the probability of getting sum of faces as 4. (6)

D. State and Prove Baye's theorem. (10)

15. A. Explain in details about sampling theory and its types. (6)

B. In a factory 1000 bolts are examined daily for defectives. The number of defectives for 15 days are 9,10,12,8,7,15,10,12,10,8,7,13,14,15,16 respectively. Draw the np – chart and state your comment. (10)

(OR)

C. Explain about control chart with type. (6)

D. There are 3 boxes containing respectively, 1 white, 2 red, 3 black balls; 2 white, 3 red, 1 black balls; 3 white, 1 red, 2 black balls. A box chosen at random and from it two balls are drawn at random. The two balls are 1 red and 1 white. what is the probability that they come from second box. (10)

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April/ May - 2026 Semester Examination

(Regulation-2021)

Semester : **I** Time:3 Hours

Course Code & Title : **BS105 Applied Chemistry** Maximum Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. How will you calculate the mole fraction? Write the formula.
2. What is Heisenberg's uncertainty principle?
3. What is Coagulant with example?
4. Write any four differences between Hard water and Soft water?
5. What is alloy? Write four Purpose of making alloy?
6. Write the preparation, properties and uses of PS.
7. What is meant by HCV and LCV?
8. Define saponification value. Write the significance of saponification value.
9. Define Secondary battery. Write any two example of secondary battery.
10. Difference between dry corrosion and wet corrosion. Write any four points.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Write a short note on Bohr's model. Write their limitations. (6)

    B. Write the shapes of s, p and d orbitals and explain it. (10)

(OR)

    C. What are Quantum numbers? Discuss the types of Quantum numbers? (6)

    D. What is Rutherford's atomic model? What are the primary observations and limitations of his model? (10)

12. A. What are the boiler troubles caused by use of hard water in boiler? (6)

    B. Briefly explain the municipal water treatment with a suitable diagram. (10)

(OR)

C. What is meant by alkalinity in water? What is its type? Explain it. (6)

D. Draw a suitable diagram and describe the Ion exchange process for the softening of hard water. (10)

13. A. Illustrate the general principles and processes of extraction of metals from its ores. (6)

B. Explain the preparation properties and uses of the Nylon 6,6 and PVC. (10)

(OR)

C. Distinguish thermoplastics and thermosetting plastics. (6)

D. Write a note on general principle and processes of extraction of metal from their ores. (10)

14. A. Define Lubricants. How would you classify lubricants? (6)

B. Write in detail the physical and chemical properties of lubricants. (10)

(OR)

C. State the functions of good lubricants with examples? (6)

D. How will you determine the quality of a coal using Proximate analysis? (10)

15. A. Discuss the factors that affect the rate of corrosion of a metal. (6)

B. What are fuel cells? Explain the construction and working of H_2-O_2 fuel cells. (10)

(OR)

C. Write down the mechanism of electrochemical corrosion. (6)

D. What is Lead acid battery? Explain the construction, working and uses of it. (10)

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April/ May - 2026 Semester Examination

(Regulation-2021)

Semester : BRIDGE COURSE Time:3 Hours

Course Code & Title : **BS110 Mathematics** Maximum Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Without using tables find the value of $\cos 15^0$
2. Convert $\frac{\pi}{5}$ radians into degrees
3. Find the slope of the straight line passing through the points (5,7) and (7,5)
4. Find the equation of the circle with Centre (1,1) and radius $\sqrt{2}$
5. Find the value of $15_{C_{13}}$
6. Find Number of different ways of arrangement using the letters of the word "RAMANUJAN"
7. Define Probability of an Event
8. If P (A)=2/3, P (B)=2/5, P (AUB)=1/3 find P ($A \cap B$)
9. Find the mean value of 120, 127, 152, 157, 160, 134, 137, 123, 140, 144.
10. Find the $\overline{R}$ for the range values 2.1, 3.1, 2.1, 1.9, 3.0, 2.5, 2.8, 2.5, 2.0, 3.9

PART-B ((6+10) ×5=80 Marks)

