



**NSRIT**

**AUTONOMOUS**

**SEMESTER END  
EXAMINATION MODEL  
QUESTION PAPERS**

**First Semester  
B. Tech.**

**ACADEMIC  
REGULATION  
2020**

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**Semester End Examination, May / June 2021  
Model Question Paper**

<b>Degree</b>	B. Tech. (U. G.)	<b>Program</b>	All Branches			<b>Academic Year</b>	2020 - 2021
<b>Course Code</b>	20HSX01	<b>Test Duration</b>	3 Hrs.	Max. Marks	70	<b>Semester</b>	I
<b>Course</b>	<b>COMMUNICATIVE ENGLISH</b>						

**Part A (Short Answer Questions 5 x 2 = 10 Marks)**

No.	Questions (1 through 5)	Learning Outcome (s)	DoK
1	What does Kalam have to say about the Constitution?	20HSX01.1	L1
2	During the freedom movement, what did Gandhiji focus on? Answer with reference to the text	20HSX01.2	L1
3	What are the three factors that Nadella lists as his formative influences?	20HSX01.3	L1
4	What was the second story of Steve jobs is all about?	20HSX01.4	L1
5	Who called Hawking 'a brilliant and an extraordinary mind'?	20HSX01.5	L1

**Part B (Long Answer Questions 5 x 12 = 60 Marks)**

No.	Questions (6 through 15)	Marks	Learning Outcome (s)	DoK
6 (a)	What is ironic about the way the story Deliverance ends?	6M	20HSX01.1	L1
6 (b)	Write a paragraph on "The influence of the internet on our lives"	6M	20HSX01.1	L2
<b>OR</b>				
7 (a)	What is the central idea of the poem 'Telephone Conversation'?	8M	20HSX01.1	L2
7 (b)	Correct the following sentences: 1. The jury have given their verdict 2. Priya is more taller than her sister 3. The injured was rushed to the hospital 4. A little learning are a dangerous thing	4M	20HSX01.1	L1
8 (a)	What kind of value does the hypothetical Shakespeare's sister assume in the final paragraph? Describe the tone of this section	8M	20HSX01.2	L2
8 (b)	Use the following phrasal verbs in sentences: 1. Get into 2. Run across 3. Backup 4. Broke down	4M	20HSX01.2	L1
<b>OR</b>				
9 (a)	What do you learn from the life of 'Stephen Hawking'?	6M	20HSX01.2	L1
9 (b)	Write a letter of complaint to the Branch Manager of a company regarding a problem with the automobile you purchased last week	6M	20HSX01.2	L2
10 (a)	Identify the specific form of inequality being referred to in the opening lines of the poem Bosom friend	8M	20HSX01.3	L2
10 (b)	Antonyms 1. Stabilize 2. Multitude 3. Foster 4. Startling	4M	20HSX01.3	L1
<b>OR</b>				
11 (a)	Contrast the characters of Dukhi and Chikhuri	8M	20HSX01.3	L2
11 (b)	Fill in the blanks with appropriate prepositions: 1. You are accountable _____ all your actions 2. She was accused _____ stealing the necklace 3. The meeting started _____ 10 O' Clock 4. The opening speech will be made _____ the Principal	4M	20HSX01.3	L1

12 (a)	How does Hawking change the perceptions of people with disabilities? What have you admired most about Prof. Hawking?	6M	20HSX01.4	L2
12 (b)	Draft a letter of application to the District Educational Officer of your district board for scholarship to enable you to pursue further studies abroad	6M	20HSX01.4	L2
<b>OR</b>				
13 (a)	What was Virginia Woolf's intention in writing the story 'Shakespeare's sister'?	6M	20HSX01.4	L2
13 (b)	Write a paragraph on "The necessity for a dress code in college"	6M	20HSX01.4	L2
<b>OR</b>				
14 (a)	Analyze the complex attitude of her family particularly her father, towards Judith in Woolf's imaginative reconstruction	6M	20HSX01.5	L2
14 (b)	Give the meaning of the following idioms: 1. Once in a blue moon 2. Get back to the drawing board 3. Barking up the wrong	6M	20HSX01.5	L1
<b>OR</b>				
15 (a)	What are the three factors that Nadella lists as his formative influences?	8M	20HSX01.5	L2
15 (b)	Synonyms 1. Regime 2. Dismantle 3. Reliant 4. Incurable	4M	20HSX01.5	L1

