

# Blue print of Applied Maths 2 question paper

## Theory Examination

1. Question paper will comprise of 6 questions, each carrying 20 marks.
2. Total 4 questions need to be solved.
3. Q.1 will be compulsory, based on entire syllabus wherein sub questions of 3 to 4 marks will be asked.
4. Remaining questions will be randomly selected from all the modules.

1	a	1.1	Beta and Gamma Functions (03 marks)	(03 marks)
	b	2.2	Finding C.F or P.I	(03 marks)
	c	4.3	Relation between $\Delta, \nabla, E$	(03 marks)
	d	3.2	Change to Polar Co-ordinates and Evaluate	(04 marks)
	e	1.3	Problems on Exact Equations	(04 marks)
	f	3.2	Evaluation of Double Integrals	(03 marks)
2	a	2.1	Reducible to Linear Differential Equations	(06 marks)
	b	3.2	Evaluation by Change of Order of Integration	(06 marks)
	c	1.1	Beta and Gamma Functions / DUIS	(08 marks)
3	a	4.1	Evaluation of Triple Integrations	(06 marks)
	b	4.2	Applications of Double Integrations	(06 marks)
	c	2.3	Cauchy's/ Legendre Homogenous Equations / Variation of Parameter	(08 marks)
	a	1.2	Rectification	(06 marks)
	b	2.2	Linear Differential Equation with constant co-efficient	(06 marks)
	c	3.1	Runga Kutta Method	(08 marks)
5	A	1.3	Reducible to Exact Differential Equations	(06 marks)
	b	3.1	Taylor's/ Euler's / Euler's Modified Method	(06 marks)
	c	4.3	Numerical Integrations	(08 marks)
6	a	2.4	Applications of Differential Equations	(06 marks)
	b	3.2	Double Integration over Given Region	(06 marks)
	c	4.2	Applications of Triple Integrations	(08 marks)

(\*\*Unit titles are written in brief)

Topic No.	Unit No	Unit Title**	Unit wise Marks	Topic wise Marks
<b>01</b>	1.1	Beta & Gamma functions & DUIS	11	<b>27</b>
	1.2	Rectification	06	
	1.3	Exact Differential equation	10	
<b>02</b>	2.1	Reducible to Linear Differential equation	06	<b>29</b>
	2.2	Linear D.E. with constant co-efficient.	09	
	2.3	Cauchy's/Legendre's/variation of parameters	08	
	2.4	Application of D.E	06	
<b>03</b>	3.1	Solving D.E. by Numerical methods	14	<b>33</b>
	3.2	Double Integration	19	
<b>04</b>	4.1	Triple integration	06	<b>31</b>
	4.2	Application of Double integration and triple integration	14	
	4.3	Numerical Integration	11	
<b>Total</b>				<b>120</b>

### Weightage wise Blue print

Topic No.	Unit No	Wtge	Q1 Comp	Q2 Op	Q3 Op	Q4 Op	Q5 Op	Q6 Op
01	1.1	11	03	08				
	1.2	06				06		
	1.3	10	04				06	
02	2.1	06		06				
	2.2	09	03			06		
	2.3	08			08			
	2.4	06						06
03	3.1	14				08	06	
	3.2	19	07(3+4)	06				06
04	4.1	06			06			
	4.2	14			06			08
	4.3	11	03				08	
	Total	120	20	20	20	20	20	20

# FE Sem 2 Applied Physics II (R-2012)

- Total 6 Questions of 15 marks each
- Q-1 Compulsory. Will contain 7 bits of 3 marks each.
- Solve any **Three** from (Q-2 to Q-6)

Question		Marks	Unit No.
Q-1	a	3	1.1
	b	3	1.3
	c	3	2.1
	d	3	2.2
	e	3	3.3
	f	3	4.1
	g	3	5.1
Q-2	a	8	1.2
	b	7	2.1
Q-3	a	8	2.2
	b	7	1.1
Q-4	a	5	1.3
	b	5	3.2
	c	5	5.1
Q-5	a	5	1.3
	b	5	3.3
	c	5	6.1
Q-6	a	5	3.1
	b	5	4.1
	c	5	6.1

## Content Wise Blueprint

Module No.	Unit No.	Unit Title (and contents)	Unit wise Marks*	Module wise total marks*
01	1.1	Interference in thin film - Introduction. Interference due to reflected and transmitted light by thin transparent parallel film. Origin of colours in thin film. Wedge shaped thin film. Newton's rings.	10	33
	1.2	Applications of interference - Determination of thickness of very thin wire or foil. Determination of refractive index of liquid. Wavelength of incident light. Radius of Curvature of lens. Testing of surface flatness. Non-reflecting films. Highly reflecting film.	10	
	1.3	Diffraction of Light - Introduction: Fraunhofer diffraction at single slit. Fraunhofer diffraction at double slit. Diffraction due to N- slits (Diffraction Grating). Missing orders. Highest possible orders. Determination of wavelength of light	13	