Answer all the questions in detail

11. A. Prove that $\frac{\sin 2A}{1+\cos 2A} = \tan A$ (6)

B. Find the value of $\sin 20^0 \sin 40^0 \sin 60^0 \sin 80^0 = \frac{3}{16}$ by using trigonometric formula (10)

(OR)

C. If $A+B=45^0$ Prove that $(1+\tan A)(1+\tan B)=2$ (6)

D. Prove that $\cos 3x = 4\cos^3 x - 3\cos x$ (10)

12. A. Find the equation of a parallel line and a perpendicular line passing through the point (1,2) to the line $3x+4y=7$ (6)

B. Find the eccentricity Centre, foci and vertices of the hyperbola $\frac{x^2}{4}-\frac{y^2}{5}=1$ and also trace the curve (10)

(OR)

C. Find the value of 'x' if $A(0,\frac{-3}{2})B(x,-1)$ and $C(2,\frac{-1}{2})$ are collinear (6)

D. If (4,1) is one extremity of a diameter of the circle $x^2+y^2-2x+6y-15=0$ find the other extremity (10)

13. A. If $n_{C_4}=495$ find the value of 'n' (6)

B. Find the general term in the expansion of $(x+\frac{1}{x})^{10}$ (10)

(OR)

C. Prove that $10_{C_2}+(2\times 10_{c_3})+10_{c_4}=12_{c_4}$ (6)

D. Find the middle term in the expansions of $(2x-\frac{x^2}{4})^{16}$ (10)

14. A. A bag contains 7 white ,6 red 5 black balls Two balls are drawn at random find the probability that they will both be white (6)

B. A box contains 2000 component of which 5 percentage are defective a second box contains 500 components of which 40 percentage are defective (10)

i) What is the probability that the component is defective

ii) If a component is selected is defective what is the probability if from box two

(OR)

C. A die is rolled and a coin is tossed simultaneously find the probability that the die shows an odd number and the coin shows head (6)

D. Two dice are rolled find the probability that sum of outcomes is (10)

i) Equal to 4, ii) greater than 10, iii) less than 13

15. A. Define variable data and attribute data with examples (6)

B. Draw the $\overline{X}$ control chart for the following data and state your conclusion (10)

Sample No.	1	2	3	4	5	6	7	8	9	10
$\overline{X}$ (Mean)	37.5	49.5	51.5	59.2	54.7	34.7	51.4	61.4	70.4	75.3
R (Range)	9.5	12.8	10.0	9.1	7.8	5.8	14.5	2.8	3.7	8.0

Given that: sample size =6, $A_2 = 0.483$

(OR)

C. In a factory 1000 belts are examined daily for defectiveness the number of defectives in 10 days are 9,10,12,8,7,15,10,12,10 and 8 calculate the control limit values for np-chart (6)

D. Construct a control chart for defectives for the following data (10)

Sample NO	1	2	3	4	5	6	7	8	9	10
NO. of inspected	90	65	85	70	80	80	70	95	90	75
NO. of defectives	9	7	3	2	9	5	3	9	6	7

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Table : Quality Control - Chart Constants

