

Registration Number

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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

NOV/DEC-2025 SEMESTER EXAMINATION

(Regulation-2025)

Semester : I

Time:3 Hours

Course Code & Title : **25BS101 Mathematics - I**

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. If $A = 45^\circ$ and $B = 30^\circ$ find $\tan(A+B)$?
2. Convert $\pi/3$ radians into degrees.
3. Identify the real and imaginary parts of $z = 7 - 4i$.
4. Multiply: $(2 + i)(3 - 4i)$.
5. Check the continuity of $f(x) = x^2 - 3x + 2$ at $x=1$.
6. Differentiate $\frac{d}{dx}(\sin x + e^x)$.
7. Find the value of: 7P_3
8. A box has 6 red and 4 blue balls. In how many ways can 3 balls be selected?
9. State the axioms of probability.
10. Find the median of the data: 5, 9, 2, 7, 1.

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. In a right- angled triangle, one side is 5 cm, the hypotenuse is 10 cm. find the other side using Pythagoras theorem and also $\sin \theta$, $\cos \theta$, $\tan \theta$. (10)
(OR)
C. If $\sin A = 3/5$. Find $\cos A$ and $\tan A$. (6)
D. Prove that $\cos 2A = 1 - 2 \sin^2 A$. Then evaluate $\cos 120^\circ$. (10)
12. A. Express $1 + \sqrt{3}i$ in polar form. (6)
B. If $Z_1 = 1 + i$ and $Z_2 = 1 - i$, find $Z_1 Z_2$. (10)
(OR)
C. Find the conjugate, modulus and amplitude of $z = 1 - \sqrt{3}i$. (6)
D. Simplify: $\frac{7+4i}{3-2i}$ (10)
13. A. $\lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2}$ (6)

B. Find $\frac{dy}{dx} = \frac{x^2+1}{x}$ (10)

(OR)

C. Differentiate $y = x^2 e^x$ (6)

D. Let $f(x) = \begin{cases} x^2 & ; x \leq 1 \\ 2x - 1 & ; x > 1 \end{cases}$ check (a) continuity at $x = 1$, (b) differentiability at $x = 1$. (10)

14. A. Expand $(x + y)^5$. (6)

B. A committee of 2 boys and 2 girls is to be formed from 5 boys and 4 girls. How many ways can this be done? (10)

(OR)

C. Evaluate $(1.02)^6$ using binomial expansion. (6)

D. Find the value of: 7P_3 and ${}^{10}C_4$. (10)

15. A. Events A and B are independent with $P(A) = 0.4$, $P(B) = 0.5$. Find (6)

1. $P(A \cap B)$

2. $P(A \text{ or } B)$.

B. For the discrete data: (10)

x	1	2	3	4	5
f	2	4	5	3	1

Find mean, median, mode.

(OR)

C. A die is rolled. Let A = 'even number', B = 'number greater than 3' Find (6)

a) $P(A \cap B)$

b) $P(A \cup B)$

c) $P(\text{not } A)$

D. Find arithmetic mean from the grouped data: (10)

Class Interval	Frequency
0 – 10	5
10 – 20	8
20 – 30	12
30 – 40	5

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 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. Write Heisenberg's uncertainty principle.
2. How will you calculate the mole fraction?
3. Define: Alkalinity.
4. What are scale and sludge?
5. Define: Composites. Give examples.
6. What is an alloy? Give examples.
7. What is a calorific value of a fuel?
8. Define: Cetane Number.
9. What are non-electrolytes? Give an example.
10. What is redox reaction? Give an example.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. What are solute, solvent and solution? Give examples. (6)
B. Write a detailed note on Rutherford's atomic model with a neat sketch. (10)
- (OR)
- C. What is Hund's rule? Write any one example in detail. (6)
D. Explain the anomalous properties of NH₃ and H₂O based on Hydrogen bonding. (10)
12. A. What are priming and foaming? Write their causes and prevention. (6)
B. Briefly explain the municipal water treatment with a suitable diagram (10)

(OR)

