[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 leaving **.....**university?
   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 buy .....pairs of blue and black jeans soon.
iv. How .....cash 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.

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[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 $(y^2e^{xy^2} + 4x^3)dx + \left(2xye^{xy^2} - 3y^2\right)dy = 0$

(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

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

(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 $x^2y + 3y - 2$ 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 $0 < x < 2$

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[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 $L^{-1}\left(\dfrac{s^2-3s+4}{s^3}\right)$.

   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) $L\{\frac{\cos at-\cos bt}{t}\}$ ii) $L\{\int_0^t e^{-t}\cos t dt\}$.

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) $L^{-1}\{\frac{3s}{s^2+2s-8}\}$.

b) State Convolution theorem and use it to evaluate $L^{-1}\{\frac{1}{(s-2)(s+2)^2}\}$.

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.

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[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 polymersation 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.

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[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 uncertainity 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 theorm (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 Savert 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)

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[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 $y^1=y-x$,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

$$\int_{-2}^{2} x \sin(x)\, dx$$ using Simpson's 1/3 rule.

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[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 30^0 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 45^0 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

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[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.

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[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 $\int_0^\infty\int_0^\infty e^{-(x^2+y^2)}dxdy$ into polar coordinates.

(d) Express $\int_0^{\frac{\pi}{2}}\sqrt{\tan\theta}\,d\theta$ in terms of gamma function.

(e) Evaluate $\int_0^1\int_0^{1-y} xy\,dxdy$ 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 $\frac{x}{1}=\frac{y}{2}=\frac{z}{3}$ about the line $\frac{x}{-1}=\frac{y}{1}=\frac{z}{2}$.

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

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

6. (a) Evaluate the integral $\int_1^e\int_1^{\log y}\int_1^{e^x}\log z\,dzdxdy$.

(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 $f(x)=\begin{cases}1\ for\ |x|\le 1\\ 0\ for\ |x|>1\end{cases}$

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 $f(x)=\begin{cases}1\ for\ |x|\le a\\ 0\ for\ |x|>a\end{cases}$.

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

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

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[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 uncertainity 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 theorm (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 Savert 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)

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[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 polymersation with suitable Examples.
   (b) Write the preparation and properties of cellulors derivatires

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.

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[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. Drawn another front view, on a reference line inclined at 30^0 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 45^0 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.

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[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 $y^1=y-x$,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

$$\int_{-2}^{2} x \sin(x)\, dx$$ using Simpson's rule.

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[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.

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[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.

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[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 it 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.

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[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(a X + b) = a E(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. $f(x)=6x(1-x),\ 0 \le x \le 1$. 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	½	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) $26 \le X \le 40$ (ii) $X \ge 45$ (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?

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[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

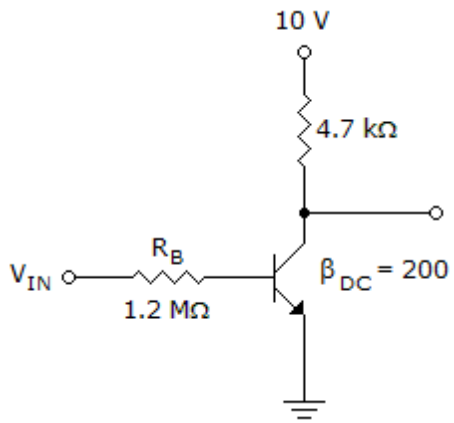
1. Write a short answer to the following [7x2 = 14 marks]
   a. What is meant by diffusion current in a semi-conductor?
   b. A silicon diode has a saturation current of 7.5 pA at 300 °K. Calculate the saturation current at 330 ° K.
   c. Define peak inverse voltage of a diode.
   d. Draw the input and 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- (VGS / VP)1/2] 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

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[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.

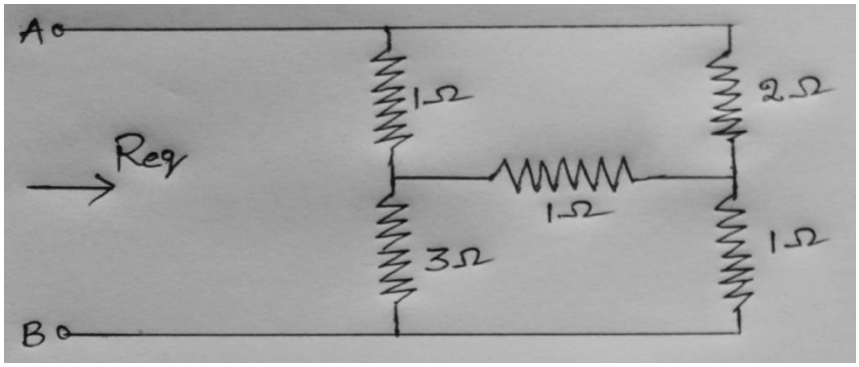
d) State Maximum power transfer theorem.

e) Define MMF, Reluctance and Magnetic flux with respect to a magnetic circuit.