Sample Size	Chart for average $\bar{X}$-chart			σ-chart — Chart for Standard Deviations					Chart for Ranges — R-chart				
	Factors for Control Limits			Factors for Central line	Factors for Control Limits				Factors for Central line	Factors for Control Limits			
n	A	A_1	A_2	C_2	B_1	B_2	B_3	B_4	d_2	D_1	D_2	D_3	D_4
2	2.121	3.760	1.880	0.5642	0	1.843	0	3.267	1.128	0	3.686	0	3.262
3	1.732	2.394	1.023	0.7236	0	1.858	0	2.568	1.663	0	4.358	0	2.575
4	1.500	1.880	0.729	0.7979	0	1.808	0	2.266	2.059	0	4.698	0	2.282
5	0.342	1.596	0.577	7.8407	0	1.756	0	2.089	2.326	0	4.918	0	2.115
6	1.225	1.410	0.483	0.8686	0.026	0.711	0.030	1.970	2.534	0	5.078	0	2.004
7	1.134	1.277	0.419	0.8882	0.105	1.672	0.118	1.882	2.704	0.205	5.203	0.076	1.924
8	1.061	1.175	0.373	0.9027	0.167	1.638	0.185	1.815	2.847	0.387	5.307	0.136	1.864
9	1.000	1.094	0.337	0.9139	0.219	1.609	0.239	1.760	2.970	0.546	5.394	0.184	1.816
10	0.949	1.028	0.308	0.9227	0.262	1.584	0.284	1.716	3.078	0.687	5.469	0.223	1.777
11	0.905	0.973	0.285	0.9300	0.299	1.561	0.321	1.679	3.173	0.812	5.534	0.256	1.744
12	0.866	0.925	0.266	0.9359	0.331	1.541	0.354	1.646	3.258	0.924	5.592	0.284	1.716
13	0.832	0.884	0.249	0.9410	0.359	1.523	0.382	1.618	3.336	1.026	5.646	0.308	1.692
14	0.802	0.848	0.235	0.9453	0.384	1.507	0.406	1.594	3.407	1.121	5.693	0.329	1.671
15	0.775	0.816	0.223	0.9490	0.406	1.492	0.428	1.572	3.472	1.207	5.737	0.348	1.652
16	0.750	0.788	0.212	0.9523	0.427	1.478	0.448	1.552	3.532	1.285	5.779	0.364	1.636
17	0.728	0.762	0.203	0.9551	0.445	1.465	0.466	1534	3.588	1.359	5.817	0.379	1.621
18	0.707	0.738	0.194	0.9576	0.461	1.454	0.482	1.518	3.640	1.426	5.854	0.392	1.608
19	0.688	0.717	0.184	0.9599	0.477	1.443	0.497	1.503	3.689	1.490	5.888	0.404	1.596
20	0.671	0.697	0.110	0.9619	0.491	1.433	0.510	1.490	3.735	1.544	5.922	0.418	1.586

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Diploma in Handloom & Textile Technology

April/ May - 2026 Semester Examination

(Regulation-2021)

Semester : **I** Time:3 Hours

Course Code & Title : **HS101 Communication Skills in English** Maximum Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences.

1. What are the types of communication?
2. Give two examples of non-verbal communication.
3. Give examples of some soft skills.
4. Name the poet of the poem 'Stopping by Woods On a Snowy Evening'.
5. Identify the following lines and name the poem from which these lines have been taken.

"*Into the dreary desert sand of dead habit*
Where the mind is led forward by thee
Into ever-widening thought and action

Into that heaven of freedom, my father, let my Country awake."

6. Who are the main characters in 'The Gift of the Magi'?
7. How did Uncle Podger hurt himself?
8. Why did the Scorpion hide under the sack of rice?
9. Fill in the blanks with the appropriate verb forms.

a) The school_____(opens, open) at nine 'o' clock in the morning.

b) There_____(was/were) too much noise in the room.

10. Fill in the blanks with suitable prepositions.

a) This pen lies_____the table.(on/to)

b) Robert has been living in this village ___1979.(since/from)

PART-B ((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Write a note on various types of communication? (6)

B. What are the different barriers to effective communication? (10)

(OR)

C. Elaborate the art of effective communication. (6)

D. Explain the 7 Cs for effective communication. (10)

12. A. Explain the importance of soft skills. (6)

B. Define soft skills. Differentiate between soft skills and hard skills. (10)

(OR)

C. Explain about "Team Work" and "Creativity" as a soft skill. (6)

D. Write about the importance of life skills. (10)

13. A. (6)

"The woods are lovely, dark and deep,
But I have promises to keep,

And miles to go before I sleep,
And miles to go before I
sleep".

i) Describe the woods?
ii) Where does the poet have to go?
iii) What does the poet mean by 'sleep'?

