

[B16 ENG 1101]
I/IV B.Tech. DEGREE EXAMINATION
First Semester
ENGLISH
MODEL QUESTION PAPER
(Common to all branches)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. a) Write an Essay on **One** of the following. (7M)
i. Pros and cons of Internet
ii. Terrorism, a social evil
- b) Correct any **Five** of the following sentences. (5M)
i. The machineries were expensive.
ii. Suppose, if you arrive late, you will miss the show.
iii. Choose the best of the two options.
iv. I enjoyed during the holidays.
v. I have seen him yesterday.
vi. The teacher gave us many advices.
- c) Use the appropriate articles in the given blanks. (2M)
i. He speaks English very well.
ii. I saw.....movie last night.
iii. Did you get married after leavinguniversity?
iv. I was at.....train station when you called me.
2. a) Write a report on **One** of the following. (7M)
i. Write a feasibility report for setting up a Water / Power Unit at your campus.
ii. Write a report on Educational Tour
- b) Write one word substitutions to any **Four** of the following and write sentences by using them. (5M)
i. Language which is confusing and unintelligible.
ii. One who prepares plans for buildings.
iii. A great lover of books
iv. A person in charge of a museum
v. A man who thinks only for himself
vi. One who kills animals and sells their flesh
- c) Write appropriate quantifiers for each sentence (Some, few, much, lesser, a little, less). (2M)
i. There were at the college last year
ii. The project is complicated than the last one

- iii. I have to buypairs of blue and black jeans soon.
- iv. Howcash do you need to purchase this CD player

3. a) Write a letter on **One** of the following. (8M)
- i. Write a letter to a renowned person, requesting him to be the Chief Guest for the cultural festival of your college.
 - ii. Write a letter to the editor about the problem of brain drain.
- b) Identify the types of the following sentences and write a similar sentence for each type. (4M)
- i. Oh, what a beautiful morning!
 - ii. Eat your supper.
 - iii. Today is my birthday.
 - iv. What gifts did you receive for your birthday?
- c) Re-write the sentences by using Gerunds, to-infinitives or plain infinitive forms. (2M)
- i. She is good at..... (dance).
 - ii. He is crazy about..... (sing).
 - iii. He'd like..... (fly) an aeroplane.
 - iv. I enjoy..... (write) picture postcards.
4. a) Draft an E-Mail to your friend about your career plans. (8M)
- b) Punctuate the following sentences taken from the text correctly. (4M)
- i. Sunil Sharma is Documentation Development Manager at Cerner Corporation one of the world's largest medical software developers
 - ii. As part of his job Sunil writes web-based content for Cerner
 - iii. One type of website that Cerner develops is marketed to health facilities for use by doctors nurses hospital administrators and patients
 - iv. This explains the communication challenge that Sunil faces. Cerner's end user is diverse consisting of lay readers and high-tech specialists
- c) Pick the right synonyms of the following words. (2M)
- i. Euphoria
 - a) Sober b) High spirits c) Mean d) Feeble
 - ii. Vicious
 - a)cruel b)kind c)splendid d)dearest
 - iii. Remnant
 - a)horror b)whole sale c)left over d)energize
 - iv. Acclaim
 - a) praise b) blame c) honour d) criticism
5. a) Develop a paragraph (150words) based on the following hints. (7M)
- As the 11th President of India---- the Indian National Congress-----
'people's president', he was-----. His contribution -----Bharat Ratna. During -
-----in India. He is the -----India: 2020 and Ignited Minds.
- b) Fill in the blanks with the appropriate idioms from the box. (5M)
- (The cream of the crop, an arm and a leg, hand in glove, hue and cry, Eager beaver, shape up)
- i. Frank always tries to finish his work before everyone else. He is an_____.
 - ii. We chose the prettiest, best behaved puppy. She was certainly _____.
 - iii. If Madge doesn't_____, she could lose her job.

- iv. Our new office was very expensive. It cost_____.
- v. The two friends are _____ with each other.
- c) Pick the right antonyms of the following words. (2M)
- i. Awake
 - a)alive b) stir c) asleep d) truce
 - ii. Create
 - a) build b) beak c) deny d) refuse
 - iii. Emerge
 - a) abandon b) appear c) fall d) hide
 - iv. Warm
 - a) cold b) pleasant c) unkind d)indifferent
6. a) Draft a pamphlet on any Electronic home appliances/Places of tourists' interest/an Educational institution/ an exhibition. (8M)
- b) Fill in the blanks using the appropriate forms of verbs given in the brackets. (4M)
- i. The wind ____ furiously. (Blow)
 - ii. He ____ to his mother every week. (Write)
 - iii. In a fit of rage, she ____ up the letter. (Tear)
 - iv. We couldn't have _____ a better day for organizing the party. (Choose)
- c) Fill in the blanks with appropriate prepositions from the box (in , at, the, at, on,). (2M)
- i. They are staying at ____hotel
 - ii. That is ____ girl I told you about
 - iii. My birthday is____ May
 - iv. We are going to see my parents ____the weekend
7. a) Present an argument in about 150 words on 'Women are not suitable to work in the industry.' Substantiate your argument with reasons. (7M)
- b) Read the following paragraph and answer the questions: (5M)

The study of history provides many benefits. First, we learn from the past. We may repeat mistakes, but, at least, we have the opportunity to avoid them. Second, history teaches us what questions to ask about the present. Contrary to some people's view, the study of history is not the memorization of names, dates, and places. It is the thoughtful examination of the forces that have shaped the courses of human life. We can examine events from the past and then draw inferences about current events. History teaches us about likely outcomes.

Another benefit of the study of history is the broad range of human experience which is covered. War and peace are certainly covered as are national and international affairs. However, matters of culture (art, literature, and music) are also included in historical study. Human nature is an important part of history: emotions like passion, greed, and insecurity have influenced the shaping of world affairs. Anyone who thinks that the study of history is boring has not really studied history.

- i. What is the main idea of this passage?
- ii. In the first paragraph, 'inferences' mean?
- iii. Which method of teaching history would the author of this passage support?
- iv. In the second paragraph, 'shaping of world affairs' Means.
- v. What is the conclusive thought of the author?

- c) Fill the blanks by using appropriate conjunctions (because, neither-nor, and, and) (2M)
- i. Receptionists must be able to relay information _____ pass messages accurately.
 - ii. Mary is a member of the Historical Society _____ the Literary Society.
 - iii. Susie _____ phoned _____ wrote after she left home.
 - iv. The committee rejected the proposal _____ they did not think it was practical.

8. a) Select appropriate words from the below word list to complete the following sentences. (6M)
(popularity, interact, networking, revolutionized, overwhelmed, reputation)

- i. Sachin's _____ was evidence of the fact that he was a friendly and fun to be with.
- ii. _____ is the key to understanding the market better.
- iii. Leela was _____ with emotion at the award ceremony.
- iv. His failure to reach the meeting on time has not done any good to his _____.
- v. A tiny little box between the electric guitar and the amplifier _____ rock music.
- vi. Javed said 'We at DSIJ love to _____ with our readers and we have some special sections for all of you.

b) Write a conversation between two/ three friends who are discussing an idea for a business they would like to set up. (8M)

(or)

Write a conversation between two students discussing a social issue.

[B16 ENG 1101]

[B16 ENG 1102]
I/IV B.Tech. DEGREE EXAMINATION
First Semester
MATHEMATICS - I
MODEL QUESTION PAPER
(Common to all branches)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Solve the following. [7x2 = 14 marks]
- (a) Find the total derivative of x^2y with respect to x when x and y are connected by the relation $x^2 + xy + y^2 = 1$
- (b) If the plane $3x + 12y - 6z - 17 = 0$ touches the conicoid $3x^2 - 6y^2 + 9z^2 + 17 = 0$ find the point of contact
- (c) Write the necessary conditions for $f(x,y)$ to have a maximum or minimum at (a,b) .
- (d) Form the differential equation from the equation $x = a \sin(\omega t + b)$
- (e) Solve $(y^2 e^{xy^2} + 4x^3)dx + (2xye^{xy^2} - 3y^2)dy = 0$
- (f) Solve $\frac{d^4y}{dx^4} + 2\frac{d^2y}{dx^2} + y = 0$
- (g) Express $f(x) = \frac{x}{2}$ as a Fourier series in the interval $-\pi < x < \pi$

2. (a) If $U = \tan^{-1} \frac{x^3 + y^3}{x - y}$ and $x U_x + y U_y = \sin 2U$, prove that

$$x^2 U_{xx} + 2xy U_{xy} + y^2 U_{yy} = 2 \cos 3U \sin U$$

(b) If $u = x^2 - 2y^2$; $v = 2x^2 - y^2$ where, $x = r \cos \theta$, $y = r \sin \theta$

show that $\frac{\partial(u,v)}{\partial(r,\theta)} = 6 r^3 \sin 2\theta$

3. (a) Expand $x^2 y + 3y - 2$ in powers of $(x - 1)$ and $(y + 2)$ using Taylor's theorem.
 (b) By using the method of differentiation under the integral sign

Prove that $\int_0^\infty \frac{\tan^{-1}(ax)}{x(1+x^2)} dx = \frac{\pi}{2} \log(1+a) : a \geq 0$

4. (a) Solve $\frac{dy}{dx} = y \tan x - y^2 \sec x$

(b) Solve $\frac{dy}{dx} + \frac{y \cos x + \sin y + y}{\sin x + x \cos y + x} = 0$

5. (a) Find the orthogonal trajectories of the family of parabolas $ay^2 = x^3$

- (b) If 30 % of radio active substance disappeared in 10 days, how long will it take for 90 % of the substance to disappear?

6. (a) Solve $\frac{d^2y}{dx^2} + 4y + 5y = -2 \cosh x$ given that $y = 0$ and $\frac{dy}{dx} = 1$ at $x = 0$

(b) Solve $\frac{d^2y}{dx^2} + 4y = \tan 2x$, by using method of variation of parameters.

7. (a) Solve $x^2 \frac{d^2y}{dx^2} - 2x \frac{dy}{dx} - 4y = x^2 + 2 \log x$

(b) Solve the simultaneous equations $\frac{dx}{dt} + y = \sin t$, $\frac{dy}{dt} + x = \cos t$, given that $x = 2$ and

$y = 0$ when $t = 0$

8. (a) Find the Fourier series of $f(x) = x - x^2$ in the interval $-\pi < x < \pi$

(b) Find the half- range cosine series for $f(x) = x$ in the interval $0 < x < 2$

[B16 ENG 1102]

[B16 ENG 1103]
I/IV B.Tech. DEGREE EXAMINATION
First Semester
MATHEMATICS - II
MODEL QUESTION PAPER
(Common to all branches)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks

All parts of a question must be answered at one place only

1. Solve the following. [7x2 = 14 marks]
- a) Find the value of λ for which the system of equations $2x + y + 2z = 0$,
 $x + y + 3z = 0$, $4x + 3y + \lambda z = 0$ have a non-zero solution.
- b) Define Hermitian matrix and give an example.
- c) Write any two properties of Laplace transforms
- d) Find the Laplace transform of unit step function
- e) Find $L^{-1}\left(\frac{s^2 - 3s + 4}{s^3}\right)$.
- f) Solve the difference equation $u_{n+1} - 2u_n + 2u_{n-1} = 0$.
- g) Find the z-transform of n^2 .
2. a) Find the rank of the matrix $A = \begin{bmatrix} 0 & 1 & 2 & -2 \\ 4 & 0 & 2 & 6 \\ 2 & 1 & 3 & 1 \end{bmatrix}$ by reducing into normal form.
- b) Find the eigen values and eigen vectors of the matrix $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$.
3. a) Verify Cayley-Hamilton theorem for the matrix $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$ and use it to evaluate the matrix equation $A^6 - 6A^5 + 9A^4 - 2A^3 - 12A^2 + 23A - 9I$.

- b) If $A = \begin{bmatrix} 0 & 1+2i \\ -1+2i & 0 \end{bmatrix}$ then show that $(I-A)(I+A)^{-1}$ is a unitary matrix.
4. a) Reduce the quadratic form $2xy + 2xz - 2yz$ to canonical form by an orthogonal transformation and discuss its nature.
 b) Solve: $x + 2y + 3z = 14$, $2x + 3y + 4z = 20$, $3x + 4y + z = 14$ by Gauss elimination method.
5. a) Find i) $L\left\{\frac{\cos at - \cos bt}{t}\right\}$ ii) $L\left\{\int_0^t e^{-t} \cos t dt\right\}$.
 b) Find the Laplace transform of the triangular wave function of period $2a$ given by
 $f(t) = t, 0 < t < a$
 $= 2a - t, a < t < 2a$.
6. a) Evaluate: i) $L^{-1}\left\{\log\left(\frac{s+1}{s-1}\right)\right\}$ ii) $L^{-1}\left\{\frac{3s}{s^2 + 2s - 8}\right\}$.
 b) State Convolution theorem and use it to evaluate $L^{-1}\left\{\frac{1}{(s-2)(s+2)^2}\right\}$.
7. a) Solve the difference equation $y_{n+2} - 6y_{n+1} + 8y_n = 2^n$.
 b) Use z-transforms to solve $y_{n+2} - 5y_{n+1} + 6y_n = 1$, given $y_0 = 0, y_1 = 1$.
8. a) Find inverse Z-transform of $\frac{z^2 + 2z}{(z+1)(z-1)^2}$ by the use of Partial fractions.
 b) Given $Z(u_n) = \frac{2z^2 + 3z + 4}{(z-3)^3}; |z| > 3$, find the values of u_1, u_2 and u_3 .