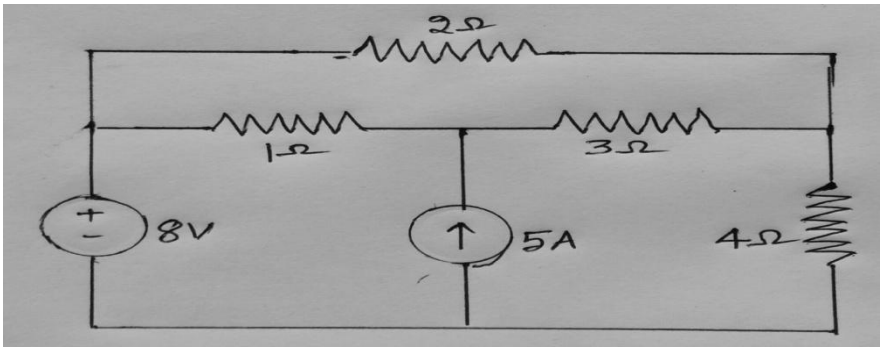
f) State Faradays laws of Electromagnetic Induction.

g) What is Self inductance?

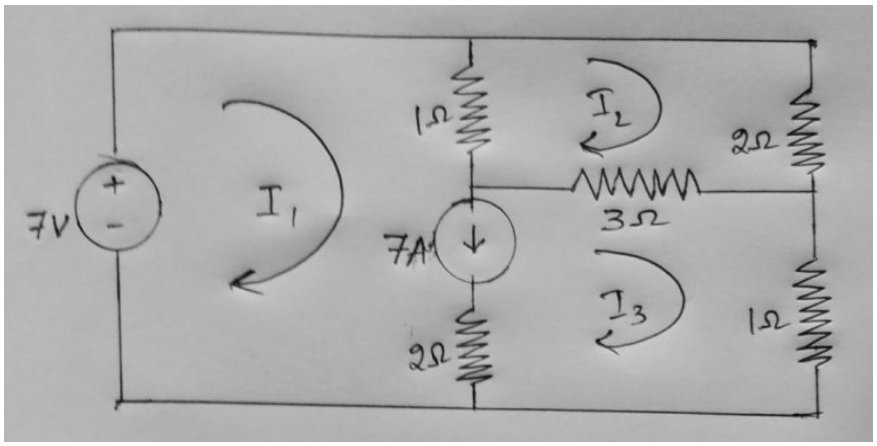
2. a) Find the equivalent resistance between the terminals A and B of the given network.



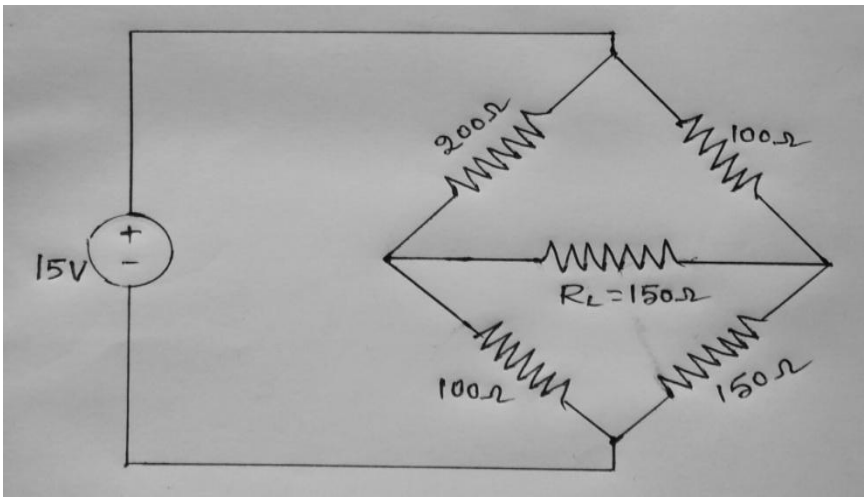
b) Using Nodal analysis find the currents and voltages in all the branches of the given network.