**Semester End Examination, May / June 2021**  
**Model Question Paper**

<b>Degree</b>	B. Tech. (U. G.)	<b>Program</b>	Common to all branches			<b>Academic Year</b>	2020 - 2021
<b>Course Code</b>	20BSX11	<b>Test Duration</b>	3 Hrs.	Max. Marks	70	<b>Semester</b>	I
<b>Course</b>	<b>LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS</b>						

**Part A (Short Answer Questions 5 x 2 = 10 Marks)**

No.	Questions (1 through 5)	Learning Outcome (s)	DoK
1	Define Echelon form of a matrix	20BSX11.1	L1
2	Write the nature of QF $2x^2+4y^2+5z^2$	20HSX11.2	L1
3	Solve $(x+2y-10)dx+(2x-y+1)dy=0$	20HSX11.3	L2
4	Solve $(D^2+1)y=0$ given that $y(0)=2, y(\frac{\pi}{2})=-2$	20HSX11.4	L2
5	Find $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$ if $u = \sin^{-1} \left( \frac{x}{y} \right)$	20HSX11.5	L2

**Part B (Long Answer Questions 5 x 12 = 60 Marks)**

No.	Questions (6 through 15)	Marks	Learning Outcome (s)	DoK
6 (a)	Obtain non – singular matrices P and Q such that PAQ is of the form $\begin{bmatrix} I_r & 0 \\ 0 & 0 \end{bmatrix}$ where $A = \begin{bmatrix} 1 & 1 & 2 \\ 1 & 2 & 3 \\ 0 & -1 & -1 \end{bmatrix}$ and hence obtain the rank	6M	20BSX11.1	L2
6 (b)	Show that the only real value of $\lambda$ , for which the following equations have non- zero solution is 6 and solves it. $x + 2y + 3z = \lambda x$ , $3x + y + 2z = \lambda y$ , $2x + 3y + z = \lambda z$	6M	20BSX11.1	L3

**OR**

7 (a)	Find the values of 'a' and 'b' for which the equations $x + y + z = 3$ , $x + 2y + 2z = 6$ , $x + ay + 3z = b$ have (i) No solution (ii) A unique solution (iii) Infinite number of solutions	6M	20BSX11.1	L3
7 (b)	Find Eigen values and Eigen vectors of the matrix $A = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$	6M	20BSX11.1	L2

8 (a)	Show that the matrix $A = \begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}$ Diagonalizable	6M	20HSX11.2	L2
8 (b)	Verify Cayley – Hamilton theorem and find the inverse of $A = \begin{bmatrix} 1 & 0 & 3 \\ 2 & -1 & -1 \\ 1 & -1 & 1 \end{bmatrix}$	6M	20HSX11.2	L2

**OR**

9 (a)	Find the singular value decomposition of $A = \begin{bmatrix} 0 & 1 & 1 \\ \sqrt{2} & 2 & 0 \\ 0 & 1 & 1 \end{bmatrix}$	6M	20HSX11.2	L2
9 (b)	Reduce the quadratic form $2x^2 + 2y^2 + 2z^2 - 2xy - 2yz - 2zx$ to canonical form by an orthogonal transformation and hence find its Rank, Index, Signature, and Nature of the quadratic form	6M	20HSX11.2	L2

10 (a)	Solve $\frac{dy}{dx} + \frac{y}{x} = y^2x$	6M	20HSX11.3	L2
10 (b)	A body is originally at 80 °C and cools down to 60 °C in 20 minutes. If the temperature of the air is 40 °C. Find the temperature of the body after 40 minutes	6M	20HSX11.3	L3
<b>OR</b>				
11 (a)	Solve $2 - (x^2 + y^2 + 1) = 0$	6M	20HSX11.3	L2
11 (b)	Find the Orthogonal Trajectories of the family of curves $r = \frac{2a}{1 + \cos \theta}$	6M	20HSX11.3	L3
<b>OR</b>				
12 (a)	Solve $(D^2 - 4D - 5)y = e^{2x} + \cos 2x + x$	6M	20HSX11.4	L2
12 (b)	Apply the method of variation of parameters to solve $(D^2 + 1)y = \operatorname{cosec} x$	6M	20HSX11.4	L3
<b>OR</b>				
13 (a)	Solve $(D^2 - 3D + 2)y = xe^x + \cos 2x$	6M	20HSX11.4	L2
13 (b)	A condenser of capacity C discharged through an inductance L and resistance R in series and the charge q at time t satisfies the equation $L \frac{d^2q}{dt^2} + R \frac{dq}{dt} + \frac{q}{LC} = 0$ . Given that L=0.75 henneries, R = 50 ohms, C = $3 \times 10^{-6}$ farads and that when t = 0 charge q is 0.003 coulombs and the current $\frac{dq}{dt} = 0$ . Obtain the values of q in terms of t	6M	20HSX11.4	L3
14 (a)	Verify Rolle's theorem for $f(x) = x^2 - 2x - 3$ in the interval (1, -3)	6M	20HSX11.5	L2
14 (b)	Discuss the maximum and minimum values of $x^2 + y^2 + 6x + 12$	6M	20HSX11.5	L3
15 (a)	Expand $e^x \cos y$ near $(1, \frac{\pi}{4})$ Taylors series method	6M	20HSX11.5	L2
15 (b)	Prove that if $u = 2x - y + 3z, v = 2x - y - z, w = 2x - y + z$ are functionally dependent	6M	20HSX11.5	L3