[B16 ENG 1103]

[B16 ENG 1104]
I/IV B.Tech. DEGREE EXAMINATION
First Semester
CHEMISTRY
MODEL QUESTION PAPER
(Common to CIVIL, CSE, IT)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks

All parts of a question must be answered at one place only

1. Write a short answer to the following. [7x2 = 14 marks]
 - (a) What is hardness of water.
 - (b) How solids are classified?
 - (c) What are ceramics?
 - (d) What is the Galvanic corrosion?
 - (e) What do you mean by conducting polymers?
 - (f) Define cetane number?
 - (g) Write any two advantages of LPG as motor fuel.
2.
 - (a) Describe the ion exchange process of water softening
 - (b) Describe the steps involved in municipal water treatment.
3.
 - (a) Write the manufacture of Portland cement.
 - (b) Write the properties and applications of ceramics.
4.
 - (a) Give a detailed account on band theory of solids.
 - (b) Explain zone refining of solids with neat diagram.
5.
 - (a) What is corrosion ? Explain the theory of dry corrosion with examples.
 - (b) What is paint? Explain the constituents of paint.
6.
 - (a) Define polymerization. Explain the mechanism of addition polymerisation with suitable Examples.
 - (b) Write the preparation and properties of cellulose derivatives.
7.
 - (a) Describe the manufacture of coke by Otto- Hoffmann's process
 - (b) What is synthetic petrol? Explain Fischer Tropsch, method with a neat diagram.
8.
 - (a) Explain the desalination of water by reverse osmosis method.
 - (b) Explain the principles of Lubrication with neat diagram.

[B16 ENG 1104]

[B16 ENG 1105]
I/IV B.Tech. DEGREE EXAMINATION
First Semester
PHYSICS
MODEL QUESTION PAPER
(Common ECE, EEE & Mechanical)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write a short answer to the following. [7x2 = 14 marks]
 - (a) Distinguish between heat and work.
 - (b) What is a cyclic process and how it can be represented ?
 - (c) What is Hall effect ?
 - (d) Explain the principle of super position.
 - (e) Explain the principle of light propagation in an optical fiber.
 - (f) Define magneto striction effect.
 - (g) State the uncertainty principle.

2.
 - (a) Distinguish between reversible and irreversible process. Mention the conditions of reversibility of a process (4M)
 - (b) State and prove the Carnot's theorem (7M)
 - (c) What is the efficiency of a Carnot engine operating between melting point and boiling Point of water under normal conditions. (3M)

3.
 - (a) State and Explain the Biot and Savart law. Using it, deduce an expression for the magnetic Induction along the axis of a circular current carrying coil. (10M)
 - (b) What are Maxwell's equations and explain their significance. (4M)

4.
 - (a) Define interference phenomena of light. (2M)
 - (b) Deduce the conditions for maxima and minima of monochromatic light reflected from a thin transparent film. (8M)
 - (c) Describe the characteristics of lasers. (4M)

5.
 - (a) Define numerical aperture of an optical fiber and what is its physical significance. (2M)
 - (b) Deduce an expression for the numerical aperture of a fiber (7M)
 - (c) Mention the important applications of ultra sonics (5M)

6. (a) What are matter waves and describe their properties . (3M)
(b) Deduce the Schrodingers time independent wave equation. (8M)
(c) Give a classification of materials based on the band theory of solids (3M)
7. (a) What are nano materials and describe the methods of characterizing the nano materials (6M)
(b) Describe with neat figure, any one method of synthesis of nano materials. (8M)
8. Write about
(a) Entropy and disorder (4M)
(b) Requirements of any laser device (4M)
(c) Piezoelectric method of producing ultrasonics (6M)

[B16 ENG 1105]

[B16 ENG 1106]
I/IV B.Tech. DEGREE EXAMINATION
First Semester
COMPUTER PROGRAMMING USING C & NUMERICAL METHODS
MODEL QUESTION PAPER
(Common to CIVIL, CSE, IT)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

- 1 Write a short answer to the following. . [7x2 = 14 marks]
- a) What is recursion? Give an example.
 - b) Explain scope and extent of variables.
 - c) What are truncation and round off errors?
 - d) Distinguish between local and global variables.
 - e) Explain different bitwise operators?
 - f) Explain Euler's Method.
 - g) What is Interpolation?
- 2
- a) Explain different types of operators in C.
 - b) Write a program to check whether the given number is palindrome or not.
- 3
- a) What is an array? Explain two dimensional array with an example?
 - b) Write a C program to generate prime numbers less than the given number.
- 4
- a) What is a Pointer? How is it initialized? What is the function of a pointer variable? What are its uses?
 - b) What is a loop ?Explain general forms of all loop structures with suitable examples.
- 5
- a) Explain the difference between call by reference & call by value?
 - b)Write a program to sort an array of elements in ascending order?

6 a) Explain the following

i) Structure

ii) Accessing elements in structure

iii) Arrays of structures

b) Briefly explain file handling functions.

7 a) Use gauss elimination method to solve

$$2x+y+z=10, 3x+2y+3z=18, x+4y+9z=16$$

b) Given $y' = y - x$, where $y(0) = 2$ find $y(0.1)$ and $y(0.2)$ using Runge-kutta fourth order method

8 a) Find the root of the following equation using Newton-Raphson method, correct the result upto 3 decimal places.

$$X^3 - 3X - 5 = 0.$$

b) Evaluate

2

$\int x \sin(x) dx$ using Simpson's 1/3 rule.

-2

[B16 ENG 1106]

[B16 ENG 1107]
I/IV B.Tech. DEGREE EXAMINATION
First Semester
ENGINEERING GRAPHICS
MODEL QUESTION PAPER
(Common to ECE, EEE & Mechanical)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write a short answer to the following. . [7x2 = 14 marks]
- (a) What is an involute? Write its uses?
 - (b) Define Conics.
 - (c) What is an auxiliary plane? State its purpose?
 - (d) Define frustum of a solid.
 - (e) Define the term section plane.
 - (f) State methods of developments.
 - (g) Define isometric scale.
2. An inelastic string 145 mm long has its one end attached to the circumference of a circular disc of 40 mm diameter. Draw the curve traced out by the other end of the string, when it is completely wound around the disc, keeping the string always tight.
3. A line AB, of 80 mm long has its end A, 15 mm in front of VP and 20 mm above HP. The other end B is 40 mm above HP and 50 mm in front of VP. Draw the projections of the line and determine the inclinations of the line with HP and VP.
4. Draw a rhombus of diagonals 100 mm and 60 mm long, with the longer diagonal horizontal. The figure is the top view of a square of 100mm long diagonals, with a corner on the ground. Draw its front view and determine the angle which its surface makes with the ground.
5. A pentagonal pyramid, with base 30mm and height 80mm, rests on one edge of its base on HP. The highest point in the base is 30mm above HP. Draw its projections, when the axis is parallel to VP. Drawn another front view, on a reference line inclined at 30° to the edge on which it is resting, so that the base is visible.
6. A cone, base 75 mm diameter and axis 80 mm long is resting on its base on the H.P. it is cut by a section plane perpendicular to the V.P., inclined at 45° to the H.P. and cutting the axis at a point 35 mm from the apex. Draw its front view, sectional top view and true shape of the section.

7. A right regular hexagonal pyramid of 30 mm side of base and height of 70 mm stands with its base on HP. A through circular hole of 30 mm diameter is drilled through the pyramid such that the axis of the hole is perpendicular to VP and intersects the axis of the pyramid 20 mm above the base. Draw the development of the lateral surface of the pyramid showing the true shape of the holes formed on it.

8. A right circular cylinder 5cm diameter of base and 7cm height has its base in the HP. A right circular cone diameter of base 4cm and height 4cm rests centrally over the upper flat surface of the cylinder. Draw the isometric view of the above combination

[B16 ENG 1107]

[B16 ENG 1108]
I/IV B.Tech. DEGREE EXAMINATION
First Semester
HISTORY OF SCIENCE AND TECHNOLOGY
MODEL QUESTION PAPER
(Common to CIVIL, CSE & IT)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write a short answer to the following. [7x2 = 14 marks]
- a) Explain the terms Science and Technology.
 - b) Describe the role of Scientist in the society.
 - c) Science and Technology Policy resolutions.
 - d) Defense Spin-offs.
 - e) Biosensors.
 - f) Barriers of Technological change.
 - g) Types of Technology transfer.
2. Describe the roots of science and technology in ancient period in India.
3. Explain the salient features of new technology fund and programs aimed at technological self reliance.
4. Describe the achievements of Council of Scientific and Industrial Research.
5. Explain the salient features of Space program and INSAT services.
6. Explain the importance of Nuclear energy and describe the effects of nuclear explosion and India's safety measures.
7. Describe the importance of Ocean development and explain the marine research and capacity building.
8. What is Appropriate technology? Explain the criteria for selection of an appropriate technology.

[B16 ENG 1108]

[B16 ENG 1109]
I/IV B.Tech. DEGREE EXAMINATION
First Semester
PROFESSIONAL ETHICS AND MORAL VALUES
MODEL QUESTION PAPER
(Common to ECE, EEE & Mechanical)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write a short answer to the following. [7x2 = 14 marks]
 - (a) Ethical Vision
 - (b) Profession and Professionalism
 - (c) Environmental Ethics
 - (d) Bhopal Gas Tragedy
 - (e) Gender discrimination
 - (f) Cyber Crimes
 - (g) Engineers as Managers
2. Discuss the scope and aim of Engineering Ethics.
3. Explain the role of Engineers in promoting ethical climate.
4. What are Values? Explain in detail the classification of human values.
5. Elucidate the moral responsibility of engineers towards safety and risk.
6. Define the concept of globalization and explain the role of MNCs in our country.
7. What are the functions of various sample codes of ethics?
8. Discuss the need to focus on professional ethics.

[B16 ENG 1109]

[B16 ENG 1201]
I/IV B.Tech. DEGREE EXAMINATION
Second Semester
MATHEMATICS-III
MODEL QUESTION PAPER
(Common to all branches)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Solve the following. [7x2 = 14 marks]
- (a) Find the angle between the line $\frac{x+1}{2} = \frac{y}{3} = \frac{z-3}{6}$ and the plane $3x + y + z = 7$.
- (b) Define right circular cylinder.
- (c) Change the integral $\int_0^\infty \int_0^\infty e^{-(x^2+y^2)} dx dy$ into polar coordinates.
- (d) Express $\int_0^\pi \sqrt{\tan \theta} d\theta$ in terms of gamma function.
- (e) Evaluate $\int_0^1 \int_0^{1-y} xy dx dy$ using Dirichlet's integral.
- (f) State Parseval's identity for Fourier transforms.
- (g) Find the Fourier cosine transform of $f(x) = e^{-ax}$ ($a > 0$).
2. (a) Find the image of the point (2, -1, 3) in the plane $3x - 2y - z - 9 = 0$.
- (b) Find the equation of the plane which passes through the point (3, -3, 1) and is perpendicular to the planes $7x + y + 2z = 6$ and $3x + 5y - 6z = 8$.
3. (a) Prove that the three planes $2x + y + z = 3$, $x - y + 2z = 4$, $x + z = 2$ form a triangular prism
- (b) Find the magnitude and equations of the shortest distance between the lines
- $$\frac{x-1}{2} = \frac{y-2}{3} = \frac{z+3}{4} \text{ and } \frac{x-2}{3} = \frac{y-4}{4} = \frac{z-5}{5}$$
4. (a) Find the equation of the sphere having its centre on the plane $4x - 5y - z = 3$

and passing through the circle $x^2 + y^2 + z^2 - 2x - 3y + 4z + 8 = 0$, $x - 2y + z = 8$.

(b) Find the equation of the right circular cone generated by rotating the line

$$\frac{x}{1} = \frac{y}{2} = \frac{z}{3} \text{ about the line } \frac{x}{-1} = \frac{y}{1} = \frac{z}{2}.$$

5. (a) Evaluate the integral by changing the order of integration $\int_0^3 \int_1^{\sqrt{4-y}} (x+y) dx dy$.

(b) Find by double integration the area of the lemniscate $r^2 = a^2 \cos 2\theta$.

6. (a) Evaluate the integral $\int_1^e \int_1^{\log y} \int_1^{e^x} \log z dz dx dy$.

(b) Find the centroid of the area enclosed by the parabola $y^2 = 4ax$, the x-axis and its latus rectum.

7. (a) Express the function $f(x) = \begin{cases} 1 & \text{for } |x| \leq 1 \\ 0 & \text{for } |x| > 1 \end{cases}$

as a Fourier integral. Hence evaluate $\int_0^\infty \frac{\sin \lambda \cos \lambda x}{\lambda} d\lambda$.

(b) Find the Fourier Sine transform of $\frac{e^{-ax}}{x}$.

8. (a) Find Fourier transform of $f(x) = \begin{cases} 1 & \text{for } |x| \leq a \\ 0 & \text{for } |x| > a \end{cases}$.

Hence evaluate $\int_0^\infty \frac{\sin ax}{x} dx$.

(a) Use Parseval's identity to show that $\int_0^\infty \frac{dt}{(t^2+1)(t^2+4)} = \frac{\pi}{12}$.

[B16 ENG 1201]

[B16 ENG 1202]
I/IV B.Tech. DEGREE EXAMINATION
Second Semester
PHYSICS
MODEL QUESTION PAPER
(Common to CIVIL, CSE, IT)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write a short answer to the following. [7x2 = 14 marks]
 - a) Distinguish between heat and work.
 - b) What is a cyclic process and how it can be represented ?
 - c) What is Hall effect ?
 - d) Explain the principle of super position.
 - e) Explain the principles of light propagation in an optical fiber.
 - f) Define magneto striction effect.
 - g) State the uncertainty principle.