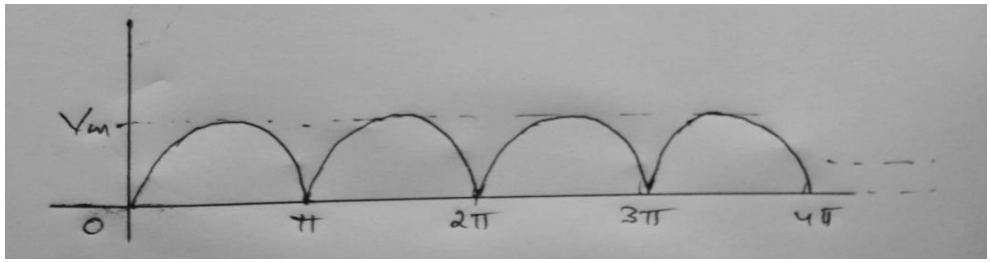
3.a) Find the mesh current I_1 in the given circuit using mesh Analysis.



b) Find the current through the load resistance R_L in the given circuit using thevinen'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=10ohms, L=0.01H, C=100μF. 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 $v(t)=220\sqrt{2}Sin(wt)$ and the current drawn from it is $i(t)=14.14Sin(wt - 45^0)$. 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)

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[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

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[B16 ME 1208]

[B16 IT 2101]

II/IV B.Tech. DEGREE EXAMINATION

First Semester

DATA STRUCTURES

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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) 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 IT 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 zenerdiode acts as voltage regulator **6 M**
   b. Explain tunnelling 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 consequencies 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 7M
   b. Explain the constructional details and characteristics of depletion type MOSFET **7 M**

[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 $a, b \in L$ & $a \leq b, hen\ (a \bullet b) = a,\ (a \oplus b) = b$

   (f) Simplify the Boolean expression given by $(x \vee y) \wedge (x' \vee y)$

2. a) Prove that $\{((p \vee q) \to r) \wedge (\neg p)\} \to (q \to r)$ 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.

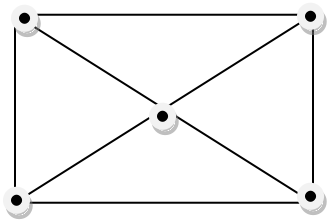
   b) How many integral solutions are there to $x_1 + x_2 + x_3 + x_4 + x_5 = 20$ where $x_1 \geq 3$, $x_2 \geq 2$, $x_3 \geq 4$, $x_4 \geq 6$ and $x_5 \geq 0$.

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?

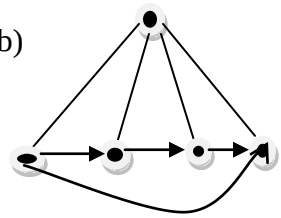
   b) Solve the recurrence relation $a_n - 5a_{n-1} + 6a_{n-2} = 0, n \geq 2$ by using generating function.S

5. a) Show that the following graphs are isomorphic

(a)



(b)



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 $((x_1+x_2)(x_3x_4)^1)^1$

[B16 ENG 2102]

[B16 IT 2102]

II/IV B.Tech. DEGREE EXAMINATION

First Semester

OBJECT ORIENTED PROGRAMMING USING C++

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 answer to the following. [7x2 = 14 marks]
   (a) What is Dynamic initialization?
   (b) What are default arguments?
   (c) What are inline functions?
   (d) What is an Object?
   (e) What is a static member variable?
   (f) What is a constant pointer?
   (e) What is an Abstract class?

2. (a) Explain dynamic constructor with example.
   (b) Explain Copy constructor with example.

3. (a) What is a friend function and explain its characteristics. .
   (b) Write a c++ program to create 2 classes each with a single member variable, find out the maximum of two variables using a friend function.

4. (a) Explain Operator overloading with example.
   (b) What are virtual functions? With an example explain the usage of virtual functions.

5. Explain up casting, down casting and dynamic casting?

6. (a) Explain multilevel inheritance.
   (b) Explain Ambiguity resolution in inheritance.

7. What is a template? How they help in writing generic programs?

8. Explain the following
   (a) Exception Handling in c++
   (b) Polymorphism in c++
   (c) Random access files.

[B16 IT 2103]

II/IV B.Tech. DEGREE EXAMINATION

First Semester

DIGITAL LOGIC DESIGN

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 it 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?

