



ANAND
INTERNATIONAL COLLEGE OF ENGINEERING

Name: Shubham Sharma

ID: 24CS107

MID-TERM EXAMINATION-I

Nov 2024, Odd Semester 2024-25

B. Tech. (Sec. A/B/C/D), I Semester

1FY2-01: Engineering Mathematics-I

Max. Marks: 30

Time: 120 min.

- Instructions:**
- * Write your Name & Roll no. (Student ID) on top of question paper. Nothing else should be written on the question paper; otherwise it will be considered as unfair-means.
 - * Assume missing data suitably, if any.

Section - A

(Short answer questions, Answer in 2-3 linesonly, Attempt all)

5 x 1 = 5 Marks

A1.	Define Euler formula for Fourier series.
A2.	Give relation between Beta and Gamma functions.
A3.	State Parseval's Theorem for Fourier series
A4.	Prove that $\Gamma(n+1) = n\Gamma n$
A5.	Define half range Fourier Cosine series

Section - B

(Analytical/Problem solvingquestions, Answer in 20-30 linesonly, Attempt any 4)

4 x 4 = 16 Marks

B1.	Prove that $\int_0^1 \sqrt{1-x^4} dx = \frac{(\Gamma(1/4))^2}{6\sqrt{2\pi}}$
B2.	Evaluate $\int_0^\infty \frac{x^2(1+x^4)}{(1+x)^{10}} dx$
B3.	Find the Fourier series for $f(x) = \begin{cases} 0 & ; -\pi < x < 0 \\ \frac{\pi x}{4} & ; 0 < x < \pi \end{cases}$
B4.	Find the Half Range Fourier Cosine Series for $f(x) = (x-1)^2$; $0 < x < 1$

B5.	Prove that $\int_0^{\infty} \frac{1}{1+y^4} dy = \frac{\pi}{2\sqrt{2}}$
B6.	Evaluate $\int_0^1 x^6(1-x)^{\frac{1}{2}} dx$

Section - C

(Descriptive questions, Answer systematically using logic's & principles, Attempt any2)

2 x 4.5 = 9 Marks

C1.	Obtain the Fourier series for the function $f(x) = x - x^2$, $-\pi < x < \pi$ and deduce the following $\frac{\pi^2}{12} = \frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} + \dots$
C2.	Find the Fourier series of $f(x) = x^2$ in $(-\pi, \pi)$. Use Parseval's identity to prove that $\frac{\pi^4}{90} = 1 + \frac{1}{2^4} + \frac{1}{3^4} + \dots$
C3.	Use the concept of Gamma function and solve the integral $\int_0^{\infty} \frac{e^{-x^2}}{\sqrt{x}} dx \times \int_0^{\infty} x^2 e^{-x^4} dx$

- Best of Luck -

$$\begin{aligned} & (x-1)^2 \rightarrow x^n \rightarrow n!x^{n-1} \\ & 2(x-1)^{-1} \end{aligned}$$

$$\frac{d}{dx}(ax)$$



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MID-TERM EXAMINATION-I

Nov 2024, Odd Semester 2024-25

B. Tech. (Sec. C/D), I Semester

1FY2-03: Engineering Chemistry

Max. Marks: 30

Time: 120 min.

- Instructions:**
- * Write your Name & Roll no. (Student ID) on top of question paper. Nothing else should be written on the question paper, otherwise it will be considered as unfair-means.
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Section - A

(Short answer questions, Answer in 2-3 lines only, Attempt all)

5 x 1 = 5 Marks

~~2 marks~~ What do you understand by Break Point Chlorination.

A1.	Why is hardness expressed in terms of calcium carbonate equivalent?
A2.	Name the processes that are used in purification of water.
A3.	What do you mean by sedimentation process?
A4.	What are the types of hardness? Give one example of each.
A5.	Hardness of given water sample is 420 mg/L. Express the hardness in degree Clarke and degree French.