- C. Explain the problems caused by the use of hard water in boilers. (6)
- D. What is soda lime process? Write the differences between hot and cold lime soda processes. (10)
13. A. Write the purpose of alloying in detail. (6)
- B. Write a note on general principle and processes of extraction of metal from their ores. (10)
- (OR)**
- C. Explain the vulcanization of rubber. Distinguish thermoplastics and thermosettings. (6)
- D. Write down the preparation and applications of PS and PVC? (10)
14. A. Write the chemical composition, calorific value and applications of producer gas. (6)
- B. How will you determine the quality of a coal using Proximate analysis? (10)
- (OR)**
- C. Write the mechanism of hydrodynamic lubrication. (6)
- D. Write in detail the physical properties of lubricants. (10)
15. A. Distinguish primary and secondary cell. (6)
- B. Write down the mechanism of electrochemical corrosion. (10)
- (OR)**
- C. Explain the heat treatment of alloys. (6)
- D. Explain the principle and working of lead storage battery. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : III/V (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. Find the value of $4\cos^3 20^\circ - 3\cos 20^\circ$.
2. Find the value of $\sin 105^\circ$.
3. Find the equation of the parabola whose vertex is at the origin and focus at (0,2).
4. The equation of an ellipse is $\frac{x^2}{16} + \frac{y^2}{9} = 1$. Find its foci, vertices and eccentricity.
5. How many different permutations of the letters in the word "BANANA".
6. Evaluate 7C_2 .
7. State Baye's theorem.
8. Define discrete random variable.
9. Write the formula to find the control limits of c-chart.
10. Find the mean value of 90,65,85,70,80,80,70,95,90,75.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Without using table, find the value of $\sin 75^\circ + \sin 15^\circ$. (6)
B. If $\tan A = \frac{1}{3}$ and $\tan B = \frac{1}{7}$, show that $2A + B = 45^\circ$ (or) $\frac{\pi}{4}$. (10)
- (OR)
- C. If $\sin \theta = \frac{3}{5}$, find the value of $\sin 3\theta$. (6)
- D. Show that $\frac{\sin 3A}{1 + \cos 2A} = \sin A$ and hence find the value of $\sin 15^\circ$. (10)
12. A. Find the perpendicular distance from the point P(2,-1) to the line $4x-3y+12=0$. (6)

- B. Find the equation of the line passing through the point (2, -3) and perpendicular to the line $3x - 4y + 7 = 0$. Also, find the acute angle between them. (10)

(OR)

- C. Find the equation of the ellipse whose one of the foci is (2,0) and corresponding directrix is $x=8$ and eccentricity $e = \frac{1}{2}$. (6)
- D. Find the equation of parabola whose focus is (-1,-2) and directrix is $x-2y+3=0$. (10)

13. A. Prove that $11C_3 + 211C_4 + 11C_5 = 13C_5$. (6)
- B. Find the 7th term in the expansion of $(3x + \frac{1}{x})^{11}$. (10)

(OR)

- C. Expand $(3x+5y)^5$. (6)
- D. Find the middle terms in the expansion of $(x^3 + \frac{2}{x^3})^{11}$. (10)

14. A. Event A and B are such that $P(A \cup B) = \frac{3}{4}$, $P(A \cap B) = \frac{1}{4}$ and $P(\overline{A}) = \frac{2}{3}$ find P(B). (6)
- B. In a bolt factory machines, A, B, C manufacture respectively 25%, 35% and 40% of the total of their output 5%,4% & 2% are defective bolts. A bolt is drawn at random from the product and is found to be defective. What are the probabilities that it was manufactured by machine A, B & C. (10)

(OR)

- C. One card is drawn from a deck of 52 cards. What is the probability of the card being either red or a king? (6)
- D. State and prove Baye's theorem. (10)

15. A. The values of sample mean \bar{X} and sample S.D for 15 samples, each of size 4, drawn from a production process are given below. Draw the appropriate control chart for s. (6)

Sample No	1	2	3	4	5	6	7	8
Mean	15.0	10.0	12.5	13.0	12.5	13.0	13.5	11.5
S.D	3.1	2.4	3.6	2.3	5.2	5.4	6.2	4.3

9	10	11	12	13	14	15
13.5	13.0	14.5	9.5	12.0	10.5	11.5
3.4	4.1	3.9	5.1	4.7	3.3	3.3

- B. Given below are the values of sample mean \bar{X} and sample range R for 10 samples, each of size 5. Draw the appropriate mean and range charts and comment on the state of control of the process. (10)

Sample no	1	2	3	4	5	6	7	8	9	10
Mean \bar{X}	43	49	37	44	45	37	51	46	43	47
Range R	5	6	5	7	7	4	8	6	4	6

(OR)

- C. 20 pieces of cloth out of different rolls contained respectively 1,4,3,2,4,5,6,7,2,3,2,5,7,6,4,5,2,1,3 and 8 imperfections. Ascertain whether the process is in a state of statistical control. (6)
- D. The data given below are the number of defectives in 10 samples of 100 items each. Construct a p-chart and an np-chart and comment on the results: (10)

Sample no:	1	2	3	4	5	6	7	8	9	10
No of	6	16	7	3	8	12	7	11	11	4

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 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. Define verbal and non-verbal communication.
2. Explain the importance of Time Management as a soft skill.
3. What is communication?
4. Write any four examples of Soft Skills.
5. Who is the author of 'Malgudi Days'?
6. What is the full form of E-Mail?
7. Identify the following lines and name the poem from which these lines have been taken:-

My little horse must think it queer
To stop without a farmhouse near
Between the woods and frozen lake
The darkest evening of the year.