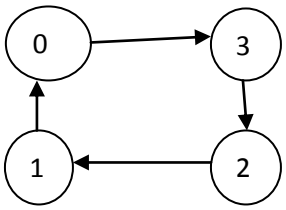
2. (a) Convert the following to Decimal and then to octal
   (i) $(125F)_{16}$ (ii) $(10111111)_2$ (iii) $(392)_{10}$
   (b) Perform the subtraction using 1's complement and 2's complement methods.
   (i) 11010 – 10000 (ii) 11010 – 1101 (iii) 100 – 110000

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) $X(A, B, C, D) = A^1B^1C^1 + (A+B+C^1)^1 + A^1B^1C^1D$

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 IT 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

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[B16 IT 2201]

II/IV B.Tech. DEGREE EXAMINATION

Second Semester

OPERATING SYSTEMS

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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. a) 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 IT 2202]

II/IV B.Tech. DEGREE EXAMINATION

Second Semester

COMPUTER ORGANIZATION

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 IT 2203]

II/IV B.Tech. DEGREE EXAMINATION

Second Semester

MICROPROCESSORS

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 IT 2204]

II/IV B.Tech. DEGREE EXAMINATION

Second Semester

DATA COMMUNICATIONS

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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
   (h) Define fundamental frequency.
   (i) Pulse stuffing.
   (j) Bit rate and Baud rate.
   (k) Goals of multiplexing.
   (l) Piggy backing.
   (m) Synchronous and Asynchronous transmission.
   (n) 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 IT 2205]

II/IV B.Tech. DEGREE EXAMINATION

Second Semester

OPERATIONS RESEARCH

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 answer to the following. [7x2 = 14 marks]

   (a) Why artificial variable is needed in solving LPP?
   (b) Differentiate Big-M and Two Phase method?
   (c) What is Unbalanced Transportation problem?
   (d) What is the difference between PERT and CPM?
   (e) What is "Saddle Point Game"?
   (f) Differentiate Pure and Mixed Integer Programming?
   (g) What is Economic Order Quantity (EOQ)?

2. (a) Using Graphical method solve the following L.P.P

   Max (Z) = 3X + 2Y
   Subjected to constraints
   $3X_1 + X_2 \geq 3$, $4X_1 + 3X_2 \geq 6$, $X_1 + 2X_2 \geq 2$ and $X_1 , X_2 \geq 0$

   (b) Solve the following LPP
   Max(Z) = $4 X_1 + 3 X_2$
   Subjected to constraints $X_1 \leq 5$, $X_1 - X_2 \leq 8$ and $X_1 , X_2 \geq 0$

3. (a) What is Degeneracy in LPP? How to resolve it?
   (b) Standard weight of special purpose Brick is 5 Kgs and contains two ingredients B1&B2. B1 costs Rs 5/Kg & B2 costs Rs 8/Kg. Brick contains not more than 4Kg of B1 and minimum 2Kg of B2. Using Simplex method find the minimum cost of brick by satisfying above conditions?

4. a) Write the Dual of the Following Primal Problem

   Max (Z) = x1 - 2x2 + 3x3
   Subjected to constraints -2x1 + x2 + 3x3 = 2, 2x1 +3x2 + 4x3 = 1
   and x1 , x2 ≥ 0 , x3 is Unrestricted in sign?

   b) Solve the following LPP using Dual Simplex method
   Max (Z) = $5X_1 + 8X_2$

Subjected to $X_1 \leq 4$, $X_2 \geq 2$, $X_1 + X_2 = 5$ and $X_1 , X_2 \geq 0$

5. a) What is Inventory? Derive EOQ formula for Constant Demand?

b) The Project being planned involved the following activities

Activity	A	B	C	D	E	F	G
Predecessor	-	-	A	A,B	C,D	B,D	E,F
Duration	2	1	3	2	1	3	1

i. Construct the network diagram. ii. Find out the Critical path?

6. a) Explain the Hungarian Method to solve Assignment problem?

b) Explain Travelling Salesman Problem?

7. a) What is Two person Zero Sum Game? Explain Dominance Principle.

b) Find the optimal solution for the game using graphical method whose payoff matrix is given below?

Player B

Player-A

4	2	5	-6	6
7	-9	7	4	8

8. (a) Explain Forward and Backward Recursion in Dynamic Programming.

(b) Solve the following LPP using Cutting Plane method

Min (Z) = 2x1 + x2 Subjected to 3x1 + x2 $\geq$ 3, 4x1 + 3x2 $\geq$ 6, x1 + 2x2 $\geq$ 2 and x1 , x2 $\geq$ 0 and Integers.

[B16 IT 2205]

[B16 IT 2206]

II/IV B.Tech. DEGREE EXAMINATION

Second Semester

JAVA PROGRAMMING

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 answer to the following. [7x2 = 14 marks]

   a. What is a Remote Applet?
   b. What is an event?
   c. What is the usage of super keyword?
   d. What is the use of finally keyword?
   e. What is a garbage collector?
   f. What is the difference between abstract class and an interface?
   g.What are static methods?