2.
 - (a) Distinguish between reversible and irreversible process. Mention the conditions of reversibility of a process (4)
 - (b) State and prove the Carnot's theorem (3)
 - (c) What is the efficiency of a Carnot engine operating between melting point and boiling Point of water under normal conditions. (7)

3.
 - (a) State and Explain the Biot and Savart law. Using it, deduce an expression for the magnetic Induction along the axis of a circular current carrying coil. (10)
 - (b) What are Maxwell's equations and explain their signature (4)

4.
 - (a) Define interference phenomena of light. (2)
 - (b) Deduce the conditions for maxima and minima of monochromatic light reflected from a Thin transparent (8)
 - (c) Describe the characteristics of lasers. (4)

5.
 - (a) Define numerical aperture of an optical fiber and what is its physical significance. (2)
 - (b) Deduce an expression for the numerical aperture of a fiber (7)
 - (c) Mention the important applications of ultrasonics (5)

6.
 - (a) What are matter waves and describe their properties . (3)
 - (b) Deduce the Schrodingers time independent wave equation. (8)

- (c) Give a classification of materials based on the band theory of solids (3)
7. (a) What are nano materials and describe the methods of characterizing the nano materials (6)
(b) Describe with neat figure, any one method of synthesis the nano materials. (8)
8. Write about
- (a) Entropy and disorder (4)
(b) Requirement of any laser device (4)
(c) Piezoelectric method of producing ultrasonics (6)

[B16 ENG 1202]

[B16 ENG 1203]
I/IV B.Tech. DEGREE EXAMINATION
Second Semester
CHEMISTRY
MODEL QUESTION PAPER
(Common to ECE, EEE, Mechanical)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write a short answer to the following. [7x2 = 14 marks]
 - a) What is hardness of water.
 - b) How solids are classified?
 - c) What are ceramics?
 - d) What is the Galvanic corrosion?
 - e) What do you mean by conducting polymers?
 - f) Define cetane number?
 - g) Write any two advantages of LPG as motor fuel.
2. (a) Describe the ion exchange process of water softening
(c) Describe the steps involved in municipal water treatment.
3. (a) Write the manufacture of Portland cement.
(b) Write the properties and applications of ceramics.
4. (a) Give a detailed account on band theory of solids.
(b) Explain zone refining of solids with neat diagram.
5. (a) What is corrosion ? Explain the theory of dry corrosion with examples.
(b) What is paint? Explain the constituents of paint.
6. (a) Define polymerization. Explain the mechanism of addition polymerisation with suitable Examples.
(b) Write the preparation and properties of cellulose derivatives
7. (a) Describe the manufacture of coke by Otto- Hoffmann's process
(b) What is synthetic petrol? Explain Fischer Tropsch, method with a neat diagram.
8. (a) Explain the desalination of water by reverse osmosis method.
(b) Explain the principles of Lubrication with neat diagram.

[B16 ENG 1203]

[B16 ENG 1204]
I/IV B.Tech. DEGREE EXAMINATION
Second Semester
ENGINEERING GRAPHICS
MODEL QUESTION PAPER
(Common to CIVIL, CSE, IT)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write a short answer to the following. [7x2 = 14 marks]
- a) What is an involute? Write its uses?
 - b) Define HT and VT.
 - c) What is an auxiliary plane? State its purpose?
 - d) Define frustum of a solid.
 - e) Define the term section plane.
 - f) State methods of developments.
 - g) Define isometric scale.
2. An inelastic string 145 mm long has its one end attached to the circumference of a circular disc of 40 mm diameter. Draw the curve traced out by the other end of the string, when it is completely wound around the disc, keeping the string always tight.
3. A line AB, of 80 mm long has its end A, 15 mm in front of VP and 20 mm above HP. The other end B is 40 mm above HP and 50 mm in front of VP. Draw the projections of the line and determine the inclinations of the line with HP and VP.
4. Draw a rhombus of diagonals 100 mm and 60 mm long, with the longer diagonal horizontal. The figure is the top view of a square of 100mm long diagonals, with a corner on the ground. Draw its front view and determine the angle which its surface makes with the ground.
5. A pentagonal pyramid, with base 30mm and height 80mm, rests on one edge of its base on HP. The highest point in the base is 30mm above HP. Draw its projections, when the axis is parallel to VP. Draw another front view, on a reference line inclined at 30° to the edge on which it is resting, so that the base is visible.
6. A cone, base 75 mm diameter and axis 80 mm long is resting on its base on the H.P. it is cut by a section plane perpendicular to the V.P., inclined at 45° to the H.P. and cutting the axis at a point 35 mm from the apex. Draw its front view, sectional top view and true shape of the section.
7. A right regular hexagonal pyramid of 30 mm side of base and height of 70 mm stands with its base on HP. A through circular hole of 30 mm diameter is drilled through the pyramid such that

the axis of the hole is perpendicular to VP and intersects the axis of the pyramid 20 above the base. Draw the development of the lateral surface of the pyramid showing the true shape of the holes formed on it.

8. A right circular cylinder 5cm diameter of base and 7cm height has its base in the HP. A right circular cone diameter of base 4cm and height 4cm rests centrally over the upper flat surface of the cylinder. Draw the isometric view of the above combination.

[B16 ENG 1204]

[B16 ENG 1205]
I/IV B.Tech. DEGREE EXAMINATION
Second Semester
COMPUTER PROGRAMMING USING C & NUMERICAL METHODS
MODEL QUESTION PAPER
(Common to ECE, EEE & Mechanical)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

- 1 Write a short answer to the following. [7x2 = 14 marks]
- a) What is recursion? Give an example.
 - b) Explain scope and extent of variables.
 - c) What are truncation and round off errors?
 - d) Distinguish between local and global variables.
 - e) Explain different bitwise operators?
 - f) Explain Euler's Method.
 - g) What is Interpolation?
- 2
- a) Explain different types of operators in C.
 - b) Write a program to check whether the given number is palindrome or not.
- 3
- a) What is an array? Explain two dimensional array with an example?
 - b) Write a C program to generate prime numbers less than the given number.
- 4
- a) What is a Pointer? How is it initialized? What is the function of a pointer variable? What are its uses?
 - b) What is a loop ?Explain general forms of all loop structures with suitable examples.
- 5
- a) Explain the difference between call by reference & call by value?
 - b) Write a program to sort an array of elements in ascending order?

6 a) Explain the following

i) Structure

ii) Accessing elements in structure

iii) Arrays of structures

b) Briefly explain file handling functions.

7 a) Use gauss elimination method to solve

$$2x+y+z=10, 3x+2y+3z=18, x+4y+9z=16$$

b) Given $y' = y - x$, where $y(0) = 2$ find $y(0.1)$ and $y(0.2)$ using Runge-kutta fourth order method

8 a) Find the root of the following equation using Newton-Raphson method, correct the result upto 3 decimal places.

$$X^3 - 3X - 5 = 0.$$

b) Evaluate

2

$\int x \sin(x) dx$ using Simpson's rule.

-2

[B16 ENG 1205]

[B16 ENG 1206]
I/IV B.Tech. DEGREE EXAMINATION
Second Semester
PROFESSIONAL ETHICS AND MORAL VALUES
MODEL QUESTION PAPER
(Common to CIVIL, CSE, IT)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write a short answer to the following. [7x2 = 14 marks]
 - (a) Ethical Vision
 - (b) Profession and Professionalism
 - (c) Environmental Ethics
 - (d) Bhopal Gas Tragedy
 - (e) Gender discrimination
 - (f) Cyber Crimes
 - (g) Engineers as Managers
2. Discuss the scope and aim of Engineering Ethics.
3. Explain the role of Engineers in promoting ethical climate.
4. What are Values? Explain in detail the classification of human values.
5. Elucidate the moral responsibility of engineers towards safety and risk.
6. Define the concept of globalization and explain the role of MNCs in our country.
7. What are the functions of various sample codes of ethics?
8. Discuss the need to focus on professional ethics.

[B16 ENG 1206]

[B16 ENG 1207]
I/IV B.Tech. DEGREE EXAMINATION
Second Semester
HISTORY OF SCIENCE AND TECHNOLOGY
MODEL QUESTION PAPER
(Common to ECE, EEE, Mechanical)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks

All parts of a question must be answered at one place only

1. Write a short answer to the following. [7x2 = 14 marks]
 - a) Explain the terms Science and Technology.
 - b) Describe the role of Scientist in the society.
 - c) Science and Technology Policy resolutions.
 - d) Defense Spin-offs.
 - e) Biosensors.
 - f) Barriers of Technological change.
 - g) Types of Technology transfer.
2. Describe the roots of science and technology in ancient period in India.
3. Explain the salient features of new technology fund and programs aimed at technological self reliance.
4. Describe the achievements of Council of Scientific and Industrial Research.
5. Explain the salient features of Space program and INSAT services.
6. Explain the importance of Nuclear energy and describe the nuclear explosion and India's safety measures.
7. Describe the importance of Ocean development and explain the marine research and capacity building.
8. What is Appropriate technology? Explain the criteria for selection of an appropriate technology.

[B16 ENG 1207]

[B16 CE 1208]
I/IV B.Tech. DEGREE EXAMINATION
Second Semester
BUILDING MATERIALS AND BUILDING CONSTRUCTION
MODEL QUESTION PAPER
(Department Subject - CIVIL)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write a short answer to the following. [7x2 = 14 marks]
 - a) Differentiate between wet and dry process manufacturing of ordinary Portland cement.(OPC)
 - b) How do you diagnose defects in painting suggest remedies
 - c) What is bearing capacity of soil? What is its importance?
 - d) Draw neat sketch of dog-legged staircase and quarter landing staircase
 - e) what are differences between distemper and emulsion paint
 - f) Explain decay of timbers
 - g) Define scaffolding and mention its components parts
2.
 - a) Discuss various methods of storing cement in the field and in godowns
 - b) Define Farm Work and explain the different types of farm-work.
3.
 - a) Draw the cross section of a tree and indicate various details.
 - b) Explain the properties of glass. What are the uses of glass brick and sheet glass?
4.
 - a) Describe various types of Pile foundations with brief description and usual notations
 - b) Explain about concrete blocks and FAL-G blocks
5.
 - a) How concrete is graded as per I.S.code? List out the factors effecting choice of mix problems.
 - b) Draw the sketch of queen post truss with all details
6.
 - a) Discuss the importance of location of doors, windows and ventilators in a building.
 - b) Explain the chemistry of plastics. Enumerate the various uses of plastics in buildings.
7.
 - a) Bring out the importance of aluminum and PVC doors, Windows and ventilators in building construction.
 - b) Describe the constituents of varnishes and explain the uses of varnishes
8.
 - a) What is a step? Mention its different types
 - b) Write short note on Transporting, placing and vibrating of concrete.

[B16 CE 1208]

[B16 CS 1208]
I/IV B.Tech. DEGREE EXAMINATION
Second Semester
PROBABILITY, STATISTICS & QUEUING THEORY
MODEL QUESTION PAPER
(Department Subject-Common to CSE, IT)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

- 1 Write a short answer to the following [7x2 = 14 marks]
- (a) State the limitations of axiomatic approach to probability.
 - (b) State the properties of distribution function.
 - (c) Show that $E(aX + b) = aE(X) + b$.
 - (d) Find the moment generating function of Poisson distribution
 - (e) Define rank correlation?
 - (f) Define Type-I-error and Type-II-error.
 - (g) What are the operating characteristics of a queuing model?
- 2 (a) State and prove addition theorem of probability for n events.
- (b) Three machines A, B and C produce respectively 50%, 30% and 20% of the total number of items of a factory. The percentage of defective output of these machines is 3%, 4% and 5%
- (i) If an item is selected at random, find the probability that the item is defective.
 - (ii) Suppose an item is selected at random and is found to be defective. Find the probability that it was produced by machine A.
- 3 (a) The diameter of an electric cable is assumed to be a continuous variate with p.d.f. $f(x) = 6x(1-x)$, $0 \leq x \leq 1$. Verify that the above is p.d.f. Also find the mean and variance.
- (b) Let X be a random variable with the following probability distribution:
- | | | | |
|---------------|-----|-----|-----|
| x : | -3 | 6 | 9 |
| P (X = x) : | 1/6 | 1/2 | 1/3 |
- Find $E(X)$, $E(X^2)$ and using the laws of expectation, evaluate $E(2X+1)^2$
- 4 (a) Twenty identical coins each with probability P of showing heads are tossed. The probability of heads showing on 10 coins is same as that of heads showing on 11 coins. Find P .
- (b) X is a normal variate with mean 30 and standard deviation 5. Find the probability that (i) $26 \leq X \leq 40$ (ii) $X \geq 45$ (iii) $|X - 30| > 5$

- 5 (a) Obtain the equations of two lines of regression for the following data. Also obtain the estimate of X for $Y = 70$

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71

- (b) Find the correlation coefficient for the following data:

x :	1	2	3	4	5	6	7	8	9	10
Y :	10	12	16	28	25	36	41	49	40	50

- 6 (a) A sample of 100 items, drawn from a universe with mean value 64 and standard deviation 3 has a mean value 63.5. Is the difference in means significant? What will be your inference if the sample has 200 items?

- (b) Determine a 95% confidence interval for the mean of a normal population with the Sample 145, 146, 142, 143

- 7 (a) A group of 10 boys fed on a diet A and another group of 8 boys fed on a different diet B recorded the following increase in weights.

Diet A	5	6	8	1	12	4	3	9	6	10	Kgs
Diet B	2	3	6	8	10	1	2	8			Kgs

Does it show the superiority of Diet A over that of Diet B

- (b) Theory predicts that the proportion of beans in four groups A, B, C, D should be 9:3:3:1. In an experiment among 1600 beans, the numbers in the four groups were 882, 313, 287, 118. Does the experiment support the theory?