B. (10)

Read the passage given below and answer the questions that follow:

Malgudi Days is a collection of short stories by R. K. Narayan published in 1943 by Indian Thought Publications. The book was republished outside India in 1982 by Penguin Classics. The book includes 32 stories, all set in the fictional town of Malgudi, located in South India. Each of the stories portrays a facet of life in Malgudi. The New York Times described the virtue of the book as "everyone in the book seems to have a capacity for responding to the quality of his particular hour. It's an art we need to study and revive."

In 1986, a few of the stories in the book were included in the *Malgudi Days* television series and directed by actor and director, Shankar Nag.

In 2004, the project was revived with film-maker Kavitha Lankesh replacing the late Shankar Nag as director. The new series was telecast from April 26, 2006, on Doordarshan.

In 2014, Google commemorated Narayan's 108th birthday by featuring a Google Doodle showing him behind a copy of Malgudi Days.

i) When was *Malgudi Days* published?
ii) How many stories are there in the book?
iii) Who directed the *Malgudi Days* TV series?
iv) How did Google honour R.K Narayan?
v) How did New York Times praise *Malgudi Days*?

(OR)

C. *"I remember the night my Mother was stung by a scorpion. Ten hours of steady rain had Driven him to crawl beneath a Sack of rice".* (6)

i) What is the name of the poem and who is the poet?

ii) Why does the speaker remember the night?

iii) Describe how the mother was cured?

D. Read the passage given below and answer the questions that follow: (10)

It is a beautiful story of a poor couple Jim and Della. She wants to give a present to Jim for Christmas, but she does not have enough money with her. She became sad for him. She possesses very beautiful and long hair in which she takes pride. She decides to sell her beautiful long hair and buy a gift for him. She sells them for twenty dollars and buys a beautiful fob chain of platinum for Jim's gold watch. Jim returns home in the evening and he seems disturbed .He does not notice that Della has cut her hair. He has brought very beautiful and expensive combs for Della as a Christmas gift. When Della looks at them, she becomes very happy and she starts crying. Della presents the chain to Jim but he has sold the watch to buy the combs. Both Della and Jim are called the Magi. They have sacrificed for the true love of each other.

i) How did Della buy a Christmas Gift for Jim?

ii) Why did Jim sell the gold watch?

iii) Why did Della become sad?

iv) Write the name of the story from which the above passage has been taken.

v) What gift did Jim bring for Della?

14. A. Read the passage given below and summarize it with an appropriate title: (6)

King Midas was fond of gold more than anything else in the world. He treasured his royal crown because it was made of that precious metal. If he loved anything good or half as good, it was a little girl who played around her father's feet so happily. But the more Mahala loved his daughter, the more he desired wealth. He thought the foolish man that he was, the best thing he could possibly do for his beloved child was to bestow upon her the great pile of yellow shiny coins that had been collected since the creation of the world.

So he gave all his thoughts and all his time to this one cause. If ever he looked for a moment at the golden clouds of sunset, he wished they were gold and that they could be safely squeezed into his strong box.

B. Write a letter to your father asking his permission to join Guitar classes. (10)

(OR)

C. Write an email to your uncle thanking him for his advice before your examinations. (6)

D. Write a letter to the manager of your bank requesting him/her to issue a new cheque book. (10)

15. A. Pick out Verbs in the following sentences:- (6)

a) Delhi became the capital of India.

b) Mohan plays cricket.

c) Indira Gandhi was a brave lady.

B. Change the following sentences into Passive Voice. (10)

i) Rahul made the painting.

ii) I have done my work.

iii) Tom is buying a gift.

iv) Walter gave me the book.

v) They are playing football.

(OR)

C. Fill in the blanks with suitable **Modal Verbs.** (6)

i) _____I see my mother now, doctor? (can/could)

ii) It _____rain today.(can/may)

iii) Tania _____drive a car at the age of ten.(can/must)

iv) _____you please hand over that book to me. (would/may)

v) She _____be a scientist in future.(will/might)

vi) Priya _____speak English fluently.(can/would)

D. Pick out the **Pronouns** in the following sentences. (10)

i) They arrived home very late.

ii) She is angry with me.

iii) We played our favourite game.

iv) It is a pleasant book.

v) You must have lunch with us.

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