**Semester End Examination, May / June 2021  
Model Question Paper**

<b>Degree</b>	B. Tech. (U. G.)	<b>Program</b>	CE / ME			<b>Academic Year</b>	2020 - 2021
<b>Course Code</b>	20BSX21	<b>Test Duration</b>	3 Hrs.	Max. Marks	70	<b>Semester</b>	I
<b>Course</b>	<b>ENGINEERING CHEMISTRY</b>						

**Part A (Short Answer Questions 5 x 2 = 10 Marks)**

No.	Questions (1 through 5)	Learning Outcome (s)	DoK
1	Define sludge and Scale formation in boilers	20BSX21.1	L1
2	Define Corrosion with an example	20BSX21.2	L1
3	How carbon and sulphur present in coal are estimated?	20BSX21.3	L1
4	Differentiate between thermoplastic and thermosetting resin	20BSX21.4	L2
5	What is Adsorption?	20BSX21.5	L1

**Part B (Long Answer Questions 5 x 12 = 60 Marks)**

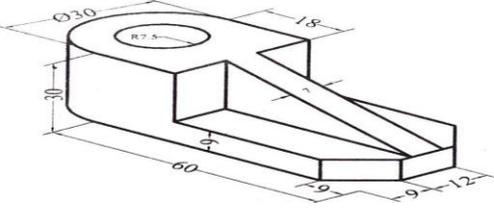
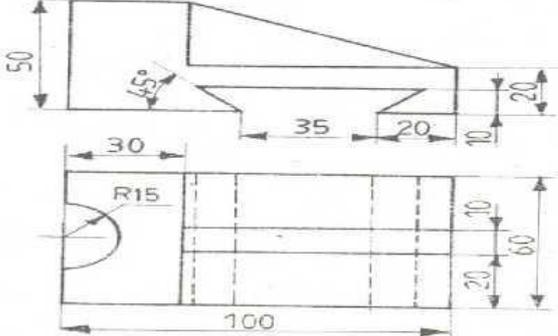
No.	Questions (6 through 15)	Marks	Learning Outcome (s)	DoK
6 (a)	What are the specifications of the drinking water BIS and WHO Standards?	6M	20BSX21.1	L1
6 (b)	Describe the estimation of hardness by EDTA method	6M	20BSX21.1	L2
<b>OR</b>				
7 (a)	List any four advantages and disadvantages of Zeolite process	7M	20BSX21.1	L1
7 (b)	Explain about demineralization of brackish water by Electro dialysis	5M	20BSX21.1	L2
8 (a)	Explain with neat diagrams the construction of (i) Hydrogen electrode (ii) Calomel Electrode	6M	20BSX21.2	L2
8 (b)	Write the construction, working principle and applications of MCFC	6M	20BSX21.2	L2
<b>OR</b>				
9 (a)	Explain the factors influencing the rate of corrosion	6M	20BSX21.2	L2
9 (b)	Write notes on anodic and cathodic coating	6M	20BSX21.2	L2
10 (a)	Explain the proximate analysis of coal and its applications	6M	20BSX21.3	L2
10 (b)	A coal has the composition by weight: C= 80%, O= 2%, S= 1.5%, N=1.5% and remaining hydrogen and ash. Net calorific value of the coal found to be 8490.5 K.cal/Kg. Calculate the percentage of hydrogen and high calorific value of coal	6M	20BSX21.3	L2
<b>OR</b>				
11 (a)	What is cracking? Discuss any one catalytic cracking method for synthesis of petrol	6M	20BSX21.3	L2
11 (b)	Discuss Orsat process for analysis of flue gases	6M	20BSX21.3	L2
12 (a)	Explain the free radical mechanism of addition polymerization?	6M	20BSX21.4	L2
12 (b)	Write the preparation, properties and application of Buna-S rubber and Thiokol	6M	20BSX21.4	L2
<b>OR</b>				