- 8 (a) For $\{(M/M/1):(\infty/FIFO)\}$ queuing model, in the steady state case, obtain the average queue length in terms of relevant parameters λ and μ .

- (b) Arrivals at a telephone booth are considered to be Poisson with an average time of 12 min. between one arrival and the next. The length of phone call is assumed to be distributed exponentially with mean 4 min.

(a) Find the average number of persons waiting in the system.

(b) What is the probability that a person arriving at the booth will have to wait in the Queue?

[B16 CS 1208]

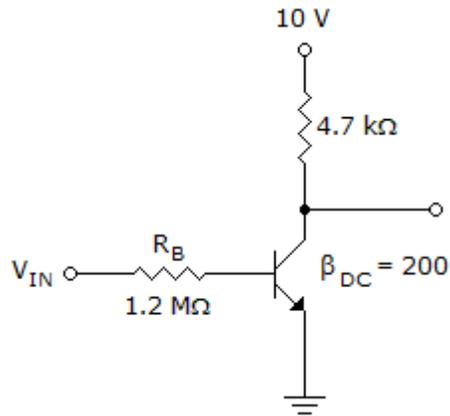
[B16 EC 1208]
I/IV B.Tech. DEGREE EXAMINATION
Second Semester
ELECTRONIC DEVICES AND CIRCUITS
MODEL QUESTION PAPER
(Department Subject-ECE)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write a short answer to the following [7x2 = 14 marks]
 - a. What is meant by diffusion current in a semi-conductor?
 - b. A silicon diode has a saturation current of 7.5 pA at 300 °K. Calculate the saturation current at 330 ° K.
 - c. Define peak inverse voltage of a diode.
 - d. Draw the input and output characteristics of a transistor in CE configuration and mark the cutoff, saturation and active regions.
 - e. Compare JFET with BJT.
 - f. Define pinch-off voltage.
 - g. Draw the equivalent circuit of transistor for high frequencies
2.
 - a. Explain the current components in a PN junction diode and Derive the diode current equation.
 - b. Explain about avalanche and zener breakdowns.
3.
 - a. Explain about intrinsic and extrinsic semiconductors
 - b. write short note on (i) Hall effect (ii) continuity equation
4.
 - a. Explain the working of Bridge rectifier. Give the expressions for RMS current, PIV, ripple factor and efficiency.
 - b. A diode whose internal resistance is 20Ω is to supply power to a 100Ω load from 110V(rms) source supply. Calculate (i) peak load current (ii) the dc load current (iii) the ac load current (iv) the percentage regulation from no load to full load.
5.
 - a. Draw and explain the input and output characteristics of a transistor in CB configuration.
 - b. Determine the minimum value of I_B that produces saturation in the following figure.



6. a. Explain with the help of neat diagrams, the structure of an N-channel FET and its Volt-ampere characteristics.
- b. Explain the operating principle of enhancement mode MOSFET. How does it differ from depletion mode type?
7. a. Explain how FET acts as a voltage variable resistor.
- b. Show that if a FET is operated at sufficiently low drain voltage, it behaves as a resistance R given by $R = R_O / [1 - (V_{GS} / V_P)^2]$ Where R_O is the channel resistance for zero gate voltage.
8. Write a short notes on
 - a. Photo transistor
 - b. Tunnel diode
 - c. Transition capacitance

[B16 EC 1208]

[B16 EE 1208]
I/IV B.Tech. DEGREE EXAMINATION
Second Semester
CIRCUIT THEORY
MODEL QUESTION PAPER
(Department Subject-EEE)

Time: 3 Hrs.

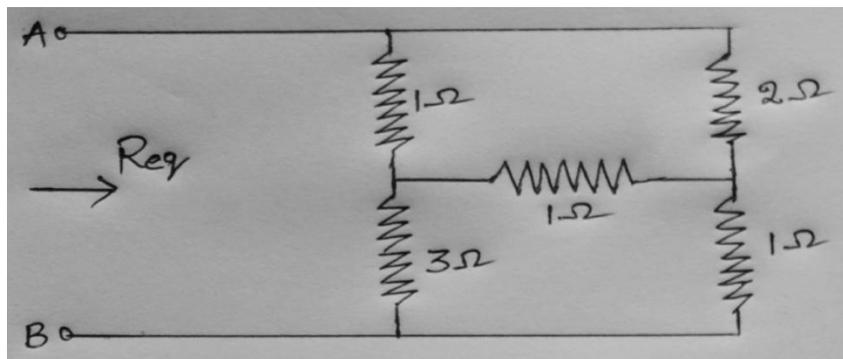
Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

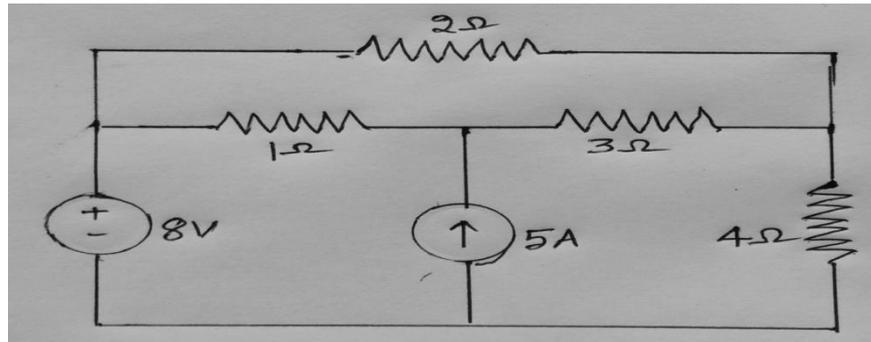
1. Write a short answer to the following [7x2 = 14 marks]

- a) What are the limitations of superposition theorem?
- b) Distinguish between Active and Passive elements.
- c) Draw the characteristics of an ideal voltage source.
- d) State Maximum power transfer theorem.
- e) Define MMF, Reluctance and Magnetic flux with respect to a magnetic circuit.
- f) State Faradays laws of Electromagnetic Induction.
- g) What is Self inductance?

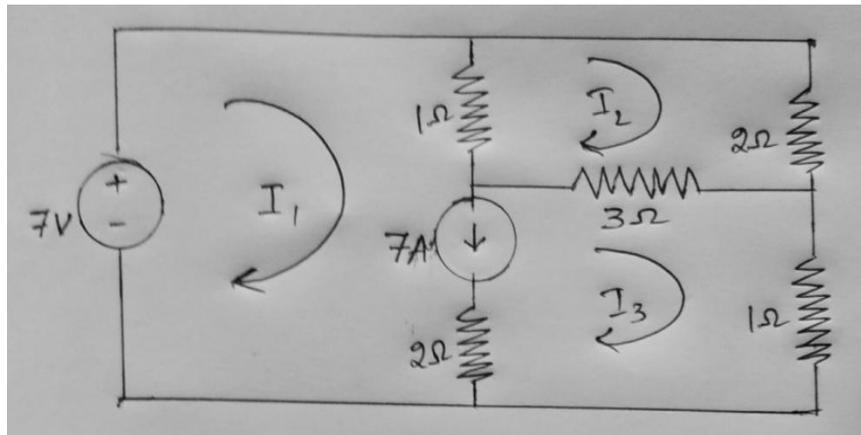
2. a) Find the equivalent resistance between the terminals A and B of the given network.



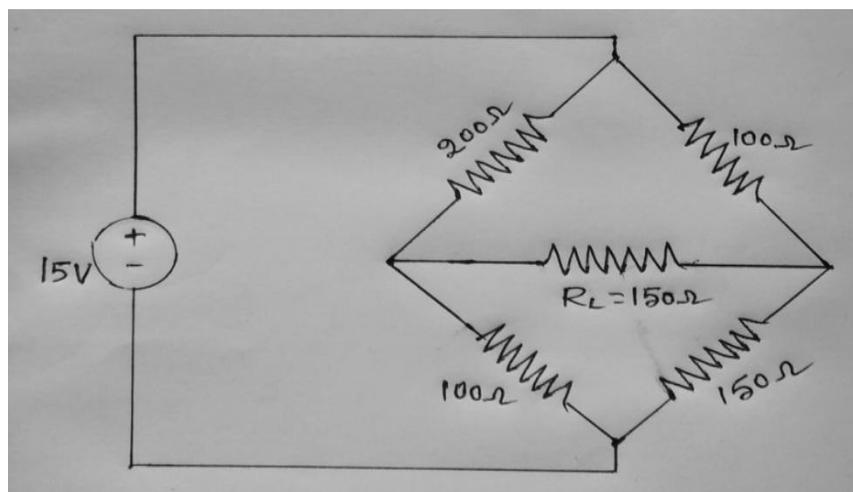
b) Using Nodal analysis find the currents and voltages in all the branches of the given network.



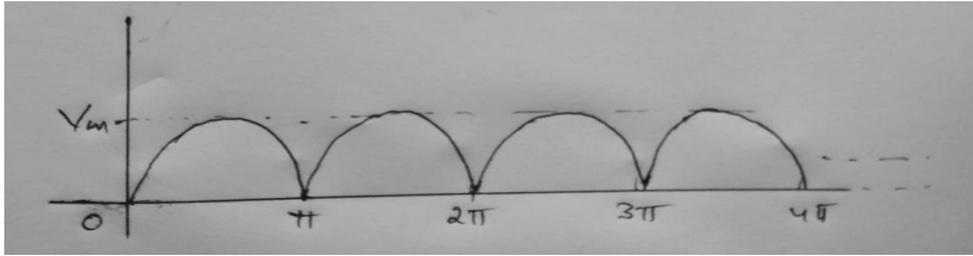
3.a) Find the mesh current I_1 in the given circuit using mesh Analysis.



b) Find the current through the load resistance R_L in the given circuit using thevenin's theorem.



4. a) Define Average, RMS values of a periodic waveform. Obtain the Average and RMS values of the rectified sinusoidal waveform shown in figure.



- b) A series R-L-C circuit has $R=10\text{ohms}$, $L=0.01\text{H}$, $C=100\mu\text{F}$. Find the Resonant frequency, Quality factor and Band width of the circuit.
- 5.a) Explain (i) Instantaneous power (ii) Average power (iii) Complex power applied to AC circuits.
- b) The supply voltage to a circuit is $v(t)=220\sqrt{2}\text{Sin}(wt)$ and the current drawn from it is $i(t)=14.14\text{Sin}(wt - 45^\circ)$. Find the Apparent, Active and Reactive powers.
6. a) Obtain the relation between Line and Phase quantities in a Star connected circuit.
- b) A 220V, 3-phase voltage is applied to a balanced delta connected 3-phase load of $(15+j20)$ ohms per phase. Find (i) Phasor current in each line (ii) Power consumed per phase and (iii) Phasor sum of three line currents and comment on it.
7. a) Distinguish between Statically induced emf and Dynamically induced emf.
- b) An iron ring of cross-sectional area of 10 cm^2 is wound with a wire of 1500 turns has a saw cut of 3mm air gap. Calculate the magnetizing current required to produce a flux of 0.25mwb if the mean length of the magnetic path is 50cm and relative permeability of 470 and the leakage factor is 1.2.
8. a) What are the advantages of three phase circuits? (4M)
- b) Give the Analogy between Electric and Magnetic circuits. (4M)
- c) Explain about the measurement of power in three phase circuits. (6M)

[B16 EE 1208]

[B16 ME 1208]
I/IV B.Tech. DEGREE EXAMINATION
Second Semester
METALLURGY AND MATERIALS ENGINEERING
MODEL QUESTION PAPER
(Department Subject-Mechanical)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsorily.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write a short answer to the following. [7x2 = 14 marks]
- a) Define lattice parameters.
 - b) Define Gibbs phase rule
 - c) Explain peritectic transformation
 - d) Define heat treatment
 - e) Write a short note on isothermal transformation curves
 - f) Define smart materials.
 - g) Write short notes on fiber composites.
2.
 - a) Discuss various types of defects in crystals?
 - b) Explain different crystal structures and find the atomic packing factor for BCC, and FCC structures.
3.
 - a) With a neat sketch explain iron-carbon phase diagram and label all its phases.
 - b) What is a phase diagram? And discuss the construction of phase diagrams.
4.
 - a) What are the different steps to construct isothermal transformation curves for a eutectoid steel and explain it.
 - b) Explain the Austempering and Martempering process.
5.
 - a) Define composite materials? Discuss briefly various reinforcements in composite materials.
 - b) Mention advantages, limitations and applications of particle- reinforced composites.
6.
 - a) Explain the composition and application of the following.
i) Hadfield Steels, ii) Tool Steels, iii) High Speed Steels
 - b) What are different types of cast irons and explain how malleable cast iron is produced.
7.
 - a) What are the different case hardening methods and explain Carburizing process.
 - b) Explain flame and Induction hardening process with neat diagram.

- 8 Write a short note on any THREE of the following
- a) Nano materials
 - b) Invariant reactions
 - c) Applications of composites
 - d) Concept of Slip and Twinning
 - e) Precipitation Hardening

[B16 ME 1208]

[B16 CS 2101]
II/IV B.Tech. DEGREE EXAMINATION
First Semester
DATA STRUCTURES
MODEL QUESTION PAPER
COMPUTER SCIENCE & ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only

1. Briefly explain
 - a) What is the role of stack in implementing Recursive algorithm?
 - b) What is Space complexity?
 - c) How do you represent a Polynomial using an array?
 - d) What is complete binary tree and Give an example.
 - e) What is Binary search tree, how it is useful.
 - f) What are the applications of Stacks?
 - g) Compare liner search and binary search

2.
 - a) What is Abstract Data Type? Give ADT for Stack
 - b) How to convert infix expression to postfix expression, write an algorithm for converting infix to postfix.