2. (a) Explain the Features of Java.
   (b) Write a Java program to print prime numbers up to a given number.

3. (a) What is the difference between an instance variable and class variable?
   (b) How do you create an instance of a class?

4. (a) Explain how an interface is different from a class.
   (b) Explain how to achieve multiple inheritances in java with an example.

5. (a) Explain different steps involved in creation and implementation of packages.
   (b) Explain different ways of creating threads in java with examples.

6. (a) Describe Exception Handling in java in detail

   (b) Write a java program to reverse the digits of a given number.

7. (a) Discuss briefly about the following
   TCP,UDP,URL
   (b)What is an Inet Address? How to create an InetAddress? What is its use?

8. **(**a)Briefly describe the lifecycle of an Applet.
   (b)Explain about different layout managers in AWT.

[B16 IT 3101]

III/IV B.Tech. DEGREE EXAMINATION

First Semester

COMPUTER NETWORKS

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

Time: 3 Hrs. **Max. Marks: 70**

Question No. 1 compulsory.

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

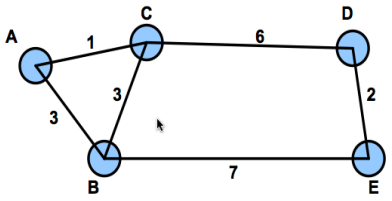
All parts of a question must be answered at one place only

1. Explain the following.

   a. Write the three phases of Circuit Switching. 2M
   b. What is a Datagram? 2M
   c. What are the ATM Service categories? 2M
   d. What do you understand by Random Routing? 2M
   e. What are the functions of a Bridge? 2M
   f. List the requirements for an an Internetworking facility 2M
   g. What does UDP provide that is not provided by IP 2M

2. a. Distinguish among Circuit switching. Packet switching and Virtual Circuit Packet Switching Techniques. 7M
   b. What are the relative merits and demerits of Frame relay compared to X25. 7M

3. a. List and briefly explain the fields in an ATM cell. 7M
   b. Find the least cost path using Dijkstra's algorithm for the packet switching network shown below with link costs. 7M



4. a. Write the effects of congestion in data networks. Briefly explain the congestion control 7M
   b. Briefly explain the operation of Cellular Systems. 7M

5. a. List four common LAN topologies and briefly describe their methods of operation. 7M

b. Distinguish among the following with respect to their characteristics. 7M
10BASE5 10BASE2 10BASE-T 10BASE-FP

6. a. Explain the function of the three flags in the IPv4 header. How is the IPv4 header Checksum calculated? 7M
b. Using a neat sketch, explain the Internet protocol operation with brief design issues. 7M

7. a. What is meant by multicasting? Give the requirements for multicasting. 7M
b. Write the addressing elements needed to specifr a target transport service (IS) user. Describe four strategies by which a sending TS user can learn the address of a receiving TS user. 7M

8. Write short notes on the following: 14M
a. HTTP
b. TCP Mechanisms
c. Difference between HUB and Layer2 Switch
d. Wireless LAN

[B16 IT 3101]

[B16 IT 3102]

III/IV B.Tech. DEGREE EXAMINATION

First Semester

WEB TECHNOLOGIES

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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.	Explain about different types of list tag	2M
	b.	Write a java script to read Number form prompt and calculate factorial of that number	2M
	c.	Difference between Script and language	2M
	d.	Explain about DTD	2M
	e.	Explain the characteristics of php	2M
	f.	Describe XML Schemas?	2M
	g.	What is a servlet?	2M
2.	a.	Explain about javax.servlet package?	7M
	b.	What is meant by session tracking how it is implemented in servlets	7M
3.	a.	Write a php code to display Dynamic Image(Ex:Captcha)	7M
	b.	Write Different looping tecniqs in Php with Example?	7M
4.	a.	Differences between DOM API and SAX parser?	7M
	b.	Define XML schema? Explain Different types of Namespaces with Example?	7M
5.	a.	Explain about session with example in php?	7M
	b.	Explain about cookies with an example in php?	7M
6.	a.	Write sample program to display cookies available in the System.	7M
	b.	Write a php program to display Records Stored in MySQL table.	7M
7.	a.	Explain session handling mechanism PHP?	7M
	b.	Explain about data types in php	7M
8.		Write short notes on the following	14M
	a.	Explain different types of arrays in php with example..	
	b.	How to Configure the Apache Tomcat Server	
	c.	Write the steps to run basic PHP?.	