13 (a)	Discuss the classification and properties of Refractories	6M	20BSX21.4	L2
13 (b)	Explain in detail about setting and hardening of Portland cement?	6M	20BSX21.4	L2
<b>OR</b>				
14 (a)	Discuss the principle, instrumentation and applications of Transmission Electron Microscopy	7M	20BSX21.5	L2
14 (b)	Write a note on Micelle formation	5M	20BSX21.5	L2
<b>OR</b>				
15 (a)	Explain the BET equation	5M	20BSX21.5	L2
15 (b)	Write a brief note on applications of colloids and nano materials	7M	20BSX21.5	L2

**Semester End Examination, May / June 2021  
Model Question Paper**

<b>Degree</b>	B. Tech. (U. G.)	<b>Program</b>	Common to all branches			<b>Academic Year</b>	2020 - 2021
<b>Course Code</b>	20ESX01	<b>Test Duration</b>	3 Hrs.	Max. Marks	70	<b>Semester</b>	I
<b>Course</b>	<b>ENGINEERING DRAWING</b>						

<b>Part A (Short Answer Questions 2 x 5 = 10 Marks)</b>				
No.	Questions (1 through 2)		Learning Outcome (s)	DoK
1	Draw the projections of the following points on the same ground line, keeping the projectors 25 mm apart. (i) D 25 mm below the HP and 25 mm behind the VP (ii) E 15 mm above the HP and 50 mm behind the VP (iii) F 40 mm below the HP and 25 mm in front of the VP		20BSX11.2	L1
2	A hexagonal prism, base 40 mm side and height 40 mm has a hole of 40 mm diameter drilled centrally through its ends. Draw its projections when it is resting on one of its corners on HP with its axis inclined at 60° to the HP		20HSX11.4	L3
<b>Part B (Long Answer Questions 5 x 12 = 60 Marks)</b>				
No.	Questions (3 through 12)	Marks	Learning Outcome (s)	DoK
3 (a)	Construct a hexagon of side 28 mm when one side is vertical	6M	20BSX11.1	L2
3 (b)	Construct an ellipse of 120 mm major axis and 80 mm minor axis using concentric circle methods?	6M	20BSX11.1	L3
<b>OR</b>				
4 (a)	Construct a diagonal scale of RF= 1: 32, 00, 000 to show kilometers and long enough to measure upto 400 km. Show distance of 257 km and 333 km on your scale	6M	20BSX11.1	L3
4 (b)	Draw a Vernier scale of RF=1/25 to read centimeters up to 4 m and on it, shown lengths representing 2.39 m and 0.91 m	6M	20BSX11.1	L2
5 (a)	Mark the projections of the following points on a common reference line, keeping the projectors 35 mm apart. (i) 25 mm above the HP and 40 mm behind the VP (ii) 20 mm above the HP and on the VP (iii) 30 mm below the HP and 45 mm in front of the VP	6M	20HSX11.2	L3
5 (b)	A line AB, 65 mm long, has its end A 20 mm above the HP and 25 mm in front of the VP. The end B is 40 mm above the HP and 65 mm in front of the VP. Draw the projections of AB and show its inclinations with the HP and the VP?	6M	20HSX11.2	L3
<b>OR</b>				
6 (a)	A line RS 40 mm long is parallel to both the planes. It is 20 mm above the HP and 15mm in front of the VP. Draw the projections of the line?	6M	20HSX11.2	L2
6 (b)	A line AB, 90mm long, is inclined at 45° to the HP and its top view makes an angle of 60° with the VP. The end A is in the HP and 12 mm in front of the VP. Draw its front view and find its true inclination with the VP.	6M	20HSX11.2	L2
7 (a)	A thin 30°-60° Set square has its longest edge in VP and inclined at 30° to HP. Its surface makes 45° with VP. Draw its projections	6M	20HSX11.3	L2
7 (b)	Draw the projections of a circle of 75 mm diameter having the end A of the diameter AB in the HP, the end B in the VP, and the surface inclined at 30° to the HP and at 60° to the VP	6M	20HSX11.3	L3