3.
 - a) How to implement different Queue operations using single linked list.
 - b) Write an algorithm for inserting an element in the middle of single linked list and in the middle of double linked list.

4.
 - a) Arrange the following elements using Quick sort algorithm
10 5 20 25 15 35 30
 - b) Write a program for implementation of Quick sort, discuss the timing analysis of Quick sort in different cases.

5.
 - a) How to sort the elements using BST explain with example, Write an algorithm for sorting elements using BST
 - b) Write an algorithm to count the number of nodes in Binary tree.

6.
 - a) Discuss about Graph Traversing techniques
 - b) Discuss about different representations of Graphs

7.
 - a) What is minimum cost spanning tree? Explain Prims algorithm by taking an example
 - b) Write algorithms for inserting element to maxheap and deletion of element from maxheap.

8. Write short note on Two of the following
- a. Threaded Binary Tree
 - b. Transitive Closure
 - c. Circular Linked List
 - d. Radix sort.

[B16 CS 2101]

[B16 EC 2103]
II/IV B.Tech. DEGREE EXAMINATION
First Semester
ELEMENTS OF ELECTRONICS ENGINEERING
MODEL QUESTION PAPER
(Common to CSE & IT)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only

1. Briefly Explain
 - a. Explain intrinsic and extrinsic semiconductor with examples.
 - b. Define Drift and Diffusion currents.
 - c. Define static and dynamic resistance of a diode.
 - d. Define PIV of diode with examples.
 - e. What is thermal runaway in transistors.
 - f. Explain avalanche breakdown in PN diode.
 - g. Compare FET with BJT .

2.
 - a. Explain Hall effect and its application in details **5 M**
 - b. Derive an expression for diode current equation **9 M**

3.
 - a. Draw the V-I characteristics of zener diode and explain how zener diode acts as voltage regulator **6 M**
 - b. Explain tunneling phenomena, V-I characteristics and applications of tunnel diode **8 M**

4.
 - a. Draw the circuit diagram of bridge full wave rectifier with capacitor filter and explain its operation with the help of waveforms **7 M**
 - b. Determine I_{DC} , I_{RMS} , rectification efficiency and ripple factor of full wave rectifier with capacitor filter **7 M**

5.
 - a. What is Early effect and explain its consequences in transistor **5 M**
 - b. Draw the circuit diagram of NPN transistor connected in CE configuration and explain its input and output characteristics with diagrams **9 M**

6. Draw the small signal low frequency h-parameter equivalent circuit of CE transistor amplifier. Derive expression for
(i) current gain A_I , (ii) voltage gain A_V , (iii) input impedance (iv) output admittance. **14 M**

7.
 - a. Draw and explain different methods of biasing the transistor in details. **7 M**
 - b. Derive an expression for stability factor S of self bias circuit **7 M**

8.
 - a. Draw and explain the drain characteristics of common source field effect transistor **7 M**
 - b. Explain the constructional details and characteristics of depletion type MOSFET **7 M**

[B16 EC 2103]

[B16 ENG 2102]
 II/IV B.Tech. DEGREE EXAMINATION
 First Semester
DISCRETE MATHEMATICAL STRUCTURES
 MODEL QUESTION PAPER
 (Common to CSE & IT)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only

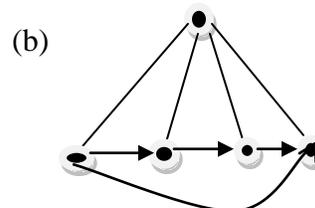
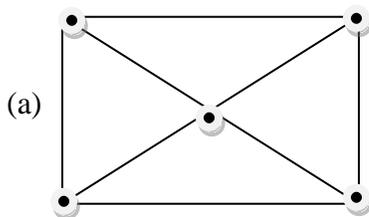
1. (a) Write the inverse, converse and contra positive of "If ΔABC is a right angle triangle then $AC^2 = AB^2 + BC^2$ "
- (b) Solve the recurrence relation $a_n - 5a_{n-1} + 6a_{n-2} = 0, n \geq 2$
- (c) Define Planar graph with example
- (d) State Four Color theorem
- (e) Define Monoid and give an example
- (f) Prove that in a Lattice if $a, b \in L$ & $a \leq b$, then $(a \bullet b) = a, (a \oplus b) = b$
- (f) Simplify the Boolean expression given by $(x \vee y) \wedge (x' \vee y)$

2. a) Prove that $\{(p \vee q) \rightarrow r\} \wedge (\neg p) \rightarrow (q \rightarrow r)$ is a tautology
- b) Verify that the following argument is valid by using the rules of inference
 If Clifton does not live in France, then he does not speak French.
 Clifton does not drive a Datsun
 If Clifton lives in France, then he rides a bicycle
 Either Clifton speaks French, or he drives a Datsun
 Hence, Clifton rides a bicycle

3. a) Using mathematical induction prove that $n(n^2+5)$ is an integer multiple of 6.
- b) How many integral solutions are there to $x_1 + x_2 + x_3 + x_4 + x_5 = 20$ where $x_1 \geq 3, x_2 \geq 2, x_3 \geq 4, x_4 \geq 6$ and $x_5 \geq 0$.

4. a) In how many ways can the letters $\{5.a, 4.b, 3.c\}$ be arranged so that all the letters of the same kind are not in a single block?
- b) Solve the recurrence relation $a_n - 5a_{n-1} + 6a_{n-2} = 0, n \geq 2$ by using generating function.S

5. a) Show that the following graphs are isomorphic



- b) Define poset and draw the Hasse diagram for the poset $[P(A), \subseteq]$ where $A = \{a, b, c\}$
6. a) Prove that a tree with 'n' vertices has exactly 'n-1' edges
b) State and Prove Euler's formula
7. a) Show that Every chain is a distributive lattice
b) Show that the lattice (S_n, D) for $n=216$ is isomorphic to the direct product of lattices for $n=8$ and $n=27$
8. a) Use the karnaugh map representation to find a minimal sum of products expression of $f(a,b,c) = \sum(0,1,4,6)$
b) Find the product of sums canonical forms of $((x_1+x_2)(x_3x_4))^1$

[B16 ENG 2102]

[B16 CS 2102]
II/IV B.Tech. DEGREE EXAMINATION
First Semester
OBJECT ORIENTED PROGRAMMING
MODEL QUESTION PAPER
COMPUTER SCIENCE & ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Answer the following.
 - a) Write about virtual base class in C++.
 - b) What is the use of final and super keywords in JAVA?
 - c) Give an example of an Inline function.
 - d) When do you use Friend functions?
 - e) What is virtual destructor?

2.
 - a) Explain concepts of Object Oriented Programming.
 - b) Discuss Operator overloading concept with complex number addition example.

3.
 - a) Explain all kinds of inheritance in C++ with examples.
 - b) Write a program using class templates to sort an array of integers and an array of float numbers.

4.
 - a) What is Constructor and explain the types of constructors in C++?
 - b) Write a program using virtual functions. Your program contains two classes, base class by name College, derived class by branch derived both will contain a function display () that displays their respective details.

5.
 - a) What is an abstract class? Explain the differences between abstract class and an interface
 - b) What is Thread? Explain how threads are created in JAVA with an example

6.
 - a) Discuss Exception handling mechanism in C++.
 - b) Write a program for file copying using file streams in C++.

7.
 - a) Explain the differences between method overloading and method overriding in JAVA.
 - b) Write a program that implements an interface containing methods describing student information.

8.
 - a) Differentiate the usage of access specifiers in java and their scope.
 - b) What is a package? Write a program that shows scope of all kinds of variables inside and outside a package.

[B16 CS 2102]

[B16 CS 2103]
 II/IV B.Tech. DEGREE EXAMINATION
 First Semester
DIGITAL LOGIC DESIGN
 MODEL QUESTION PAPER
 COMPUTER SCIENCE & ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only

1. (a) Convert $(F5.E)_{16}$ into decimal.
 (b) What do you mean by K-map? Name its advantages and disadvantages.
 (c) Distinguish between a half-adder and a full-adder?
 (d) Explain the operation of a SR flip-flop?
 (e) What is a PLD? What is the principal advantage of a PLD?

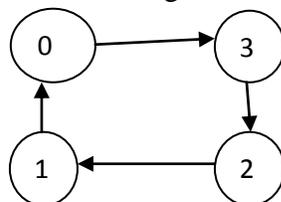
2. (a) Convert the following to Decimal and then to octal
 (i) $(125F)_{16}$ (ii) $(10111111)_2$ (iii) $(392)_{10}$
 (b) Perform the subtraction using 1's complement and 2's complement methods.
 (i) $11010 - 10000$ (ii) $11010 - 1101$ (iii) $100 - 110000$

3. (a) Simplify the following using K-map and implement the same using NAND gates.
 $Y(A, B, C) = \sum (0, 2, 4, 5, 6, 7)$
 (b) Simplify the following Boolean expression.
 (i) $T(x, y, z) = (x + y) \{[x' (y' + z')]\}' + x' y' + x' z'$
 (ii) $X(A, B, C, D) = A^1 B^1 C^1 + (A+B+C^1)^1 + A^1 B^1 C^1 D$

4. (a) Perform the realization of half adder and full adder using decoders and logic gates.
 (b) Design and draw the logic circuit diagram for full adder/subtractor. Let us consider a control variable w and the designed circuit that functions as a full adder when $w=0$, as a full subtractor when $w=1$.

5. (a) Draw the circuit diagram of a positive edge triggered JK flip flop and explain its operation with the help of a truth table?
 (b) Convert a D flip flop into SR flip flop and JK flip flop?

6. (a) Design a sequential circuit for the given state diagram using D-flipflop



- (b) Explain the operation of 4-bit ring counter with circuit diagram, state transition diagram and state table. Draw the corresponding timing diagrams?

7. (a) Explain different types of registers with neat diagram?
(b) Write the design steps of synchronous counters with suitable examples?
8. (a) Discuss how PROM, EPROM and EEPROM technologies differ from each other.
(b) Implement the following multiple output functions using PROM
- | | |
|---------------------------------------|-------------------------------|
| $F1 = \sum m(0, 1, 4, 7, 12, 14, 15)$ | $F2 = \sum m(2, 3, 7, 8, 10)$ |
| $F3 = \sum m(1, 3, 6, 9, 12)$ | $F4 = \sum m(1, 3, 5)$ |

[B16 CS 2103]

[B16 ENG 2103]
II/IV B.Tech. DEGREE EXAMINATION
First Semester
ENVIRONMENTAL STUDIES
MODEL QUESTION PAPER
(Common to CIVIL, CSE & IT)

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write short answers for the following:
 - (a) Give the objectives of Environmental Studies
 - (b) Define ecosystem
 - (c) What are hotspots?
 - (d) What is soil erosion?
 - (e) What is sustainable development?
 - (f) State the practical benefits of watershed management
 - (g) What is biomagnifications movement?
2. Write about structure and function of forest ecosystem
3. Give an account of the various energy resources of India and their merits and demerits.
4. Give the bio-geographical classification of India and add a brief note on threats to biodiversity
5. Explain causes, effects and control measures of water pollution
6. Write a critical account of the effect of population growth on environment.
7. Give an account of rain water harvesting and watershed management with suitable example
8. Write short notes:
 - a) Conflicts of water
 - b) Effect of modern agriculture
 - c) Noise pollution
 - d) Solid waste management

[B16 ENG 2103]

[B16 CS 2201]
II/IV B.Tech. DEGREE EXAMINATION
Second Semester
OPERATING SYSTEMS
MODEL QUESTION PAPER
COMPUTER SCIENCE & ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Briefly explain about
 - (a) Main Frame System.
 - (b) Base Register.
 - (c) Cache Memory.
 - (d) Device Controller.
 - (e) Control Word.
 - (f) Page Table.
 - (g) Write any 4 UNIX commands.
2.
 - a) What are the functions of operating systems?
 - b) Explain the structure of an operating system.
3.
 - a) What is the difference between preemptive and non preemptive scheduling?
 - b) Explain any Two non preemptive scheduling algorithms with suitable examples.
4. Explain any TWO Classical problems with code.
5.
 - a) What are the conditions of deadlock? Explain with example.
 - b) Explain about deadlock detection and recovery.
6.
 - a) Discuss about various memory allocation strategies.
 - b) What is page fault? What happens when page fault occurs?
7. Consider the following page reference string
1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.
How many page faults would occur for the following page replacement algorithms, assuming an allocation of 4 frames?
 - a) LRU
 - b) FIFO
 - c) OPTIMAL
8.
 - a) b) Explain about different directory structures.
 - b) Explain the process management in MS-DOS.

[B16 CS 2201]

[B16 CS 2202]
II/IV B.Tech. DEGREE EXAMINATION
Second Semester
COMPUTER ORGANIZATION
MODEL QUESTION PAPER
COMPUTER SCIENCE & ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Write briefly about
 - (a) Shift Micro Operations
 - (b) Poling
 - (c) Format of Micro instruction
 - (d) Characteristics of RISC
 - (e) Parallel Processing
 - (f) RAM and ROM
 - (g) Control Word

2. (a) Draw and Explain bus line with Three state Buffers.
(b) Explain Arithmetic Micro Operations.

3. (a) Explain in detail about Instruction cycle with a flow chart.
(b) Explain Memory Reference Instructions.

4. Explain Micro program sequencer with a Flow chart.

5. Write any two of the following
 - (a) Pipelining
 - (b) Vector pipeline
 - (c) Array pipeline

6. (a) Describe Stack Organization.
(b) Explain Addressing modes with suitable examples .

