
Enrollment No.

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B. TECH. (ALL BRANCHES)
II YEAR III SEMESTER EXAMINATION
ENGINEERING MATHEMATICS – III

[Time : 3:00 Hours]

[Max. Marks: 70]

NOTE: - Attempt all the questions as instructions.**Non – programmable scientific calculators are allowed. Statistical tables will be provided if asked.****1. Attempt any four parts of the following: (4 X 3 = 12m)**

(a) Prove that $\Delta \log\{f(x)\} = \log\left[1 + \frac{\Delta\{f(x)\}}{f(x)}\right]$.

(b) Form a partial differential equation from the solution $z = e^{my} \cdot \phi(x - y)$ where "a" and "b" are arbitrary constants.

(c) 10 coins are thrown simultaneously. Find the probability of getting at least 7 heads.

(d) If the regression coefficients are 0.5 and 0.6, what would be the coefficient of correlation?

(e) Find the median of given data:

x	3	2	5	9	3	1
f	5	2	2	4	9	5

(f) Find the complementary function of the PDE $\frac{\partial^2 z}{\partial x^2} + 4 \frac{\partial^2 z}{\partial x \partial y} + 4 \frac{\partial^2 z}{\partial y^2} = 0$.**2. Attempt any three parts of the following: (3 X 4 = 12m)**(a) Solve $p \tan x + yq = 3z$.(b) If the variance of the Poisson distribution is 3, find the probabilities for $r = 1, 2, 3, 4$ from the recurrence relation of the Poisson distribution.

(c) Calculate the geometric mean for

x	10	15	18	20	25
f	2	3	5	6	4

(d) For given values of (x, y) , find $\nabla^3 y_{25}$:

x	5	10	15	20	25	30
y	9962	9848	9659	9397	9063	8660

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Paper Code : KFD-302
(B) (SVSU): 2025-2026/R

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B.TECH (FOOD TECHNOLOGY)**IInd YEAR EXAMINATION****Food Microbiology (KFD-302)****[Time : 3:00 Hours]****[Max. Marks : 70]**

I	Long Question : Answer Any Three	[10×3=30]
1.	Explain the contamination and preservation techniques of egg and poultry products?	
2.	Describe the general principles underlying spoilage of food?	
3.	Define the microorganism? Explain the general characteristics of microorganism in brief?	
4.	Explain contamination and preservation of meat and meat products in brief?	
II.	Short Question: Answer any Five	[5×5=25]
1.	What is a Basic term which is used in the control of microorganism?	
2.	Define hygiene and explain personal hygiene?	
3.	Explain Food plant sanitation?	
4.	Describe the different Microbes used in food fermentation?	
5.	What is the Contamination of egg and poultry products?	
6.	Describe the method of Preservation of bakery products?	
III.	Answer Any Three Question	[3×5=15]
1.	Difference B/W the Pasteurization and Sterilization?	
2.	Explain the contamination factor of sugar products?	
3.	What do you understand by the term of indicator microorganism?	
4.	What is the Bacterial food borne diseases?	

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B.TECH (FOOD TECHNOLOGY)**IInd YEAR EXAMINATION****Food Microbiology (KFD-302)****[Time : 3:00 Hours]****[Max. Marks : 70]**

I	Long Question : Answer Any Three	[10×3=30]
1.	Define the microorganism? Explain the general characteristics of microorganism in brief?	
2.	Explain the general principles underlying spoilage of food?	
3.	Explain the physical and chemical methods to control the microorganism?	
4.	What is the microbiological culture? Explain streak plate technique and pour plate technique with suitable diagram?	
II.	Short Question: Answer any Eight	[8×5=40]
1.	What are the Sources of contamination?	
2.	What do you mean by Spoilage of sugar products?	
3.	Describe the Preservation of fruits and vegetable products?	
4.	Explain the Growth, nutrition and reproduction of microorganism?	
5.	What is bacterial food borne diseases?	
6.	Describe the Contamination of fruit and vegetable?	
7.	What is the Basic terms used in the control of microorganism?	
8.	Define hygiene and explain personal hygiene.	
9.	Explain Food poisoning and food borne infections?	
10.	Explain the Pour plate technique with suitable diagram.	

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(A) (SVSU): 2025-2026/R

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B. Tech (Food Technology)
2nd/3rd sem YEAR EXAMINATION
Subject Name- Process Calculations
Subject Code- KFD-304

[Time : 3:00 Hours]

[Max. Marks : 70]

I	Long Question- Answer Any Three	[10×3=30]
1.	Explain laws of thermodynamic with example?	
2.	Write about frictional properties and angle of repose?	
3.	What is Humidity and also explain dew point, dry and wet bulb temperature?	
4.	Write about sensible and latent heat?	
II.	Short Question – Answer Any Five	[5×5=25]
1.	What is Mass and Volume?	
2.	Explain freeze drying?	
3.	What is heat exchanger?	
4.	Write about rheological properties?	
5.	1000kg of paddy grain is harvested at 25% MC, and dried down to 18%MC so what is the final weight of the dried grain?	
6.	Explain thermal radiation?	
III.	Answer Any Five Question	[3×5=15]
1.	What is specific gravity?	
2.	Explain drag coefficient?	
3.	What is Sterilization?	
4.	What is blanching?	
5.	Define wet and dry basis moisture content?	
6.	Explain dimensional and dimensionless variables?	