<b>OR</b>				
8 (a)	A regular pentagonal lamina of side 25 mm is lying in such way that the one of its base edge touches both the reference planes. If the lamina makes $40^\circ$ with the VP and perpendicular to profile plane, draw the projections of the lamina	6M	20HSX11.3	L2
8 (b)	Draw the projections of a pentagonal sheet of 26 mm side, having its surface inclined at $30^\circ$ to VP. It's one side is parallel to VP and inclined at $45^\circ$ to HP	6M	20HSX11.3	L3
<b>OR</b>				
9 (a)	A hexagonal prism with side of base 25 mm and 50 mm long is resting on a corner of its base on HP. Draw the projections of the prism when its axis is making $30^\circ$ with HP and parallel to V.P	6M	20HSX11.4	L2
9 (b)	Draw the projections of a cylinder 75 mm diameter and 100 mm long. Lying on the ground with its axis inclined at $30^\circ$ to the VP and $45^\circ$ inclined to HP	6M	20HSX11.4	L3
<b>OR</b>				
10 (a)	Draw the projections of a cone, base 75 mm diameter and axis 100 mm long, lying on the ground on one of its generators with the axis parallel to the VP	6M	20HSX11.4	L2
10 (b)	A square prism of side of base 30 mm and axis 55 mm long lies on one of its generator in the HP and its faces equally inclined to the HP. Draw its projections when its axis is inclined at an angle of $60^\circ$ to the VP?	6M	20HSX11.4	L3
11	<p>Draw the front view, top view and side view from the isometric view. All dimensions are in mm</p> 	12M	20HSX11.5	L4
<b>OR</b>				
12	<p>Draw the isometric view of figure</p> 	12M	20HSX11.5	L4

**Semester End Examination, May / June 2021  
Model Question Paper**

<b>Degree</b>	B. Tech. (U. G.)	<b>Program</b>	CSE			<b>Academic Year</b>	2020 - 2021
<b>Course Code</b>	20ESX02	<b>Test Duration</b>	3 Hrs.	Max. Marks	70	<b>Semester</b>	I
<b>Course</b>	<b>PROGRAMMING FOR PROBLEM SOLVING USING 'C'</b>						

**Part A (Short Answer Questions 5 x 2 = 10 Marks)**

No.	Questions (1 through 5)	Learning Outcome (s)	DoK
1	What are flowchart & algorithm?	20ESX02.1	L1
2	Write the function of break and continue statements	20ESX02.2	L1
3	Define array. Write the syntax for declaration of initialization of 1D array	20ESX02.3	L1
4	What is the difference between structure and union	20ESX02.4	L2
5	List out any two file error handling functions	20ESX02.5	L1

**Part B (Long Answer Questions 5 x 12 = 60 Marks)**

No.	Questions (6 through 15)	Marks	Learning Outcome (s)	DoK
6 (a)	Write the algorithm and corresponding flowchart to find the biggest of three numbers	8M	20ESX02.1	L3
6 (b)	What are variables? List the rules to be followed while naming variables	4M	20ESX02.1	L1
<b>OR</b>				
7 (a)	Write a program to add 2 numbers. Explain structure of C program with it	8M	20ESX02.1	L3
7 (b)	Write the different categories of operators supported in C	4M	20ESX02.1	L1
8 (a)	Write the syntax of all looping statements supported by C	6M	20ESX02.2	L1
8 (b)	Write a program to check whether the given number is prime or not	6M	20ESX02.2	L3
<b>OR</b>				
9 (a)	Write a program to check whether the given character is vowel or not using switch-case statement	6M	20ESX02.2	L3
9 (b)	Describe any 3 storage classes	6M	20ESX02.2	L1
10 (a)	Write a program to add 2 matrices	6M	20ESX02.3	L3
10 (b)	With syntax and example, describe any 6 string handling functions	6M	20ESX02.3	L2
<b>OR</b>				
11 (a)	Write a program to find the sum of first 20 even numbers using user-defined function	8M	20ESX02.3	L3
11 (b)	Write any 6 built-in functions for mathematical operations	4M	20ESX02.3	L2
12 (a)	What are pointers? Describe pointer arithmetic with examples	6M	20ESX02.4	L2
12 (b)	Explain call by reference mechanism with an example program	6M	20ESX02.4	L2
<b>OR</b>				
13(a)	Explain usage of structure in terms of definition, declaration and accessing members with syntax and example	12M	20ESX02.4	L2
14 (a)	Explain about random access files with necessary functions, syntax and example program	12M	20ESX02.5	L2
<b>OR</b>				

15 (a)	Describe pre-processor directives	6M	20ESX02.5	L2
15 (b)	Explain command line arguments	6M	20ESX02.5	L2

**Semester End Examination, May / June 2021  
Model Question Paper**

<b>Degree</b>	B. Tech. (U. G.)	<b>Program</b>	CSE, CSM/D & EEE			<b>Academic Year</b>	2020 - 2021
<b>Course Code</b>	20BSX33	<b>Test Duration</b>	3 Hrs.	Max. Marks	70	<b>Semester</b>	I
<b>Course</b>	<b>Applied Physics</b>						