8. What is precis writing?
9. Fill in the blanks with the plural of the word given in the bracket;
a) Many _____(book) are kept in the library.
b) We should be careful to play with _____ (knife).
10. Use proper articles. (a ,an, the)
a) It is _____ interesting book.
b) _____ cat is sitting on the table.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Describe the process of communication. (6)
B. Explain the 7 Cs for effective communication. (10)

(OR)

- C. Write the barriers to effective communication. (6)
- D. Elaborate art of effective communication. (10)
12. A. Differentiate between Hard Skills and Soft skills. (6)
- B. Define soft skills. Write the importance of soft skills? (10)
- (OR)**
- C. Explain how teamwork and collaboration contribute to success. (6)
- D. Write a note on the different types of Life Skills. (10)
13. A. Where the mind is without fear and the head is held high; (6)
Where the knowledge is free;
Where the world has not been broken into fragments
By narrow domestic walls
- i) Who is the author of above mentioned poem?
- ii) What breaks the world into fragments?
- iii) What does 'without fear' mean here?
- B. Read the passage given below and answer the questions that follow; (10)
- Rasipuram Krishnaswami Iyer Narayanaswami born on Oct 1906 died in Madras on May 13, 2001. Malgudi Days collection of short stories written by R.K Narayan, published in 1943 by Indian Thought Publications, the publishing company Narayan himself founded in 1942. Malgudi Days is a collection of 32 fictional stories set in a small beautiful town called Malgudi in South India. Malgudi is a fictional town located in the novels and short stories of R.K. Narayan's work. The 1986 TV show Malgudi Days, based on Narayan's works and directed by Shankar Nag, become a phenomenon in no time, the show started many senior actors, become a popular name with his portrayal of swami.
- i) How many stories are there in Malgudi Days?
- ii) What is Malgudi famous for?
- iii) Where did R.K Narayan died?
- iv) What is the full form of R.K. Narayan?
- v) When did "Malgudi Days" Published?

(OR)

C. I remember the night my mother (6)

Was stung by a scorpion. Ten hours

Of steady rain had driven him

To crawl beneath a sack of rice.

- i) Who was stung by the scorpion?
- ii) How the scorpion is had come into the house?
- iii) Who is the 'evil one' in the poem?

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

One dollar and eighty-seven cents. That was all. And sixty cents of it was in pennies. Pennies saved one and two at a time by bulldozing the grocer and the vegetable man and the butcher until one's cheeks burned with the silent imputation of parsimony that such close dealing implied. Three times Della counted it. One dollar and eighty-seven cents. And the next day would be Christmas. There was clearly nothing left to do but flop down on the shabby little couch and howl. So Della did it. Which instigates the moral reflection that life is made up of sobs, sniffles, and smiles, with sniffles predominating?

- i) Write the name of the story from which the above passage has been taken.
- ii) Write the name of the writer of the passage.
- iii) Why Della was sad?
- iv) Write the meaning of the word 'sniffles'.
- v) Identify the proper noun in the above passage.

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

Scientists are the backbone of a nation. Their contributions have been very massive to the society. Their inventions and discoveries have made people's lives easier and comfortable. Inventions like planes, cars etc. have made it very accessible for people to travel and save precious time. Phone has been one of the greatest inventions which allow us to stay connected with one another in almost any part of the world. There are many more inventions and discoveries which have imparted our lives on a daily basis and without them our lives will be very difficult. So, the contributions of the scientists are indeed very important for the development of a nation.

B. Write a letter to your friend, thanking him for sending you a birthday present. (10)

(OR)

- C. Write the dialogue between father and son, who is asking money from his father. (6)
- D. Write a letter to the Manager of a book company, ordering books for the library. (10)
15. A. Pick out the Nouns in the following sentences: (6)
1. The dog is sleeping under the tree.
 2. The children are playing in the park.
 3. The teacher gave the students homework.
- B. Fill in the blanks with suitable Prepositions: (10)
1. She was standing _____ her best friend. (on/beside)
 2. She is interested _____ music.(on/in)
 3. He is afraid _____ the dark.(of/at)
 4. The cat jumped _____ the table. (on/upon)
 5. We will meet _____ 5 p.m. tomorrow. (in/at)
 6. They are going _____ the market. (to/in)
 7. He is famous _____ his honesty. (with/for)
 8. She divided the money _____ her two sons. (between/among)
 9. The teacher is angry _____ him.(for /with)
 10. The plane flew _____ the clouds. (on/above)

(OR)

- C. Pick out the Adverbs in the following sentences: (6)
1. she got up quickly
 2. Pavana came today by running
 3. The player walked slowly
 4. The children are playing outside
 5. The boys spoke wisely
 6. Ezhil take the class nicely
- D. Change the Active voice into Passive voice. (10)
1. She writes a letter.
 2. They played the game.
 3. They will buy the car
 4. He broke the window
 5. She is making dinner