Section - B

(Analytical/Problem solving questions, Answer in 20-30 lines only, Attempt any 4)

4 x 4 = 16 Marks

B1.	<p>Write short note on:</p> <ul style="list-style-type: none"> (i) Breakpoint chlorination (ii) Sedimentation with coagulation
B2.	What are scale and sludge? Discuss the disadvantages of scale and sludge formation.
B3.	Discuss the EDTA method for the determination of temporary, permanent and total hardness of water.
B4.	A water sample contains $\text{Ca}(\text{HCO}_3)_2 = 18 \text{ mg/L}$, $\text{CaSO}_4 = 8.2 \text{ mg/L}$, $\text{Mg}(\text{HCO}_3)_2 = 5 \text{ mg/L}$, $\text{MgSO}_4 = 7.1 \text{ mg/L}$, $\text{MgCl}_2 = 6.5 \text{ mg/L}$. Calculate the total, temporary and permanent hardness of the given water sample in ppm.
B5.	Explain the types of impurities present in water.

B6. Explain what happens when:

- (i) Soap reacts with hard water.
- (ii) EBT is added to hard water.
- (iii) Ozone gas is added to water in water treatment process.
- (iv) Coagulants are added to water sample.

Section - C

(Descriptive questions, Answer systematically using logic's & principles, Attempt any2)

2 x 4.5 = 9 Marks

C1.	What is disinfection process used in municipal water treatment? Discuss any 4 chemical method for the disinfection of water.
C2.	0.5 g of CaCO_3 was dissolved in HCl and the solution was made upto 500 mL with distilled water. 50 mL of this water sample required 45 mL of EDTA solution for titration. 50 mL of sample water required 20 mL of EDTA and 50 mL of boiled water sample required 12 mL of EDTA solution for titration. Calculate the temporary, permanent and total hardness of given water sample in mg/L.
C3.	What do you mean by filtration process? Explain the commonly used filters in water treatment process with the help of diagrams.

- Best of Luck -

$$\begin{array}{r} 42 \\ 42 \\ \hline 84 \end{array}$$

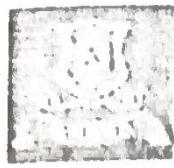
$$\begin{array}{r} 20 \\ 20 \\ \hline 40 \end{array}$$

$$\begin{array}{r} 84 \\ 40 \\ \hline 284 \end{array}$$

$$1 \text{ PPM} = 1 \text{ mg/L} = 1^\circ \text{F} = 0.07^\circ \text{C}$$

$$1^\circ \text{F} = 10 \text{ mg/L} = 1 \text{ PPM} = 0.7^\circ \text{C}$$

$$1^\circ \text{C} = 14.3 \text{ mg/L} = 1^\circ \text{F} = 10^\circ \text{F}$$



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Shubham Sharma

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ID: QHCS107

MID-TERM EXAMINATION-I

Nov 2024, Odd Semester 2024-25

B. Tech. (Sec. C & D), I Semester

Sub. Code: 1FY1-04 Communication Skills

Time: 120 min.

Max. Marks: 30

- Instructions:**
- * Write your Name & Roll no. (Student ID) on top of question paper. Nothing else should be written on the question paper; otherwise, it will be considered as unfair-means.
 - * Assume missing data suitably, if any.

Section - A

(Short answer questions, Answer in 2-3 lines only, Attempt all)

5 x 1 = 5 Marks

A1.	Define the term 'Communication'?
A2.	What is 'Filtering'?
A3.	Explain the term Status Consciousness.
A4.	Mention any one quality of good communication.✓
A5.	What is non-verbal communication?

Section - B

(Analytical/Problem solving questions, Answer in 20-30 lines only, Attempt any 4)

4 x 4 = 16 Marks

B1.	Explain the cycle of communication in detail.
B2.	What is downward communication? Draw a diagram and explain its advantages and disadvantages.
B3.	Explain the division of human communication in details. ✓
B4.	What is the grapevine chain?
B5.	Mention the difference between written and oral communication.
B6.	Differentiate between verbal and non-verbal communication.

Section - C

(Descriptive questions. Answer systematically using logic's & principles. Attempt any2)

2 x 4.5 = 9 Marks

C1.	What is the difference between formal and informal channels of communication?
C2.	What are the qualities of good communication?✓
C3.	Discuss in detail the ways to improve interpersonal communication.✓

- Best of Luck -



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MID-TERM EXAMINATION-I

Nov 2024, Odd Semester 2024-25

B. Tech. (Sec. C/D), I Semester

1FY3-07 : Basic Mechanical Engineering

Max. Marks: 30

Time: 120 min.

Instructions: * Write your Name & Roll no. (Student ID) on top of question paper. Nothing else should be written on the question paper; otherwise it will be considered as unfair-means.
* Assume missing data suitably, if any.