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Paper Code : KFD-303

(C) (SVSU): 2025-2026/R

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B.Tech (Food Technology)
3 Sem / 2 Year, Examination
Fluid Flow and Solid Handling
Code No: KFD-303

[Time : 03:00 Hours]

[Max. Marks:70]

Note: 1. Attempt all the questions as per given instructions.

I Long Question - (Attempt any three) (10 x 3 = 30)

1. Explain the types of fluids?
2. Determine the viscosity of liquid having kinematic viscosity 06 stokes and specific gravity is 1.9?
3. Explain the working of reciprocating pump with neat and clean diagram?
4. Explain the Solid and their handling properties of solid?

II Short Question - (Attempt any five) (5 x 5 = 25)

1. Define the food packaging and write their types?
2. Define the size reduction?
3. What intermediate and fine size reduction?
4. Define the fruit beverages?
5. Define the drying and dehydration food?
6. Write the properties of fluid?

III Very Short Question - (Attempt any five) (3 x 5 = 15)

1. What is flip flop screen and gyratory screen?
2. What is difference between blower and rotary pump?
3. Define the sterilization and pasteurization?
4. What is fortified food?
5. Define the crushers and grinder?
6. What is food processing?

(B) (SVSU): 2025-2026/R

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B. TECH. (ALL BRANCHES)
II YEAR III SEMESTER EXAMINATION
ENGINEERING MATHEMATICS – III

[Time : 3:00 Hours]

[Max. Marks: 70]

NOTE: - Attempt all the questions as instructions.

Non – programmable scientific calculators are allowed. Statistical tables will be provided if asked.

1. Attempt any four parts of the following:

(4 X 3 = 12m)

- Find the harmonic mean of 6, 7, 5, 4, 3, 2
- Form the partial differential equation by eliminating the function f from the relation $z = f(xy)$
- Write the binomial probability distribution function and its some basic properties.
- Show that the partial differential equation of the relation $x^2 + y^2 + (z - c)^2 = a^2$ is $yp = xq$.
- Prove that $\Delta \log\{f(x)\} = \log\left[1 + \frac{\Delta\{f(x)\}}{f(x)}\right]$.
- Find the complementary function of the PDE $\frac{\partial^2 z}{\partial x^2} + 4 \frac{\partial^2 z}{\partial x \partial y} + 4 \frac{\partial^2 z}{\partial y^2} = 0$.

2. Attempt any three parts of the following:

(3 X 4 = 12m)

- (a) Calculate the correlation coefficient for the following heights (in inches) of fathers (x) and their sons (y):

x	65	66	67	67	68	69	70	72
y	67	68	65	68	72	72	69	71

- (b) Solve $\frac{\partial^2 z}{\partial x^2} + 3 \frac{\partial^2 z}{\partial x \partial y} + 2 \frac{\partial^2 z}{\partial y^2} = 12xy$.

- (c) Find the median wage of the following distribution:**

Wages (in Rs.)	10-20	30-40	50-60	70-80	90-100
Number of Labourers	3	5	20	10	5

- (d) For given values of (x, y) , find $\nabla^3 y_{25}$:

x	5	10	15	20	25	30
y	9962	9848	9659	9397	9063	8660

3. Attempt any three parts of the following:

(3 X 6 = 18m)

- (a) If the variance of the Poisson distribution is 2, find the probabilities for $r = 1, 2, 3, 4$ from the recurrence relation of the Poisson distribution. Also find $P(r \geq 4)$.
 (b) Solve the PDE $xyp + y^2q = zxy - 2x^2$.
 (c) Fit a straight line $y = ax + b$ to the given data:

x	3	2	5	9	3	1
f	5	2	2	4	9	5

- (d) Show that $\nabla = 1 - E^{-1}$.

[P.T.O.]

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B.Tech (Food Technology)
3 Sem / 2 Year, Examination
Fluid Flow and Solid Handling
Code No: KFD-303

[Time : 03:00 Hours]

[Max. Marks:70]

Note: 1. Attempt all the questions as per given instructions.

I Long Question - (Attempt any three) (10 x 3 = 30)

1. Explain the solid handling and their handling properties of solid?
2. Determine the viscosity of liquid having kinematic viscosity 06 stokes and specific gravity is 1.9
3. Explain the intermediate and fine size reduction?
4. Explain the working of centrifugal pump?

II Short Question - (Attempt any five) (5 x 5 = 25)

1. Define the working of blower?
2. Define the size reduction?
3. What flip flop screen?
4. Define the rotary pump?
5. Define the types of fluid?
6. What is density and specific gravity?

III Very Short Question - (Attempt any five) (3 x 5 = 15)

1. What is rotary screen and gyratory screen?
2. What is screen analyzer?
3. Define the sterilization and pasteurization?
4. What is sedimentation?
5. Define the orifice meter?
6. What is food processing?