		with a plane transmission grating: resolving power of a grating. Dispersive power of a grating.		
<b>02</b>	2.1	<b>Fibre optics:</b> Introduction. Total internal reflection. Basic construction. Optical fibre as light guide and types of optical fibre; Numerical Aperture and maximum angle of acceptance. Numerical Aperture for graded index fibre: V-number. Maximum number of possible orders: Losses in optical fibre: Merits of optical fibre: Applications.	10	<b>20</b>
	2.2	<b>Lasers:</b> Quantum processes as absorption, spontaneous emission and stimulated emission, Meta-stable states, population inversion, pumping, resonance cavity. Einstein's equations, Helium Neon laser, Nd:YAG laser, Semiconductor laser, Applications of laser-Holography (construction and reconstruction of Holograms) and other applications.	10	
<b>03</b>	3.1	Introduction, Wave particle duality, De Broglie Wave length, Experimental verification of de Broglie theory, Properties of matter Waves, Wave packet, group velocity and phase velocity, Wave function, Physical interpretation of wave function	05	<b>18</b>
	3.2	Heisenberg's uncertainty principle. Electron diffraction experiment and Gama ray Microscope experiment. Applications of Uncertainty principle.	05	
	3.3	Schrodinger's time dependent wave equation. Time independent wave equation - Motion of free particle. Particle trapped in one dimensional infinite potential well.	08	
<b>04</b>	4.1	Electrostatic focusing. Magnetostatic focusing. Cathode ray tube (CRT). Cathode ray Oscilloscope (CRO). Application of CRO.	08	<b>08</b>
<b>05</b>	5.1	Introduction, Meissner Effect. Type I and Type-II superconductors. BCS Theory (concept of Cooper pair). Josephson effect. Applications of Superconductors - SQUID, MAGLEV.	07	<b>07</b>
<b>06</b>	6.1	Introduction to Nano-science and Nanotechnology. Two main approaches in nanotechnology - Bottom up technique and top down technique. Tools used in nanotechnology such as Scanning electron microscope. Scanning Tunnelling Microscope. Atomic Force Microscope. Nano materials: Methods to produce nanomaterial. Applications of Nanomaterial. Different forms of carbon Nanoparticles. Carbon nanotubes. Properties and Applications.	10	<b>10</b>
		<b>Grand Total</b>		<b>96#</b>

\*Variation up to  $\pm 2$  marks is possible in the total marks for the module

#Grand total includes all optional Q. Nos. from 2 to 6 and internal options of Q. No. 1

## Distribution of Marks

Module No	Unit No	Weightage	Q.1 (comp) 3 x 7	Q.2 (opt) 8+7	Q.3 (opt) 8+7	Q.4 (opt) 5+5+5	Q.5 (opt) 5+5+5	Q.6 (opt) 5+5+5	Weightage for Module
<b>1</b>	1.1	<b>10</b>	3		7				<b>33</b>
	1.2	<b>10</b>		8					
	1.3	<b>13</b>	3			5	5		
<b>2</b>	2.1	<b>10</b>	3	7					<b>20</b>
	2.2	<b>10</b>	3		8				
<b>3</b>	3.1	<b>5</b>						5	<b>18</b>
	3.2	<b>5</b>				5			
	3.3	<b>8</b>	3				5		
<b>4</b>	4.1	<b>8</b>	3					5	<b>8</b>
<b>5</b>	5.1	<b>7</b>	3			5			<b>7</b>
<b>6</b>	6.1	<b>10</b>					5	5	<b>10</b>
<b>Total</b>		<b>96 (60)</b>	21 (15)	15	15	15	15	15	<b>96</b>

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## ENGINEERING DRAWING (ED)

Note:

1. Question No. 1 is compulsory.
2. Attempt any 3 questions from the remaining 5 questions.

1	a	Engineering Curves	(06 marks)
	b	Orthographic Projections (Any two views only without section)	(09 marks)
2		Sectional Orthographic Projections (Three views) (Full or half section)	(15 marks)
3		Projection of Solids (Pyramid/ Cone) (Three stage)	(15 marks)
4	a	Projection of Solids (Prism/Cylinder) (Only two stage)	(06 marks)
	b	Isometric Projection (With curved surfaces)	(09 marks)
5		Section of solids and Development of surfaces of sectioned solid (In one problem)	(15 marks)
6	a	Projection of Lines	(09 marks)
	b	Simple Isometric Projection (With plane surfaces)	(06 marks)