Section - A

(Short answer questions, Answer in 2-3 linesonly, Attempt all)

5 x 1 = 5 Marks

A1.	Classify the engines according to type of fuel used..
A2.	List the strokes that constitute a four- stroke engine. -
A3.	List the ports used in a 2-stroke engine. .
A4.	Define TDC & BDC in IC engine.
A5.	Define swept volume in IC engine. .

Section - B

(Analytical/Problem solving questions, Answer in 20-30 linesonly, Attempt any 4)

4 x 4 = 16 Marks

B1.	Explain the working of a 2-stroke diesel engine with sketch.
B2.	Explain the differences between a petrol and a diesel engine. .
B3.	Explain the function of rings and cylinder.
B4.	Describe the main component of IC engine with proper diagram.
B5.	Explain the working of 4- stroke petrol engine with neat sketch.
B6.	Describe the classification of IC engines.

Section - C

(Descriptive questions. Answer systematically using logic's & principles. Attempt any 2)

2 x 4.5 = 9 Marks

C1.	Explain the difference between 4 stroke and 2 stroke engine.
C2.	Explain the working of a 4-stroke diesel engine with proper diagram.
C3.	Describe how a four-stroke diesel engine operates and list every component of the Tata Motor Diesel engine.

- Best of Luck -



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Shubham Sharma

ID: 24CS107

MID-TERM EXAMINATION-I

Nov 2024, Odd Semester 2024-25

B. Tech. (Sec. C/D), I Semester

1FY3-09 : Basic Civil Engineering

Max. Marks: 30

Time: 120 min.

Instructions: * Write your Name & Roll no. (Student ID) on top of question paper. Nothing else should be written on the question paper, otherwise it will be considered as unfair-means.
* Assume missing data suitably, if any.

Section - A

(Short answer questions, Answer in 2-3 lines only, Attempt all)

5 x 1 = 5 Marks

A1.	Discuss about 'Principle of Survey'.
A2.	Define Geoditic Survey and Plane Survey.
A3.	Summarize on Objects of Surveying.
A4.	Elist various specialization of Civil Engineering.
A5.	Differentiate between Plan and Map.

Section - B

(Analytical/Problem solving questions, Answer in 20-30 lines only, Attempt any 4)

4 x 4 = 16 Marks

B1.	Discuss the impact of infrastructural Development on the economy of the country.
B2.	Describe the role of Civil Engineers in society.
B3.	Describe in detail about the Measurement on Sloping Ground.
B4.	Explain 'Ranging out of Survey lines'
B5.	Discuss in detail the various scopes in Civil Engineering.
B6.	Discuss in detail about the roles of Site Engineer.

Section - C

(Descriptive questions. Answer systematically using logic's & principles. Attempt any 2)

2 x 4.5 = 9 Marks

C1.	Being a Surveyor, you are supposed to do linear measurement of the ground with an area 50 m ² . Suggest suitable instrument used for the same along with brief description.
C2.	You are supposed to draw a plan of a residential building while provided with a site plan. Explain the importance of Site Plan for making the same.
C3.	Differentiate between Architect and Civil Engineers.

- Best of Luck -

ANAND
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Name: Shubham Sharma

ID: 24C8107

MID-TERM EXAMINATION-II

Jan 2025, Odd Semester 2024-25

B. Tech. (Sec. A/B/C/D), I Semester
1FY2-01: Engineering Mathematics-I

Max. Marks: 30

Time: 120 min.

Instructions: * Write your Name & Roll no. (Student ID) on top of question paper. Nothing else should be written on the question paper; otherwise it will be considered as unfair-means.
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Section - A

(Short answer questions, Answer in 2-3 lines only, Attempt all)

5 x 1 = 5 Marks

A1.	Give the formula of finding Surface Area and Volume of the solid of revolution when the plane curve $x = f(y)$ revolved about Y-axis.
A2.	Define homogeneous functions of two independent variables with an example.
A3.	Find the unit vector normal to surface $x^2y + 2xz = 4$ at point (1, 2, 3)
A4.	Find the first order partial derivatives with respect to x and y of $u = \tan^{-1} \frac{y}{x}$
A5:	Change the order of integration of the following double integration: $\int_0^1 \int_x^1 f(x, y) dx dy$

Section - B

(Analytical/Problem solving questions, Answer in 20-30 lines only, Attempt any 4)

4 x 4 = 16 Marks

B1.	If $u = \tan^{-1} \left\{ \frac{x^3+y^3}{x-y} \right\}$, Prove that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = \sin 2u$
B2.	Discuss the maxima and (or) minima of the function: $x^3 + 3xy^2 - 15x^2 - 15y^2 + 72x$
B3.	Find the volume of the solid generated by revolving the astroid $x^{2/3} + y^{2/3} = a^{2/3}$ about the X-axis.