7. (a) Explain Hand shaking mechanism in Asynchronous Data Transfer.
(b) Explain DMA controller with a neat sketch.

8. In detail explain Virtual Memory.

[B16 CS 2202]

[B16 CS 2203]
II/IV B.Tech. DEGREE EXAMINATION
Second Semester
MICROPROCESSORS
MODEL QUESTION PAPER
COMPUTER SCIENCE & ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. a) What is Microprocessor
b) Write 8085 Interrupts
c) Write IO instructions in 8085 MPU
d) Define the 8086 status word
e) What is Read on fly operation
f) Write 8253 modes
g) SRAM vs DRAM
2. a) Explain the 8085 architecture and describe its PIN operation
b) Design the Timing diagram for the instruction MVI A,32H
3. a) Explain Memory classification
b) Describe the Interfacing characteristics of the IO devices
4. a) Explain the 8255 architecture and describe its MODEs of operation
b) Explain the USART
5. a) Explain 8279 architecture
b) Write the 8259 EOI commands
6. Explain the 8086 architecture
 - a) Maximum Mode
 - b) Minimum Mode
7. a) Explain 8086 addressing modes.
b) Write the 8086 string manipulation instructions .
8. a) Design Interfacing diagram for 32KX8 SRAM by using 4KX8 SRAM's
b) Write an assembly language program for HEXA keyboard.

[B16 CS 2203]

[B16 CS 2204]
II/IV B.Tech. DEGREE EXAMINATION
Second Semester
DATA COMMUNICATIONS
MODEL QUESTION PAPER
COMPUTER SCIENCE & ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Briefly explain about
 - (a) Define fundamental frequency.
 - (b) Pulse stuffing.
 - (c) Bit rate and Baud rate.
 - (d) Goals of multiplexing.
 - (e) Piggy backing.
 - (f) Synchronous and Asynchronous transmission.
 - (g) Different types of Modem.

2.
 - (a) Explain about TCP/IP protocol architecture
 - (b) Explain about Transmission Impairments.

3.
 - (a) Explain about Digital – Digital encoding techniques.
 - (b) Explain about pulse code modulation(PCM) and Delta modulation(DM).

4.
 - (a) Explain about Cyclic Redundancy Check (CRC) in error detection process with example.
 - (b) Explain about HDLC protocol.

5.
 - (a) Differentiate between Synchronous TDM and Statistical TDM.
 - (b) Explain about sliding window protocol.

6. Explain about switching processors and Front-end processors.

7.
 - (a) Explain about various modes of propagation in wireless transmission.
 - (b) Explain various Automatic Repeat Request techniques in error control.

8.
 - (a) Explain about various types of terminals.
 - (b) Explain about characteristics of interfacing.

[B16 CS 2204]

[B16 CS 2205]
II/IV B.Tech. DEGREE EXAMINATION
Second Semester
ADVANCED DATA STRUCTURES
MODEL QUESTION PAPER
COMPUTER SCIENCE & ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

1. Explain the following.
 - a. Define Red Black Trees.
 - b. d-Heaps
 - c. Open Addressing
 - d. Difference between Internal and External sorting
 - e. Applications of ADT Disjoint set

2.
 - a. Define AVL Tree. Explain single and double Rotations in an AVL tree.
 - b. Explain B-Tree with an Example

3.
 - a) Show the result of inserting 10, 12, 1, 14, 6, 5, 8, 15, 3, 9, 7, 4, 11, 13, and 2 one at a time into an initially empty binary Heap.
 - b) Write Routine to perform delete_min operation for the above binary heap.

4. What are the advantages and disadvantages of different Collision Resolution strategies?

5. Explain the following.
 - a) Multi Way Merge
 - b) Poly-Phase Merge
 - c) Replacement Selection.

6.
 - a) Write a program to perform Topological sort on a Graph.
 - b) Applications of DFS.

7.
 - a) Advantages of Path Compression.
 - b) Explain how Disjoint sets are useful in finding Minimum spanning Tree using Kruskal's Algorithm.

8. Show how to Merge two Skew Heaps with one top-down pass and reduce the merge cost to $O(1)$ Amortized time.

[B16 CS 2205]

[B16 CS 2206]
II/IV B.Tech. DEGREE EXAMINATION
Second Semester
COMPUTER GRAPHICS
MODEL QUESTION PAPER
COMPUTER SCIENCE & ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only

1. Explain the following
 - a. What is a PIXEL?
 - b. What is meant by Frame Buffer?
 - c. What is inside-outside test?
 - d. Define Homogeneous coordinates.
 - e. What is Clipping?
 - f. Distinguish between a Window and a Viewport?
 - g. Define Approximation Splines.
2.
 - a. List and explain applications areas of Computer Graphics?
 - b. Differentiate Raster-Scan and Random-Scan systems with illustrations.
3.
 - a. Implement simple DDA-Line drawing algorithm in C.
 - b. Scan convert a circle with radius 5 units using Mid-Point Circle Algorithm.
4.
 - a. Explain basic Two-Dimensional geometric transformations.
 - b. Obtain the coordinates of a square with $(-2,-2)$, $(2,-2)$, $(2,2)$ and $(-2,2)$ as the corner points after rotating it by 90 degrees clockwise about the point $(2,2)$.
5.
 - a. Derive the transformation matrix for Window-to-Viewport coordinate transformation.
 - b. Demonstrate Cohen-Sutherland line Clipping Algorithm with diagrams.
6.
 - a. Scan convert a line starting at $(0,0)$ and ending at $(10,16)$ using Bresenham's Line drawing algorithm.
 - b. Explain Bezier curves and surfaces.
7.
 - a. Construct basic Three-Dimensional geometric transformations using matrices.
 - b. Derive transformation matrix for 3D Rotation about an arbitrary line.
8.
 - a. What is a projection? Describe types of projections?
 - b. What is Aliasing? Discuss about any two Anti-Aliasing Techniques.

[B16 CS 2206]

[B16 CS 3101]
III/IV B.Tech. DEGREE EXAMINATION
First Semester
COMPUTER NETWORKS
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only

1. Answer the following briefly: 7*2=14 M
 - (a) Computer Network.
 - (b) Circuit switching
 - (c) ATM cell
 - (d) Congestion Control
 - (e) Network Topologies
 - (f) Multicasting
 - (g) Routing

2.
 - a. Write a comparative note on OSI model and TCP/IP model. 7M
 - b. Explain the phases in Circuit switching approach. 7M

3.
 - a. What is Packet-Switching ? Explain the packet –switching principles and different virtual circuit types. 7M
 - b. Explain X.25 virtual circuit service and packet format. 7M

4.
 - a. Explain Frame-relay call control mechanism in detail. 7M
 - b. Describe ATM protocol architecture. 7M

5.
 - a. Discuss about different LAN topologies and MAC format. 7M
 - b. Explain working of Ethernet and Fast Ethernet. 7M

6.
 - a. Discuss Congestion control techniques. 7M
 - b. Discuss the differences between TCP & UDP. 7M

7.
 - a. With a suitable example explain Disjkstra’s algorithm 7M
 - b. What is meant by sub netting ? Why it is required ? Explain how subnet masks are generated with respect to IP addresses. 7M

8. Write a Short Note On Following: 14M
 - a. Switches & Routers
 - b. Bridges
 - c. Frequency Reuse

[B16 CS 3101]

[B16 CS 3102]
III/IV B.Tech. DEGREE EXAMINATION
First Semester
WEB TECHNOLOGIES
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only

- | | |
|--|----------|
| 1. Explain Briefly | 7*2M=14M |
| a. Cell Spacing and Cell Padding. | |
| b. Types of Lists. | |
| c. Class Selector and id Selector. | |
| d. Name Space in XML. | |
| e. Syntax of function in PHP with example. | |
| f. Web server. | |
| g. Cookie and session Tracking. | |
|
 | |
| 2. A. Explain about frames and forms with suitable examples. | 7M |
| B. Explain about types of CSS with examples. | 7M |
|
 | |
| 3. A. Difference between HTML and DHTML. | 7M |
| B. Explain about Prompt, Alert, Confirm boxes with examples. | 7M |
|
 | |
| 4. Develop a java script to validate user email id and phone number. | 14M |
|
 | |
| 5. A. Explain about name space with example. | 7M |
| B. Write a XML schema of supermarket. | 7M |
|
 | |
| 6. A. Write a PHP program to find and display factorial of a given number. | 7M |
| B. Illustrate the usage of arrays in PHP. | 7M |
|
 | |
| 7. Write a HTML program to insert a record into the database. (USING PHP) | 14M |
|
 | |
| 8. What is session tracking? What are the ways to do session tracking?
How session tracking is done in PHP. | 14M |

[B16 CS 3102]

[B16 CS 3103]
III/IV B.Tech. DEGREE EXAMINATION
First Semester
FORMAL LANGUAGE AND AUTOMATA THEORY
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only

1. a) Define DFA and give an example. 7x2=14M
b) Write any two applications of Finite automata.
c) What is ambiguous grammar? Give an example.
d) What is ID of Push down automata give an example.
e) What are different types of grammars and name the automata accepting the different languages.
f) What is church thesis?
g) What is decidability?

2. a) Design NFA for accepting the strings { ab, ba } and then convert it to DFA. 7M
b) Construct NFA with ϵ moves equivalent to the Regular Expression (ab+aab) * 7M

3. a) Define Moore Machine; design a Moore machine to count the occurrences of substring abb in the input. 7M
b) Define Mealy Machine; design a Mealy machine to generate output Y for all the strings ending with aa or bb and for all the remaining strings output will be N. 7M

4. a) Define Regular expression. 2M
b) Write the Regular expression and equivalent Finite automata for the following: 12M
 - i. set of all strings beginning with 01 and ending with 10
 - ii. set of all strings having three consecutive zeros or three consecutive ones
 - iii. set of all strings ending with either 000 or 111
 - iv. set of all strings denoting 3 or more zero's followed by 4 or more one's

5. a). Define CFG and Generate Context free grammar for $L = \{ WCW^R / W \text{ in } (0+1)^* \}$ 7M
b) Define CNF and Convert the following CFG to CNF
 $S \rightarrow aSa / bSb / a / b$ 7M

6. a) What is pumping lemma on CFL and what are the applications of pumping lemma? 7M
b) What are the closure properties on Context free languages? 7M

7. a) Define Pushdown Automata? How to convert CFG to PDA 7M
b) Design PDA for recognizing the Context free language $L = a^n \{ c b^n / n=1 \}$ 7M

8. a) Define the Turing Machine and what are the languages accepted by TM? 7M
b) Design a Turing Machine for recognizing the language $L = W \{ W^R / W \text{ in } (a,b)^* \}$ 7M

[B16 CS 3103]

[B16 CS 3104]
III/IV B.Tech. DEGREE EXAMINATION
First Semester
DATABASE MANAGEMENT SYSTEMS
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

1. a. What is a relation in relational model? 2m
b. What are different levels of abstraction in DBMS? 2m
c. What are anomalies of redundancy in tables? 2m
d. What are anomalies of Concurrent Transactions? 2m
e. Write SQL command for creating a sequence 2m
f. Explain Lossless join decomposition 2m
g. What is WAL? 2m

2. a. Describe the structure of DBMS with diagram. 7m
b. Compare File processing system and DBMS. 7m

3. a. What are different constraints over relations? How do you enforce the integrity constraints? 7m
b. How do you convert ER-diagrams to tables? 7m

4. Consider the following database and answer the following queries in SQL.
Sailors(sid,sname,rating,age) Boats(bid,bname,color) Reserves(sid,bid,day)
a. Find the sid and sname of sailors who have reserved a boat on 10-jun-2000. 3M.
b. Find the average age for each rating level. 3M.
c. Find the sid and sname of sailors who have reserved all boats. 3M.
d. Find the sids of sailors who have reserved two different boats on the same day. 3M
e. Find the sids of sailors who have reserved both Red and Green boats. 2M.

5. a. Explain Normal forms up to BCNF. 7M.
b. Design an algorithm to perform Lossless join decomposition to BCNF. 7M.

6. a. How do serialize schedules using Two phase locking protocol? 7M.
b. Explain timestamp ordering protocol. 7M.

7. a. Illustrate the basic features of ER model 7M.
b. Demonstrate ISA relationship and aggregation in ER diagrams 7M.

8. a. Explain the ACID properties of a transaction. 5M.
b. Explain ARIES recovery algorithm. 9M

[B16 CS 3104]

[B16 CS 3105]
III/IV B.Tech. DEGREE EXAMINATION
First Semester
EMBEDDED SYSTEMS
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

1. Write a short notes on the following: 7x2=14M
 - (a) What are Open collector and Tri-stating outputs?
 - (b) Explain Random Access Memory.
 - (c) What is Locator map?
 - (d) Mention different ways to protect shared data.
 - (e) What is the major difference between Emulator and simulator.
 - (f) What is System tick.
 - (g) What is meant by debugging.