**Part A (Short Answer Questions 5 x 2 = 10 Marks)**

No.	Questions (1 through 5)	Learning Outcome (s)	DoK
1	List any two difference between Fresnel's and Fraunhofer diffraction	20BSX33.1	L2
2	Define spontaneous and stimulated emission of radiation	20BSX33.2	L1
3	Define Dielectric polarization	20BSX33.3	L1
4	What is the Physical significance of wave function?	20BSX33.4	L1
5	What are Intrinsic Semiconductors?	20BSX33.5	L1

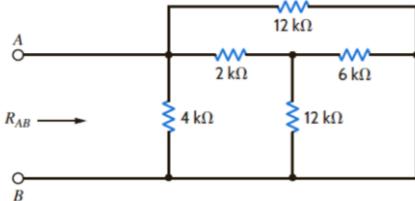
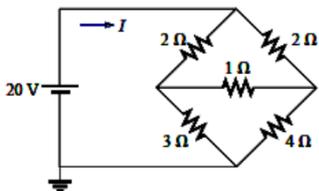
**Part B (Long Answer Questions 5 x 12 = 60 Marks)**

No.	Questions (6 through 15)	Marks	Learning Outcome (s)	DoK
6 (a)	Derive conditions for dark and bright fringes in case of thin films reflective system	9M	20BSX33.1	L2
6 (b)	Explain the concept of coherence	3M	20BSX33.1	L2
<b>OR</b>				
7 (a)	Deduce conditions for central maxima and minims in Fraunhofer single slit experiment	8M	20BSX33.1	L2
7 (b)	Derive condition for maximum orders possible with a grating	4M	20BSX33.1	L2
8 (a)	Explain the construction and working of a Ruby laser. What are the merits of this laser?	8M	20BSX33.2	L2
8 (b)	Interpret any four applications of lasers	4M	20BSX33.2	L2
<b>OR</b>				
9 (a)	Explain the classification of fibers based on modes and refracting index profile	9M	20BSX33.2	L2
9 (b)	Explain any three applications of optical fibers	3M	20BSX33.2	L2
10 (a)	Explain in detail the classification of magnetic materials	8M	20BSX33.3	L1
10 (b)	Compare the differences between soft and hard magnetic materials	4M	20BSX33.3	L2
<b>OR</b>				
11 (a)	Define various types of polarizations in a dielectric material	8M	20BSX33.3	L1
11 (b)	Outline the applications of dielectric materials	4M	20BSX33.3	L2
12 (a)	Show that the energies of a particle in a potential box are quantized	8M	20BSX33.4	L2
12 (b)	An electron is confined to a potential box of length $2A^0$ calculate energies of second and fourth quantum states in eV	4M	20BSX33.4	L2
<b>OR</b>				
13 (a)	By applying quantum free electron theory, derive expression for electron conductivity of metals	8M	20BSX33.4	L2
13 (b)	Calculate the Fermi function for an energy $k BT$ above the Fermi energy	4M	20BSX33.4	L2
14 (a)	Explain Bloch theorem	5M	20BSX33.5	L2

14 (b)	Derive the effective mass of an electron and write concept of hole	7M	20BSX33.5	L2
<b>OR</b>				
15 (a)	Explain classification of materials in to conductors, semiconductors and insulators based on band theory	8M	20BSX33.5	L2
15 (b)	Explain the process of determination of Hall coefficient	4M	20BSX33.5	L2

**Semester End Examination, May / June 2021**  
**Model Question Paper**

<b>Degree</b>	B. Tech. (U. G.)	<b>Program</b>	ECE & EEE			<b>Academic Year</b>	2020 - 2021
<b>Course Code</b>	20ESX03	<b>Test Duration</b>	3 Hrs.	Max. Marks	70	<b>Semester</b>	I
<b>Course</b>	<b>BASIC ELECTRICAL ENGINEERING</b>						