B4.	Prove that vector $\vec{A} = (x^2 - yz)\hat{i} + (y^2 - zx)\hat{j} + (z^2 - xy)\hat{k}$ is irrotational. Find its scalar potential.
B5.	Change into polar form the following double integration and evaluate it. $\int_0^1 \int_0^{\sqrt{9-x^2}} \sqrt{9-(x^2+y^2)} dx dy$
B6.	If $u = f(r)$; $r^2 = x^2 + y^2$, show that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = f''(r) + \frac{1}{r} f'(r)$

Section - C

(Descriptive questions, Answer systematically using logic's & principles, Attempt any 2)

2 x 4.5 = 9 Marks

C1.	A rectangular box, open at the top is to have a capacity of 32 cubic meters. Find the dimensions so that it requires the least material for its construction.
C2.	The part of the parabola cut off by the latus- rectum revolves about the tangent at the vertex. Find the volume of the reel thus generated.
C3.	Find by using double integration, the area of the region bounded by the curves $x^2 = 4y$ and $y = x$

- Best of Luck -



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ID: 24CS107

MID-TERM EXAMINATION-II

Jan 2025, Odd Semester 2024-25

B. Tech. (Sec. C/D), I Semester

1FY2-03: Engineering Chemistry

Max. Marks: 30

Time: 120 min.

- Instructions:
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Section - A

(Short answer questions, Answer in 2-3 lines only, Attempt all)

5 x 1 = 5 Marks

A1.	Define flash-point of lubricant?
A2.	What will happen if gypsum is added to cement?
A3.	Define viscosity index.
A4.	What are the constituents of Portland cement?
A5.	What is synthetic petrol? Name the two methods that are used to produce synthetic petrol.

Section - B

(Analytical/Problem solving questions, Answer in 20-30 lines only, Attempt any 4)

4 x 4 = 16 Marks

B1.	What is galvanic corrosion? Explain it with suitable example.
B2.	Discuss the property of setting and hardening of cement.
B3.	Discuss the determination of viscosity by Redwood viscometer No. 1 with diagram.
B4.	Explain the thin layer mechanism of lubrication.
B5.	Why is annealing required in the manufacturing of glass?
B6.	What is glass? Discuss the manufacturing of ordinary glass.

Section - C

(Descriptive questions, Answer systematically using logic's & principles, Attempt any 2)

$2 \times 4.5 = 9$ Marks

C1.	<p>Write short notes on:</p> <ul style="list-style-type: none">(a) Manufacture of cement by Rotary kiln method(b) Classification of Lubricants
C2.	What is corrosion? Discuss the mechanism of electrochemical corrosion.
C3.	What is paracetamol drug? Discuss the synthesis, process and uses of paracetamol.

Best of Luck -

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B

ANAND
INTERNATIONAL COLLEGE OF ENGINEERING

Name:

Chubkin Shashwat

III DUCS 102

MID-TERM EXAMINATION-II

Jan 2025, Odd Semester 2024-25

B. Tech. (See.- C/D), I Semester

Sub. 1FY1-02: Communication Skills

Max. Marks: 30

Time: 120 min.

Instructions: * Write your Name & Roll no. (Student ID) on top of question paper. Nothing else should be written on the question paper; otherwise it will be considered as unfair-means.
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Section - A

(Short answer questions, Answer in 2-3 linesonly, Attempt all)

5 x 1 = 5 Marks

A1.	What do you know about curriculum vitae?
A2.	What does the message author want to convey from "how does a land need a man"?
A3.	What is the message of "No men are foreign"?
A4.	The window _____ (is/are) opened every morning by the Janitor.
A5.	I didn't see him leaving the office. – Convert the sentence into passive voice.