2.
 - (a) Discuss about various ROM variants used in embedded systems. 7M
 - (b) Describe cordless bar-code scanner function as an example of embedded systems. 7M

3.
 - (a) Explain how shared data is handled in RTOS. 7M
 - (b) Explain about Function Queue Scheduling Architecture. 7M

4.
 - (a) Discuss binary semaphore in RTOS. 7M
 - (b) Give comparisons of the methods for intertask communication. 7M

5.
 - (a) Explain about RTOS memory management subsystem. 7M
 - (b) Explain the differences between Hard and Soft Real Time Systems. 7M

6. Explain the following software development tools 14M
 - (a) Cross-compiler (b) linker and (c) loader /locator

7. Explain various methods for getting embedded software into the target system. 14M

8.
 - (a) Discuss the method used to test the embedded systems software 7M
 - (b) Explain laboratory tools in testing embedded systems software. 7M

[B16 CS 3105]

[B16 CS 3106]
III/IV B.Tech. DEGREE EXAMINATION
First Semester
BIO-INFORMATICS
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

1. a)What is Genome 14M
b)Write about any two Protein Sequence databases
c)Write about DNA sequence databases
d)What is the importance of DNA sequence analysis
e)What is Identity and Similarity in sequences
f) Give the Computational Complexity of Multiple sequence alignment
g) What are the Specialized packages in DNA analysis

2. Write about 14M
a) Protein pattern databases
b) Structure Classification Databases

3. Write about Specialized Genomic resources 14M

4. Explain various features of DNA sequence Analysis 14M

5. With suitable examples explain the Dotplot, Local and global similarity 14M

6. Write about Simultaneous methods and Progressive Methods of Multiple Sequence alignment 14M

7. Write about Secondary Database structure 14M

8. Write about 14M
a) Intranet Packages
b) Internet Packages

[B16 CS 3106]

[B16 CS 3107]
III/IV B.Tech. DEGREE EXAMINATION
First Semester
IMAGE PROCESSING
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

- | | | |
|----|--|-----|
| 1. | a) Define Image acquisition | 14M |
| | b) Define pixel | |
| | c) Write the purpose for Image compression | |
| | d) Define Thresholding | |
| | e) Write about Opening and Closing | |
| | f) Write about the gray scale Image | |
| | g) Define image segmentation | |
| 2. | a) Explain fundamental steps in Image processing | 7M |
| | b) Explain Elements of Digital Image Processing. | 7M |
| 3. | (a) Explain about Arithmetic and logical operations | 7M |
| | (b) Explain about smoothing filters | 7M |
| 4. | (a) Define an edge. Explain various edge enhancement filters. | 7M |
| | (b) Distinguish between Low pass filters and High pass filters | 7M |
| 5. | (a) Explain about Image compression standards | 7M |
| | (b) Give the steps for Contour coding. | 7M |
| 6. | (a) Explain Characteristics of Segmentation, and Detection of Discontinuities | 7M |
| | (b) Explain about Pixel Based Segmentation Method | 7M |
| 7. | (a) Explain in detail Binary dilation and Erosion. | 7M |
| | (b) Explain about Thinning and Skeletons in image morphology | 7M |
| 8. | (a) Explain about Fourier Transform | 7M |
| | (b) Explain Comparative study of Filters in Domain and Spatial Domain Frequency. | 7M |

[B16 CS 3107]

[B16 CS 3108]
III/IV B.Tech. DEGREE EXAMINATION
First Semester
APPLICATION DEVELOPMENT USING JAVA
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only.

- | | | |
|----|---|-----|
| 1. | a) Define thread | 14M |
| | b) Write about race condition | |
| | c) Write about JDBC connection types. | |
| | d) Write about Tomcat server | |
| | e) Define SharingSession | |
| | f) Define TCP | |
| | g) What is ServerSocket | |
| 2. | a) Explain about GUI control processing events | 7M |
| | b) Describe the Layout Managers in java with examples. | 7M |
| 3. | a) Explain about components and containers in Java Swing. | 7M |
| | b) Explain about the structure of JDBC. | 7M |
| 4. | a) Explain the JDBC classes for creating a connection with example. | 7M |
| | b) Explain the declaring variables and methods. | 7M |
| 5. | a) Write a JAVA Database connection program for MS Access | 7M |
| | b) Explain event handling in JavaSwing. | 7M |
| 6. | a) Explain the Inner classes that implement Runnable interface with example | 7M |
| | b) Write a JSP Program for Database Access | 7M |
| 7. | a) Explain about NIO Fundamentals | 7M |
| | b) Explain about The I/O Stream Classes | 7M |
| 8. | a) Explain about URL Connection demo class with example | 7M |
| | c) Explain about Datagram Socket | 7M |

[B16 CS 3108]

[B16 CS 3201]
III/IV B.Tech. DEGREE EXAMINATION
Second Semester
DATA WAREHOUSING AND DATA MINING
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

- | | |
|---|---------|
| 1. Explain the following | 7*2=14M |
| (a) Data model and Data Mart | |
| (b) Binning. | |
| (c) Apex cuboid. | |
| (d) Lazy Learner. | |
| (e) Supervised and Unsupervised learning. | |
| (f) Support and Confidence. | |
| (g) Dendogram. | |
| 2. (a) What is data mining? Briefly describe the architecture of a data mining system. | 7M |
| (b) Explain data mining functionalities. | 7M |
| 3. (a) Discuss in detail about the Data Preprocessing Techniques. | 7M |
| (b) Explain about regression with example. | 7M |
| 4. (a) Write the differences between operational database and data warehouse. | 7M |
| (b) Briefly describe multidimensional data model representation. | 7M |
| 5. (a) Explain about Apriori algorithm with example. | 7M |
| (b) Compare different correlation methods for identifying interesting association rules. | 7M |
| 6. (a) Explain Decision tree induction. | 7M |
| (b) Discuss about Back propagation algorithm for neural network-based classification of data. | 7M |
| 7. (a) Explain the different methods for evaluating the classification models. | 7M |
| (b) Explain Partitioning Clustering Methods. | 7M |
| 8. (a) Write about different types of data in cluster analysis. | 7M |
| (b) Explain Density-Based Clustering Method. | 7M |

[B16 CS 3201]

[B16 CS 3202]
III/IV B.Tech. DEGREE EXAMINATION
Second Semester
OBJECT ORIENTED SOFTWARE ENGINEERING
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only.

- | | |
|--|------------|
| 1. a) What are various types of Software | 7X2 = 14 M |
| b) What is a Non functional Requirement | |
| c) What are various types of UML diagrams | |
| d) What are the essentials of Class diagrams | |
| e) What is Design Pattern | |
| f) Write about equivalence Class partitioning | |
| g) What are various Project Management Activities | |
| 2. In detail Explain Spiral Model | 14 M |
| 3. Explain various techniques for Gathering and Analyzing Requirements | 14 M |
| 4. a) Explain various ways for making User Centered Design | 7 M |
| b) Write about various Usability Principles | 7 M |
| 5. a) Write about Association and Multiplicity in Class diagrams | 7 M |
| b) With a suitable example explain Activity diagrams | 7 M |
| 6. With suitable examples explain | |
| a) Adaptor design pattern | 7 M |
| b) MVC architecture pattern | 7 M |
| 7. a) What is a Test Case ? Write about Unit Testing | 7 M |
| b) Explain Black Box testing and White Box Testing | 7 M |
| 8. Write short notes on | |
| a) Software Engineering Teams | 4 M |
| b) PERT charts | 5 M |
| c) Gantt charts | 5 M |

[B16 CS 3202]

[B16 CS 3203]
III/IV B.Tech. DEGREE EXAMINATION
Second Semester
DESIGN AND ANALYSIS OF ALGORITHMS
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

1. A) Find the number of comparisons made by the sequential search in the worst case and best case . 14M
B) Differentiate space and time complexity.
C) what are the steps involed for solving recursive algorithms.
D) write any two characteristics of Greedy Algorithm.
E) what is the general divide and conquer recurrence relation.
E) define balanced tree.
F) define horner's rule.
G) state sum of sub set problem.
2. A) What are the fundamental steps involved in algorithmic problem solving ? 7M
B) Explain in detail about asymptotic notations. 7M
3. What is meant bu Exhaustive search? How to solve assignment problem by Exhaustive search. 7M
4. Show how Quick Sort is working for the following sequence of keys in assending order : 22, 55, 33, 11, 99, 77, 66, 54, 21, 32. 7M
5. If $A = \begin{bmatrix} 5 & 3 & 0 & 2 \\ 4 & 3 & 2 & 6 \\ 7 & 8 & 1 & 4 \\ 9 & 4 & 6 & 7 \end{bmatrix}$, $B = \begin{bmatrix} 3 & 2 & 4 & 7 \\ 2 & 5 & 2 & 9 \\ 3 & 9 & 0 & 3 \\ 7 & 6 & 2 & 1 \end{bmatrix}$ Implement Strassen's matrix multiplication on A and B. 14M
6. A) Find the Huffman code for the following data: 7M

Character	A	B	C	D	---
Probability	0.35	0.1	0.2	0.2	0.15

B) Solve the All Pair Shortest Path Problems for given adjacent matrix graph using FLOYD'S Algorithm. 7M

$$\begin{bmatrix} 0 & \infty & 3 & \infty \\ 2 & 0 & \infty & \infty \\ \infty & 7 & 0 & 1 \\ 6 & \infty & \infty & 0 \end{bmatrix}$$

7. A) Find the Optimal solution for 0/1 knapsack problem, for the values $(w_1, w_2, w_3, w_4) = (2, 1, 3, 2)$,
 $(v_1, v_2, v_3, v_4) = (12, 10, 20, 15)$ and capacity $W = 5$. 7M
- B) State and Explain 4-Queens Problem. 7M
8. A) Explain about methods in Branch and Bound Technique. 7M
- B) Write about NP-hard and NP-complete problems. 7M

[B16 CS 3203]

[B16 CS 3204]
III/IV B.Tech. DEGREE EXAMINATION
Second Semester
COMPILER DESIGN
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

- | | |
|---|----------|
| 1. a) Explain Bootstrapping | 7x2 =14M |
| b) What is input buffering? | |
| c) What is left recursion and how to eliminate left recursion? | |
| d) What is an LL(1) grammar give an example | |
| e) Differentiate inherited and synthesized translation. | |
| f) Explain about copy propagation | |
| g) Write a short note Symbol table | |
| 2. Explain about the structure of a compiler using examples. | 14M |
| 3. a) Explain about the role of lexical analyzer. | 7M |
| b) Explain about the role design of Lexical-Analyzer generator | 7M |
| 4. a) Differentiate Top-down and Bottom-up parsers | 4M |
| b) Explain about Shift-Reduce parsing | 10M |
| 5. What is LR parser and construct SLR parsing table using a CFG | 14M |
| 6. a) Explain about Syntax-Directed Translation schemes | 7M |
| b) Explain about different types of Three-Address code statements | 7M |
| 7. a) What are principle sources of optimization | 7M |
| b) Write about peephole optimization | 7M |
| 8. a) Explain about simple code generator | 7M |
| b) Explain about storage organization | 7M |

[B16 CS 3204]

[B16 CS 3205]
III/IV B.Tech. DEGREE EXAMINATION
Second Semester
ARTIFICIAL INTELLIGENCE
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

1. a) Define AI and list few applications of Artificial intelligence. 14M
 - a) What is production system?
 - b) What is Heuristic search technique?
 - c) Differentiate between forward reasoning and backward reasoning
 - d) What are frames? Give an example.
 - e) What augmented transition networks.
 - f) What are the components of planning system?
 - g) What is expert system shell?
2. a) Illustrate a possible heuristic function for solving 8-Puzzle problem and also give the solution. 7M
 - b) Compare any two traditional ways of solving travelling salesman problem and suggest the best possible heuristic function. 7M
3. a) Describe the behavior of A* search in terms of optimality and completeness. 7M
 - b) Explain about Simple Hill climbing and Steepest –Ascent Hill climbing; also explain how 8-puzzle problem can be solved by using Hill climbing. 7M
4. a) Compare Procedural and declarative Knowledge representation 7M
 - b) Explain RETE matching and Conflict Resolution. 7M
5. a) Explain clause conversion algorithm by taking an example 7M
 - b) Explain Unification algorithm and give an example for each possible output 7M
6. a) What is Conceptual dependency? Write any 5 CD rules. 7M
 - b) Write short notes on Partitioned semantic networks. 7M
7. a) Explain about Bayesian Networks. 7M
 - b. Explain about justification based TMS 7M
8. a) Write different steps in Natural language processing. 7M
 - b) Explain the architecture of an Expert system. 7M

[B16 CS 3205]

[B16 CS 3206]
III/IV B.Tech. DEGREE EXAMINATION
Second Semester
CLOUD COMPUTING
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

1. Explain the following 7x2=14
 - a. Cloud Computing
 - b. Virtual Machine
 - c. Architectural Design Challenges
 - d. Security in cloud
 - e. Mention few cloud storage providers
 - f. OVF
 - g. SAAS
2.
 - a. Mention the technologies for memory, storage and wide area networking 7M
 - b. Explain Peer-to-Peer Network Families 7M
3.
 - a. Explain VMM Design Requirements and Providers. 7M
 - b. Explain Binary Translation with Full Virtualization 7M
4.
 - (a) Explain Trust Management in Virtualized Data Centers 7M
 - (b) Write short note on Cloud Computing Service Models 7M
5.
 - (a) Explain traditional common to Grids and Clouds 7M
 - (b) Explain Google File System 7M
6.
 - a. Write shot note on Web API 7M
 - b. Security in cloud 7M
7.
 - a. Amazon Simple Storage Services(S3) 7M
 - b. Explain Open Source Eucalyptus and Nimbus 7M
8. Write short note on
 - a. Google App Engine 6M
 - b. Microsoft Azure 4M
 - c. Bungee Connect 4M

[B16 CS 3206]

[B16 CS 3207]
III/IV B.Tech. DEGREE EXAMINATION
Second Semester
MOBILE COMPUTING
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