# Structured Programming Approach (SPA) First Year Engg R -2012

Combined Content-wise and Ability-wise Blue Print

Topic No	Sub-Topic / Unit No	Sub-topic Unit Title	Weightage	Q.1	Q.2	Q.3	Q.4	Q.5	Q.6
01	1.1	Problem Definition	04	04 (C)	----	----	----	----	----
02		Algorithms	12						
02	2.1	Developing Algorithms		----	----	06 (A)	06 (A)	----	----
	2.2	Efficiency of Algorithms		----	----	----		----	----
03		Expressing Algorithms-Sequence	09						
	3.1	Expressions in C; Arithmetic and Boolean expressions		----	----	----	----	06 (K)	----
	3.2	Use of Standard Functions		03 (K)	----	----	----	----	----
	3.3	Assignment Statements		----	----	----	----	----	----
	3.4	Input and Outputs		----	----	----	----	----	----
4		Concept of Scalar and Data Types	05						
	4.1	Scalar Data types in C, Scope and Lifetime, type conversion		----	05 (C)	----	----	----	----
5		Expressing Algorithms-Iteration	15						
	5.1	Ordering a Solution in loop		----	----	----	----	----	----
	5.2	C-Control Structures for Iteration		03 (C)	----	06 (A)	06 (A)	----	----

06		Expressing Algorithms- Selection	12						
	6.1	C-Control Structures for selection		----	----	----	----	06 (A)	06 ( C)
7		Decomposition of Solution	23						
	7.1	Defining functions in C		----	----	----	----	----	----
	7.2	Function and Parameters		04 ( C)	05 (A)	----	----	----	----
	7.3	Introduction to recursive functions		----		08 (A)	----	----	06 (A)
8		Additional C Data Types	40						
	8.1	Arrays- Single & Multidimensional		----	----	----	08 (A)	08 (A)	----
	8.2	Strings		03 (A)	----	----	----	----	05 (A)
	8.3	Structures		----	10(A)	----	----	----	----
	8.4	Files		----	----	----	----	----	03 (C)
	8.5	Pointers		03 (C)	----	----	----	----	----
		Total	120	20	20	20	20	20	20

# Blueprint for FEC206 Communication Skills (Revised Syllabus)

## Year 2012-13

### *Format-wise Blueprint: Communication Skills (FEC206) (R - 2012 -syllabus)*

- Total No. of Questions in Question paper : **6**
- Marks per Question: **10**
- Qs to be solved: **4**
- **Question No. 1** : Compulsory and based on entire syllabus except “Summarization” with sub- questions of 2 to 4 marks.
- Remaining questions to be randomly selected from all modules except “Summarization”\*
- Weightage of marks should be proportional to number of hours assigned to each Module.

*\*A question on Summarization should be set as a compulsory question in Test Two (internal assessment)*

### *Content-wise blueprint*

Program Name & Code: First year engineering Semester II

Course Name & Code: Communication Skills FEC206

Max. Marks: 40

Time: 2 hrs

Topic No.	Sub-topic / Unit No.	Sub-topic/Unit title	Unitwise marks	Topicwise Total marks
<b>1.Communication Theory</b>	1.1	Communication Process & Objectives	04	16
	1.2	Barriers to Communication	04	
	1.3	Methods & Channels	04	
	1.4	Techniques to improve communication	04	
<b>2. Grammar &amp;Comprehension</b>	2.1	Comprehension	04	07
	2.1	Grammar	03	
<b>3.Business Correspondence</b>	3.1	Principles of Business Correspondence	03	12
	3.2	Parts & Types	03	
	3.3	Types of letters	06	
<b>4. Technical Writing</b>	4.1	Definitions in Technical writing	01	05
	4.2	Instructions	02	
	4.3	Language exercises on Descriptions and Explanation of Processes	02	
			Total	40

*Communication Skills (FEC206) (R - 2012 -syllabus)*

Weightage per topic per question:

Topic No.	Unit No.	Weightage	Q1 (Comp)	Q2 (Op)	Q3 (Op)	Q4 (Op)	Q5 (Op)	Q6 (Op)
<b>1.</b>	1.1	04	--	04	--	--	--	--
	1.2	04	04	--	--	--	--	--
	1.3	04	--	--	04	--	--	04
	1.4	04	--	--	--	04	04	--
<b>2.</b>	2.1	04	--	--	--	--	--	04
	2.2	03	02	--	--	--	01	01
<b>3.</b>	3.1	03	02	01	--	--	--	--
	3.2	03	--	03	--	--	03	--
	3.3	06	--	--	06	06	--	--
<b>4.</b>	4.1	01	--	--	--	--	--	01
	4.2	02	02	--	--	--	--	--
	4.3	02	--	02	--	--	02	--
<b>Total</b>		<b>40</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>

*Ability-wise blueprint*

Topic	Knowledge	Comprehension	Application	Higher Abilities	Total
<b>1.</b>	04	08	04	--	16
<b>2.</b>	02	02	03	--	07
<b>3.</b>	03	03	06	--	12
<b>4.</b>	03	02	--	--	05
<b>Total</b>	<b>12</b>	<b>15</b>	<b>13</b>	<b>--</b>	<b>40</b>