Section - B

(Analytical/Problem solvingquestions, Answer in 20-30 linesonly, Attempt any 4)

4 x 4 = 16 Marks

B1.	Convert the following sentences into indirect speech -
	1. Tom asked, "Do you want to sit here?"
	2. Clare said, "Hurrah! Barcelona won the match!"
	3. Mother said, "How is the chicken?"
B2.	Fill in the blanks:
	1. If I had time, I _____ (go) shopping with you.
	2. If you _____ (speak) English, you will get along with them perfectly.
	3. If they had gone for a walk, they _____ (turn) the lights off.
B3.	4. If she _____ (come) to see us, we will go to the zoo.
	Write a paragraph on "your memory of a place that you visited as a child".

B4.	Explain the theme of "where the mind is without fear".
B5.	Give central theme of the story "the night train at Deoli".
B6.	Draft an order latter requesting the supplier of stationary to supply certain items of stationary for your college.

Section - C

(Descriptive questions, Answer systematically using logic's & principles, Attempt any2)

$2 \times 4.5 = 9$ Marks

C1.	Write an application for the post of Junior Engineer in Infosys Company with your updated resume with essential details
C2.	Bring out the mystery and emotions the envelopes the story "The train at the Deoli station"
C3.	Mention all the barriers to communication in detail.

- Best of Luck -



Name: Shubham Sharma

ID: 24CSE107

MID-TERM EXAMINATION-II

Jan 2025, Odd Semester 2024-25

B. Tech. (Sec. C/D), I Semester

1FY3-07 : Basic Mechanical Engineering

Max. Marks: 30

Time: 120 min.

Instructions: * Write your Name & Roll no. (Student ID) on top of question paper. Nothing else should be written on the question paper, otherwise it will be considered as unfair-means.
* Assume missing data suitably, if any.

Section - A

(Short answer questions, Answer in 2-3 lines only, Attempt all)

5 x 1 = 5 Marks

A1.	Differentiate between belt drive and rope drive.
A2.	List out various types of patterns.
A3.	Define role of coolant in refrigeration system.
A4.	Define speed ratio.
A5.	Define soldering processes.

Section - B

(Analytical/Problem solving questions, Answer in 20-30 lines only, Attempt any 4)

4 x 4 = 16 Marks

B1.	Explain the working of Vapour compression refrigeration system with neat sketch.
B2.	Describe the different types of gears with neat sketches.
B3.	Explain Window air conditioning system with neat sketch.
B4.	Explain the difference between forward and backward extrusion.
B5.	Describe the different types of welded joints with diagrams.
B6.	With a simple diagram explain the rolling process.

Section - C

(Descriptive questions. Answer systematically using logic's & principles. Attempt any 2)

$2 \times 4.5 = 9$ Marks

C1.	Define Vapour Absorption Refrigeration System with neat sketch.
C2.	Describe the working of gas welding with proper neat sketch.
C3.	Explain the preparation process before moulding involve in your mechanical workshop.

- Best of Luck -

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ID: 24CS107

MID-TERM EXAMINATION-II

Jan 2025, Odd Semester 2024-25

B. Tech. (Sec. C/D), I Semester

1FY3-09 : Basic Civil Engineering

Max. Marks: 30

Time: 120 min.

Instructions: * Write your Name & Roll no. (Student ID) on top of question paper. Nothing else should be written on the question paper, otherwise it will be considered as unfair-means.
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Section - A

(Short answer questions, Answer in 2-3 lines only, Attempt all)

5 x 1 = 5 Marks

A1.	Define a) Floor space index b) Plinth area
A2.	Describe the site selection criteria for a building.
A3.	Differentiate between "Cautionary Sign & Mandatory Sign."
A4.	Write short note on: a) Green House effect b) Acid rain.
A5.	Describe rain water harvesting.

Section - B

(Analytical/Problem solving questions, Answer in 20-30 lines only, Attempt any 4)

4 x 4 = 16 Marks

B1.	Illustrate the concept of "Sun light & Ventilation".
B2.	Describe in detail the sources, effects and control of Air Pollution.
B3.	Explain in detail carbon cycle with diagram.
B4.	Describe in detail the functions of Ecosystem.
B5.	Describe in brief treatment of waste water.
B6.	Brief out about "Building Bye-Laws".

Section - C

(*Descriptive questions. Answer systematically using logic's & principles. Attempt any 2)*

2 x 4.5 = 9 Marks

C1.	Define Biodiversity. Explain in detail the functions of Biodiversity.
C2.	Explain in detail about the components of building along with their functions.
C3.	Describe the characteristics of various Transportation systems in detail.

- Best of Luck -