<b>Part A (Short Answer Questions 5 x 2 = 10 Marks)</b>				
No.	Questions (1 through 5)	Learning Outcome (s)	DoK	
1	What is meant by unilateral and bilateral circuit?	20ESX03.1	L1	
2	What is the working principle of D. C. motor?	20ESX03.2	L1	
3	What is the main purpose of conducting OC and SC tests in a transformer?	20ESX03.3	L1	
4	Define slip	20ESX03.4	L1	
5	Give the classification of single phase induction motor	20ESX03.5	L1	
<b>Part B (Long Answer Questions 5 x 12 = 60 Marks)</b>				
No.	Questions (6 through 15)	Marks	Learning Outcome (s)	DoK
6 (a)	Classify different types of network elements	7M	20ESX03.1	L2
6 (b)	Find R <sub>AB</sub> in the following circuit using star-delta transformation 	5M	20ESX03.1	L3
<b>OR</b>				
7 (a)	Explain dependent and independent sources	7M	20ESX03.1	L2
7 (b)	Using $\Delta$ -Y or Y- $\Delta$ conversion, find the current I in the circuit shown in figure 	5M	207ESX03.1	L3
<b>OR</b>				
8	Explain the principle of operation of a D. C. generator and derive its e.m.f. equation	12M	20ESX03.2	L2
<b>OR</b>				
9	Explain the necessity of starter in a D. C. motor and describe three point starter with a neat sketch. Also give the applications	12M	20ESX03.2	L2
10	With the help of neat sketch, explain in detail about parallel operation of single phase transformers	12M	20ESX03.3	L2
<b>OR</b>				

11	Explain OC test and SC test of single phase transformer in detail with neat sketches	12M	20ESX03.3	L2
12 (a)	Derive the e.m.f. equation for an alternator; explain the meaning of (i) distribution factor (ii) coil span factor	7M	20ESX03.4	L3
12 (b)	A 10 MVA 6.6 kV, 3 phase star connected alternator gave open circuit and short circuit data as follows: Field current in amps : 25 50 75 100 125 150 OC voltage in kV (L-L) : 2.4 4.8 6.1 7.1 7.6 7.9 SC Current in Amps : 288 528 875 Find the voltage regulation at full load 0.8 pf lagging by e.m.f. method. Armature resistance per phase = 0.13 $\Omega$	5M	20ESX03.4	L3
<b>OR</b>				
13 (a)	Explain the working principle of three phase induction motor with neat sketches	6M	20ESX03.4	L3
13 (b)	Derive the torque equation of induction motor	6M	20ESX03.4	L3
14 (a)	Explain the principle of operation and construction of single phase induction motor	7M	20ESX03.5	L3
14 (b)	Explain the working of capacitor-start type single phase induction motor	5M	20ESX03.5	L3
<b>OR</b>				
15 (a)	Explain the working principle of A. C. servo motors with neat sketches	6M	20ESX03.5	L3
15 (b)	Explain the working principle of shaded pole induction motor	6M	20ESX03.5	L3

**Semester End Examination, May / June 2021  
Model Question Paper**

<b>Degree</b>	B. Tech. (U. G.)	<b>Program</b>	ECE			<b>Academic Year</b>	2020 - 2021
<b>Course Code</b>	20BSX23	<b>Test Duration</b>	3 Hrs.	Max. Marks	70	<b>Semester</b>	I
<b>Course</b>	<b>APPLIED CHEMISTRY</b>						

**Part A (Short Answer Questions 5 x 2 = 10 Marks)**

No.	Questions (1 through 5)	Learning Outcome (s)	DoK
1	Define stereospecific polymerization	20BSX23.1	L1
2	What is Electrochemical cell?	20BSX23.2	L1
3	Write De-Broglie's equation	20BSX23.3	L2
4	What is electromagnetic spectrum?	20BSX23.4	L1
5	How is supramolecular chemistry useful?	20BSX23.5	L1

**Part B (Long Answer Questions 5 x 12 = 60 Marks)**

No.	Questions (6 through 15)	Marks	Learning Outcome (s)	DoK
6 (a)	Explain physical and mechanical properties of polymer	6M	20BSX23.1	L2
6 (b)	Explain the Free radical mechanism of addition polymerization	6M	20BSX23.1	L2
<b>OR</b>				
7 (a)	Write the preparation, properties and application of Buna-S rubber and Nylon-6, 6	5M	20BSX23.1	L2
7 (b)	What are conducting polymers? How are they classified? Write the synthesis and engineering applications of conducting polymers	7M	20BSX23.1	L2
8 (a)	Explain the construction & working of Calomel electrode	5M	20BSX23.2	L2
8 (b)	Define conductometric titrations. Discuss all types of acid-base conductometric titrations and explain the nature of the graphs between conductance and volume of titrant used	7M	20BSX23.2	L2
<b>OR</b>				
9 (a)	Explain construction, working and applications of photovoltaic cell	6M	20BSX23.2	L2
9 (b)	Derive the Nernst equation for a single electrode potential and write its applications	6M	20BSX23.2	L2
10 (a)	Explain the energy level diagrams of CO and NO molecule. Explain their magnetic nature and bond order	7M	20BSX23.3	L2
10 (b)	What is Schrodinger wave equation? Explain the significance of $\Psi$ and $\Psi^2$	5M	20BSX23.3	L2
<b>OR</b>				
11 (a)	What is crystal field theory? Explain the crystal field splitting in octahedral and tetrahedral complexes	7M	20BSX23.3	L2
11 (b)	Draw the band diagrams of conductors, semiconductors and insulators	5M	20BSX23.3	L2
12 (a)	Write a short note on Beer-Lambert's Law	5M	20BSX23.4	L2
12 (b)	Explain principle and instrumentation of UV-visible spectroscopy with neat diagram	7M	20BSX23.4	L2
<b>OR</b>				