- | | |
|---|----------|
| 1. Answer the following | 7*2=14M. |
| a. CDMA. | |
| b. Wireless LANs. | |
| c. Java Card. | |
| d. Applications of mobile computing. | |
| e. Asymmetry communications. | |
| f. SMS. | |
| g. Fixed network transmission. | |
| 2. a. Explain Ubiquitous networks. | 7M |
| b. Explain Three-tier architecture for mobile computing. | 7M |
| 3. a. Explain the advantages and disadvantages of wireless LANs. | 7M |
| b. Explain the difference between wireless and fixed telephonic networks. | 7M |
| 4. a. Compare the IEEE 802.11a,b,g and n standards. | 7M |
| b. Describe various networks for connecting to the internet. | 7M |
| 5. a. Explain i) GSM | 4M |
| ii) GPS | 3M |
| b. Differentiate between Bluetooth & RFID. | 7M |
| 6. a. How data replicated for mobile computing. | 7M |
| b. Explain the applications and limitations of GPRS. | 7M |
| 7. a. What is 3G networks and write its applications. | 7M |
| b. Explain Classification of new data delivery mechanisms. | 7M |
| 8. Explain the following in details | |
| i. Mobile Computing over Short Message Services (SMS). | 7M |
| ii. Wireless application protocols. | 7M |

[B16 CS 3207]

[B16 CS 3208]
III/IV B.Tech. DEGREE EXAMINATION
Second Semester
DISTRIBUTED SYSTEMS
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only

1. Explain the following 7X2=14M
 - a. Distributed operating system.
 - b. Tightly coupled Vs. Loosely coupled systems
 - c. ATM
 - d. Mutual exclusion
 - e. Thread models
 - f. Real Time Distributed Systems
 - g. Release consistency
2.
 - a. Explain software concepts of distributed systems? 7M
 - b. Explain about the design issues of the DOS? 7M
3.
 - a. Explain about the parameter passing mechanism in RPC. 7M
 - b. Explain about the group communication. 7M
4.
 - a. Explain about the clock synchronization algorithms. 7M
 - b. Explain about the deadlocks in distributed systems. 7M
5.
 - a. Explain about the processor allocation algorithms. 7M
 - b. Explain about the fault tolerance. 7M
6.
 - a. Explain about the distributed file system implementation. 7M
 - b. Explain about the trends in distributed system. 7M
7.
 - a. Explain about the sequential consistency with an example. 7M
 - b. Explain about implementation of atomic transactions. 7M
8. Explain about the page based distributed shared memory 14M

[B16 CS 3208]

[B16 CS 3209]
III/IV B.Tech. DEGREE EXAMINATION
Second Semester
ADVANCED COMPUTER ARCHITECTURE
MODEL QUESTION PAPER
COMPUTER SCIENCE AND ENGINEERING

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only

- | | |
|---|---------|
| 1. a) Define Computer Architecture | 7X2=14M |
| b) Differentiate CISC/RISC scalar processors | |
| c) What is instruction pipelining | |
| d) Discuss about cross bar switch and multiport memory | |
| e) Describe vector instruction types | |
| f) List some latency hiding techniques | |
| g) What is parallel processing | |
| 2. Define advanced processing and explain about super scalar processors | 14M |
| 3. Describe the concept of super pipelining design with a neat sketch | 14M |
| 4. Briefly explain about snoopy bus protocols | 14M |
| 5. Illustrate CM-2 and the MASPAP MP-1 architecture in detail | 14M |
| 6. Define multithreading and explain its issues and solutions | 14M |
| 7. Explain code optimization and scheduling in parallel pipelining | 14M |
| 8. Discuss about master slave and multithreaded UNIX | 14M |

[B16 CS 3209]

[B16CS4101]
IV/IV B.Tech. DEGREE EXAMINATION
First Semester
MACHINE LEARNING
COMPUTER SCIENCE AND ENGINEERING
MODEL QUESTION PAPER

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only.

1. Answer the following. 2x7=14 M
 - a. Explain descriptive model and predictive model
 - b. Geometric learning model Vs probabilistic learning model
 - c. What is one versus one voting?
 - d. Decision tree
 - e. Support Vector Machines
 - f. Significance of Sigmoid function
 - g. Hierarchical Clustering

2.
 - a. Write in detail about ingredients of machine learning 7M
 - b. What is scoring and ranking? How do you assess and visualise ranking performance? 7M

3.
 - a. How to handle more than two classes in beyond binary classification 7M
 - b. Explain how hypothesis space search is carried in decision tree learning 7M

4.
 - a. Examine the ranking and probability estimation trees 7M
 - b. Differentiate learning ordered rules and unordered rules 7M

5.
 - a. Differentiate linear models and distance based models 7M
 - b. Explain feature construction and transformation techniques 7M

6.
 - a. Write an algorithm for K-means clustering. Describe its working in brief using example 7M
 - b. Explain univariate linear regression using least square method 7M

7. Write short notes on the following models
 - a. Bagging and random forest 7M
 - b. Boosted rule learning 7M

8.
 - a. Explain Back propagation algorithm .Mention its limitations 7M
 - b. How is Q-learning used in machine learning? Explain with help of an example 7M

[B16CS4101]

[B16CS4102]
IV/IV B.Tech. DEGREE EXAMINATION
First Semester
BIG DATA ANALYTICS
COMPUTER SCIENCE AND ENGINEERING
MODEL QUESTION PAPER

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

- | | |
|---|-----|
| 1. Answer the following. | 14M |
| h. What are the characteristics of Big data? | |
| i. List the building blocks of Hadoop. | |
| j. List the applications of Map Reduce. | |
| k. Define HDFS. | |
| l. Give the basic templates of a Map Reduce program. | |
| m. What is the purpose of Bloom filter? | |
| n. What is the use of page rank algorithm? | |
| 2. a. Why is big data important? Explain in detail. | 7M |
| b. Discuss big data in healthcare, transportation and medicine. | 7M |
| 3. a. What are the advantages of Hadoop? Explain Hadoop Architecture and its Components with the neat diagram. | 7M |
| b. Discuss role of Data node and Name node in HDFS. | 7M |
| 4. a. Explain "Map Phase" and "Combiner Phase" in Map Reduce. | 7M |
| b. Discuss in detail about Hadoop Streaming. | 7M |
| 5. a. Write a note on Hadoop archives. | 7M |
| b. Discuss about parallel copying with distcp. | 7M |
| 6. a. Write a Map Reduce steps for counting occurrences of specific numbers in the input text file(s). Also write the commands to compile and run the code. | 7M |
| b. What is the role of Combiners in Map Reduce? | 7M |
| 7. a. What is advanced Map Reduce? Discuss in detail. | 7M |
| b. Explain the process of joining the data from different sources. | 7M |
| 8. a. Write and explain shortest path algorithm. | 7M |
| b. How the parallelized bloom filters are created? Explain. | 7M |

[B16CS4102]

[B16ENG4101]
IV/IV B.Tech. DEGREE EXAMINATION
First Semester
PRINCIPLES OF ECONOMICS & MANAGEMENT
(Common to CSE & IT)
MODEL QUESTION PAPER

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

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|---|-----|
| 1. Write short notes for the following | 14M |
| a. Scarcity definition | |
| b. Demand | |
| c. Oligopoly | |
| d. Sole proprietorship | |
| e. Plant location | |
| f. Distribution channels | |
| g. Phases of installing a project | |
| 2. What is utility? And explain the law of diminishing marginal utility and its limitations. | 14M |
| 3. Describe the conditions of perfect competition comma monopolistic competition and monopoly. | 14M |
| 4. Explain the silent features of joint stock companies and advantages and disadvantages of private and public limited companies. | 14M |
| 5. Describe the functions of Management. | 14M |
| 6. Explain the functions of production planning control. | 14M |
| 7. Describe the importance of depreciation and write about straight and diminishing balance method. | 14M |
| 8. Explain the functions and objectives of entrepreneurship. | 14M |

[B16ENG4101]

[B16CS4201]
IV/IV B.Tech. DEGREE EXAMINATION
Second Semester
INTERNET OF THINGS
COMPUTER SCIENCE AND ENGINEERING
MODEL QUESTION PAPER

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

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|---|-----|
| 1. Answer the following. | 14M |
| a. Define Internet of Things | |
| b. What is M2M | |
| c. Define sensor | |
| d. What is Actuator | |
| e. What is embedded system. | |
| f. Write about Raspberry pi | |
| g. Define MQTT | |
| 2. Explain Internet of things with examples. | 14M |
| 3. a. Explain M2M communication. | 7M |
| b. Design Principles For Connected Devices. | 7M |
| 4. a. Explain IoT/M2M systems Layers and designs standardizations. | 7M |
| b. Explain communication Technologies for connected devices. | 7M |
| 5. a. Explain design principles for the Web connectivity for connected-Devices. | 7M |
| b. Discuss message communication protocols for Connected Devices. | 7M |
| 6. a. Explain Application Layer Protocols. | 7M |
| b. Explain about IDE programming steps for Arduino board. | 7M |
| 7. a. Explain about Data Acquiring and storage. | 7M |
| b. Write about cloud storage. | 7M |
| 8. Distinguish between Industrial IoT and Automotive IoT. | 14M |

[B16CS4201]

[B16CS4202]
IV/IV B.Tech. DEGREE EXAMINATION
Second Semester
CRYPTOGRAPHY AND NETWORK SECURITY
COMPUTER SCIENCE AND ENGINEERING
MODEL QUESTION PAPER

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.
Answer any FOUR questions from the remaining.
All Questions Carry equal marks
All parts of a question must be answered at one place only.

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|---|-----|
| 1. Answer the Following. | 14M |
| a. What is Confidentiality? | |
| b. What is Biometric Authentication? | |
| c. What is RBAC? | |
| d. What is Malware? | |
| e. Explain Firewall Characteristics. | |
| f. What is Digital Signature? | |
| g. What is HTTPS? | |
| 2. a. Explain different types of threats and attacks. | 7M |
| b. Explain Remote User Authentication. | 7M |
| 3. a. Discuss about Access Control Principles. | 7M |
| b. Discuss about Database Access Control. | 7M |
| 4. a. Explain Keyloggers, Phishing and Spyware. | 7M |
| b. Explain Different types of flooding Attacks. | 7M |
| 5. a. Discuss about Distributed Host Based Intrusion Detection. | 7M |
| b. Discuss about Intrusion Prevention Systems. | 7M |
| 6. a. Explain about writing safe program code. | 7M |
| b. Explain security related to windows operating systems. | 7M |
| 7. a. Discuss about principles of symmetric key encryption. | 7M |
| b. Explain RSA algorithm with suitable example. | 7M |
| 8. a. Explain about Secure Socket Layer. | 7M |
| b. Discuss about Wireless LAN Security. | 7M |

[B16CS4202]

[B16CS4203]
 IV/IV B.Tech. DEGREE EXAMINATION
 Second Semester
OPERATIONS RESEARCH
COMPUTER SCIENCE AND ENGINEERING
 MODEL QUESTION PAPER

Time: 3 Hrs.

Max. Marks: 70

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All parts of a question must be answered at one place only.

1. Write short notes on the following : 7x2=14M

- a. Artificial variables
- b. Slack variables
- c. Unrestricted variables
- d. Degeneracy
- e. Economic Order Quantity (EOQ)
- f. Two phase method
- g. North west corner rule.

2. Solve the following LPP by Two phase method: 14M

Maximize $Z=12x_1+18x_2+15x_3$

Subject to the constraints:

$$4x_1+8x_2+6x_3 \geq 64$$

$$3x_1+6x_2+12x_3 \geq 96$$

and $x_1, x_2, x_3 \geq 0$

3. Solve the following LPP by Big - M Method: 14M

Minimize $Z=10x_1+15x_2+20x_3$

Subject to the constraints:

$$2x_1+4x_2+6x_3 \geq 24$$

$$3x_1+9x_2+6x_3 \geq 30$$

and $x_1, x_2, x_3 \geq 0$

4. (a) Find the BFS by VAM's for the following transportation problem. 7M

Destination → Origin ↓	D ₁	D ₂	D ₃	D ₄	Supply
O ₁	5	3	6	2	19
O ₂	4	7	9	1	37
O ₃	3	4	7	5	34
Demand	16	18	31	25	90

(b) Find the optimal assignment of salesmen to sales areas for the following cost matrix.

7M

		Sales area			
		A ₁	A ₂	A ₃	A ₄
Sales man	S ₁	11	17	8	16
	S ₂	9	7	12	10
	S ₃	13	16	15	12
	S ₄	14	10	12	11

5. (a) There are five jobs, each of which must go through the two machines A and B in the order AB. Processing times are given below.

7M

Job	1	2	3	4	5
Machine A	5	1	9	3	10
Machine B	2	6	7	8	4

Determine a sequence for five jobs that will minimize the total elapsed time. Also find the idle time for machines.

(b) A machine owner find, from his past records the cost per year of maintaining a machine whose purchase price is Rs. 6000 are as follows

7M

Year	1	2	3	4	5	6
Maintain cost(Rs.)	1000	1200	1400	1800	2300	2800
Resale Value(Rs.)	3000	1500	750	375	200	200

Determine at what age replacement is due.

6. Determine critical path, expected duration of the project and variance of the following:

14M

Job	Predecessors	Optimistic time(a)	Most likely Time(m)	Pessimistic time(b)
A	--	2	5	8
B	A	6	9	12
C	A	5	14	17
D	B	5	8	11
E	C,D	3	6	9
F	--	3	12	21
G	E,F	1	4	7

7. (a) Explain the various costs that are involved in the inventory control. 7M

(b) A company uses annually 12000 units of a raw material costing Rs 1.25 per unit. Placing each order costs 45 paise and the carrying costs are 15 % per year per unit of the average inventory. Find the economic order quantity? 7M

8. Solve the following 6x2 game graphically. 14M

1	-3
3	5
-1	6
4	1
2	2
-5	0

[B16CS4203]