[B16 IT 3103]

III/IV B.Tech. DEGREE EXAMINATION

First Semester

FORMAL LANGUAGES AND AUTOMATA THEORY

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

Time: 3 Hrs. **Max. Marks: 70**

Question No. 1 compulsory.

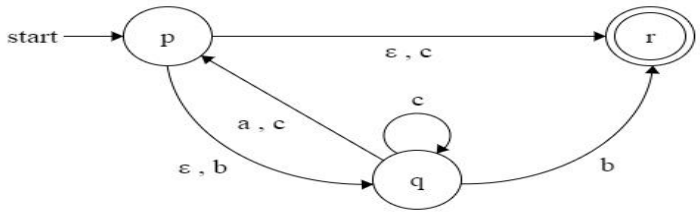
Answer any FOUR questions from the remaining.

All Questions Carry equal marks

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

1. Explain the following.
   a. Let ∑={a,b}. Write regular expression for the set of all strings in ∑* with no more than three a's. 2M
   b. Define DFA. 2M
   c. Define Context Free grammar. 2M
   d. What is configuration of a Turing machine? 2M
   e. When do we say that a function is Turing – computable. 2M
   f. When do we say that a function is Primitive Re cursive? 2M
   g. State post correspondence problem. 2M

2. a. Construct a DFA which accepts even number of 0's and 1's over alphabet ∑={0,1} 7M
   b. Construct DFA equivalent to non-deterministic automata given below : 7M



3. a. Write about different types of Grammars. 7M
   b. Construct context free Grammar that generate the language $\{wcw^R \mid w€\{a, b\}^*\}$ 7M

4. a. Define PDA .Discuss about the languages accepted by PDA. 7M
   b. Design a PDA for the language $L=\{0^n1^n / n>=1\}$ 7M

5. a. Describe the Turing Machine which shifts a string w containing no blanks to one cell to the left. 7M
   b. Construct a Turing Machine that accepts the Languages $a^* ba^*b$. 7M

6.	a.	Explain halting problem.	7M
	b.	Write in detail about Chomsky Hierarchy.	7M
7.	a.	What is Context Sensitive Language? How LBA is related with it?	7M
	b.	Explain about Universal Turing Machine.	7M
8.	a.	Describe the method of Godelization.	7M
	b.	Show that the function f(n) = n! is primitive recursive.	7M

[B16 IT 3103]

[B16 IT 3104]

III/IV B.Tech. DEGREE EXAMINATION

First Semester

DATABASE MANAGEMENT SYSTEMS

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 data model? 2M
   b. What is a super key? 2M
   c. List the set operations of SQL? 2M
   d. What is meant by functional dependencies? 2M
   e. What is trigger? 2M
   f. What is assertion? 2M
   g. What are the properties of transaction? 2M

2. a. Describe the problems with file processing system with supporting examples. 7M
   b. Describe the levels of abstraction supported by DBMS. 7M

3. Discuss 1NF,2NF,3NF and BCNF with an example and state the normal forms. 14M

4. a. Explain various mapping cardinalities with suitable example. 7M
   b. Explain about weak entity sets with a suitable example. 7M

5. The given database Schema is 14M

   Employee(FName, Initial, Lname, ENO ,DOB, Address, Gender, Salary, Supereno,Dno)

   Department(Dname, Dnumber,mgreno,mgrstartdate)

   Dept_locations(Dnumber,Dlocation)

   Project(Pname, Pnumber , plocation, dnum)

   Works_on(EENO, PNo, hours)

   Dependent(EENo, Dependent_Name, Gender, BDate, Relationship)

   Write the queries in relational algebra with the above schema

   a. Retrieve the name and address of all employees who work for the ‘Research department’.
   b. List the project numbers for projects that involve an employee whose last name is ‘Kumar’, either as a worker or as a manager of the department that controls the project.

c. For each department, retrieve the department name and the average salary of all employees working in that department.
d. List the names of all employees who have a dependent with the same first name as themselves.
e. Retrieve the average salary of all female employees.
f. Retrieve the names of employees who work on all the projects that 'Mahesh Kumar' works on

6. Consider a relation R(A,B,C,D,E) and set of FD'S F={A->BC,CD->E,B->D,E->A}. Find out candidate keys of R. Find the best normal form that R satisfies under F. If R is decomposed into R1(A,B,C) and R2(A,D,E) , Check whether the decomposition is loss less and dependency preserving. 14M

7. a. What is a transaction? Explain the properties of transaction. 7M
b. Explain the anomalies caused due to interleaved execution of transactions with example. 7M