13 (a)	Explain the principle and instrumentation of Gas Chromatography	6M	20BSX23.4	L2
13 (b)	Explain the potentiometric methods help to determine the endpoint in acid-base titration	6M	20BSX23.4	L2
14 (a)	What is basic lock and key principle?	5M	20BSX23.5	L1
14 (b)	Explain molecular switches, molecular elevators and Rotaxanes	7M	20BSX23.5	L2
<b>OR</b>				
15 (a)	List any four applications of Catenands	4M	20BSX23.5	L1
15 (b)	Discuss about computational chemistry	8M	20BSX23.5	L2

**Semester End Examination, May / June 2021  
Model Question Paper**

<b>Degree</b>	B. Tech. (U. G.)	<b>Program</b>	CSE			<b>Academic Year</b>	2020 - 2021
<b>Course Code</b>	20CS101	<b>Test Duration</b>	3 Hrs.	<b>Max. Marks</b>	70	<b>Semester</b>	I
<b>Course</b>	<b>FUNDAMENTALS OF COMPUTER SCIENCE</b>						

<b>Part A (Short Answer Questions 5 x 2 = 10 Marks)</b>				
No.	Questions (1 through 5)		Learning Outcome (s)	DoK
1	List any four hardware components of computer		20CS101.1	L1
2	What is the difference between machine-level and high-level programming language?		20CS101.2	L2
3	Define WAN, MAN		20CS101.3	L1
4	What is logical data independence and why it is important?		20CS101.4	L1
5	Write short notes on Geometric model		20CS101.5	L1
<b>Part B (Long Answer Questions 5 x 12 = 60 Marks)</b>				
No.	Questions (6 through 10)	Marks	Learning Outcome (s)	DoK
6 (a)	With necessary diagrams, describe the functions of various components of computer	6M	20CS101.1	L2
6 (b)	Explain different types of memory available in computer in the order of their hierarchy with respect to CPU access	6M	20CS101.1	L2
<b>OR</b>				
7 (a)	What is Central Processing Unit (CPU)? List out its components and explain their functions	8M	20CS101.1	L2
7 (b)	What are the factors to be considered while selecting input device?	4M	20CS101.1	L2
8 (a)	Define an algorithm. List the characteristics of a good algorithm with an example	4M	20CS101.2	L1
8 (b)	What is structured programming approach? Highlight the advantages and disadvantages of structured programming	8M	20CS101.2	L2
<b>OR</b>				
9 (a)	Define a pseudo code? Write the pseudo code for integer arithmetic operations	6M	20CS101.2	L1
9 (b)	What is meant by high level language? Give its characteristics, merits and demerits	6M	20CS101.2	L1
10 (a)	Write any six functionalities of an operating system	6M	20CS101.3	L1
10 (b)	Write about classification of networks based on their feature and size	6M	20CS101.3	L1
<b>OR</b>				
11 (a)	Explain the activities of operating system with respect to process management	8M	20CS101.3	L2
11 (b)	List the advantages and disadvantages of star and ring topologies	4M	20CS101.3	L1
12 (a)	Compare the features of hierarchical, network and relational data models	8M	20CS101.4	L2
12 (b)	What is the need of documentation in software development?	4M	20CS101.4	L1
<b>OR</b>				
13 (a)	What is a Database Management System? Explain various components of it	8M	20CS101.4	L1

13 (b)	Why is requirement analysis said to be most important phase of software development	4M	20CS101.4	L2
14 (a)	Write about evolution of AI	4M	20CS101.5	L1
14 (b)	Describe the types of machine learning algorithms	8M	20CS101.5	L2
<b>OR</b>				
15 (a)	Write about any four applications of AI	6M	20CS101.5	L1
15 (b)	Describe any three tasks that machine learning algorithms can accomplish	6M	20CS101.5	L2