8. a. Briefly explain any two specialized locking techniques. 7M
b. Explain deadlock detection and deadlock prevention with an example. 7M

[B16 IT 3104]

[B16 IT 3105]

III/IV B.Tech. DEGREE EXAMINATION

First Semester

PRINCIPLES OF PROGRAMMING LANGUAGES

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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. Write down the attributes of good programming language. 2M
   b. Difference between the pass by value and pass by reference. 2M
   c. Distinguish between the static and dynamic scope of variables 2M
   d. Distinguish between the simplicity and orthogonality. 2M
   e. What is scope resolution operator? 2M
   f. What are the register variables? Write their advantages. 2M
   g. What is genetic subroutine? Name one language which support it. 2M

2. Explain briefly about formal translation models. 14M

3. Give BNF notation for identifier, for loop, while loop in C. Give the corresponding syntax graph. 14M

4. Write a short note on the following
   a. Inheritance 7M
   b. Polymorphism 7M

5. a. What are the properties of types and objects? 7M
   b. Explain briefly about composite data types. 7M

6. Discuss formal properties of languages and semantics. 14M

7. a. Explain the rules of Expression evaluation in functional programming. 7M
   b. Explain control mechanism in PROLOG. 7M

8. Write a short note on the following. 14M
   a. WWW.
   b. Hardware Development.
   c. Software architecture.

[B16 IT 3106]

III/IV B.Tech. DEGREE EXAMINATION

First Semester

ADVANCED COMPUTER ARCHITECTURE

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 hazard? State its types. 2M
   b. Mention the techniques available to measure the performance. 2M
   c. What is dynamic scheduling? 2M
   d. Give the limitation of ILP. 2M
   e. Distinguish between hardware and software speculation mechanisms. 2M
   f. What is static branch prediction? 2M
   g. What are the synchronization issues? 2M

2. a. How does one classify ISA? Discuss their design issues. 7M
   b. What is pipelining? Explain various hazards involved in implementing pipelining 7M

3. a. Explain the instruction level parallelism with dynamic approaches. 7M
   b. What is dynamic hardware prediction? Explain it in detail. 7M

4. a. Explain the different hardware support for exposing ILP. 7M
   b. Explain the different hardware support for more parallelism. 7M

5. a. Explain distributed shared memory architecture with necessary life cycle diagram. 7M
   b. Differentiate software and hardware multithreading approaches. 7M

6. a. How does one reduce cache miss penalty and miss rate? Explain. 7M
   b. What are the ways available to measure the I/O performance? Explain each of them in detail. 7M

7. a. Explain the SUN CAMP Architecture. 7M
   b. Discuss the Design issues and implementations of Intel Multi core Architecture. 7M

8. a. Write short notes on Designing of clusters. 7M
   b. Write short notes on distributed shared memory. 7M

[B16 IT 3107]

III/IV B.Tech. DEGREE EXAMINATION

First Semester

FILE STRUCTURES

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 rational delay? What is the reason? 2M
   b. What is multiple buffering? What is its use? 2M
   c. What are the limitations of key sort? 2M
   d. What are the limitations of Binary search? 2M
   e. What is collision? 2M
   f. What is linear hashing? 2M
   g. What are the operations required to maintain an indexed file? 2M

2. a. What is Abstract data model? Why did the early file processing programs does not deal with abstract data model? What are the advantages of using abstract data models in application? 7M
   b. How do you retrieve special subset of records from a data file using combination of secondary key? 7M

3. What do you mean by Data Compression? Explain about the data compression. What are various techniques of data compressions? What are its uses? 14M

4. What is Hashing? Explain the various methods of Hashing Algorithms. 14M

5. What is Collision? Explain the various collision "Resolution Technique". 14M

6. a. Explain why the number of comparisons is not adequate for measuring performance in sorting large files. 7M
   b. Construct a B+ tree for the set of key values (21,33,41,47,49,54,63,70) under the assumption that the number of search key values that fit in a node is 5. 7M
   Show the steps involved in the following tasks:
   a)Find record 49
   b)Inseret record 45
   c)Delete record 41

7.	a.	Explain how extendible Hashing works. Show how it combines tries with conventional static hashing technique.	7M
	b.	In extendible hashing procedure, the directory can occasionally point to empty bucket. Describe two situations that can produce emp bucket.	7M
8.	a.	Explain the track Organization using sectors in magnetic Disk.	7M
	b.	Explain the 9 track tape organization.	7M

[B16 IT 3107]

[B16 IT 3108]

III/IV B.Tech. DEGREE EXAMINATION

First Semester

BIO INFORMATCS

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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. Describe Folding problem? 2M
   b. Explain Biological databases? 2M
   c. Describe DNA sequence databases? 2M
   d. Define Gene hunting? 2M
   e. Describe types of alignment techniques? 2M
   f. Explain Progressive methods? 2M
   g. Differentiate Internet Packages and Intranet Packages? 2M

2. a. Explain Biological sequence/structure? 7M
   b. Explain Pattern recognition an prediction? 7M

3. a. Describe Protein Information Resources? 7M
   b. Explain Genome Information Resources? 7M

4. a. What is the Importance of DNA analysis? 7M
   b. Explain Analysis and Effects of EST data on DNA databases? 7M

5. a. Explain Pair wise alignment techniques? 7M
   b. Explain Dynamic Programming and Pair wise database searching? 7M
6. a. Explain Multiple sequence alignment? 7M
   b. How to Implement Multiple alignments and searching in Databases? 7M

7. Explain Secondary Database Searching and How to build sequence search protocol? 14M

8. Write short notes on the following 7M
   a. Analysis package structure? 7M
   b. Packages specializing in DNA analysis?
   c. Comprehensive packages?

[B16 IT 3201]

III/IV B.Tech. DEGREE EXAMINATION

Second Semester

DATA WAREHOUSING AND DATA MINNING

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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. Explain Knowledge Discovery Process? 2M
   b. Explain Data Mining and Data Warehouse? 2M
   c. What is the difference between OLAP and OLTP? 2M
   d. What is Heterogeneous and Legacy Database? 2M
   e. Explain Data Mining Functionalities? 2M
   f. Explain Types of Data on Data Mining? 2M
   g. What is difference between Data Warehouse and Data mart? 2M

2. a. Explain Major Issues In Data Mining? 7M
   b. Explain Classification of Data Mining System? 7M

3. a. Explain Multidimensional Model? 7M
   b. Explain Data warehouse Architecture? 7M

4. a. Explain Data Cleaning and Data Integration Techniques? 7M
   b. Explain Data Reduction Techniques 7M

5. a. Explain Types of Data Cubes? 7M
   b. Explain Apriory and Frequent Pattern Algorithm? 7M
6. a. Explain Multidimensional Association Rule Mining? 7M
   b. Explain Decision Tree Algorithm? 7M

7. a. Explain Back Propagation Algorithm? 7M
   b. Explain Bayesian Classifier? 7M

8. a. Explain Partitioning Methods in Cluster Analysis? 7M
   b. Explain Density Based Methods in Cluster Analysis? 7M

[B16 IT 3201]

[B16 IT 3202]

III/IV B.Tech. DEGREE EXAMINATION

Second Semester

OBJECT ORIENTED SOFTWARE ENGINEERING

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 Software Engineering?	2M
	b.	Explain different types of project.	2M
	c.	What is the difference between PERT and GANTT CHARTS?	2M
	d.	What is class diagram?	2M
	e.	List out the activities of software project management.	2M
	f.	What is the purpose of interaction diagrams?	2M
	g.	What is rationale management?	2M
2.	a.	Explain about the Software Development Life Cycle activities?	7M
	b.	Explain spiral model with its merits and demerits.	7M
3.	a.	Explain Functional & Non-Functional Requirements with examples.	7M
	b.	Identify the Functional & Non-Functional Requirements for **"Online Course Registration System".**	7M
4.	a.	Explain relationships among classes with examples	7M
	b.	What is the purpose of user centered design? Explain.	7M
5.	a.	Explain about Use case diagram and their relationships.	7M
	b.	What is state chart diagram? Explain with a simple example.	7M
6.	a.	What is Unit Testing? Explain.	7M
	b.	What is Testing? Explain about concepts of testing.	7M
7.		Explain Principles leading to good design.	14M
8.		Write short notes on the following	7M
	a.	Integration Testing.	7M
	b.	Swim lanes.	
	c.	Regression Testing.	

[B16 IT 3202]

[B16 IT 3203]

III/IV B.Tech. DEGREE EXAMINATION

Second Semester

DESIGN AND ANALYSIS OF ALGORITHMS

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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. Explain about Asymptotic Notations 2M
   b. Write Control abstraction for Divide-and-Conquer 2M
   c. Write about Principle of optimality 2M
   d. Explain about Biconnected Components 2M
   e. Write Graph coloring problem with Example 2M
   f. Write Knapsack problem with example 2M
   g. Explain about Least Cost(LC) Search 2M

2. a. Write an algorithm for finding the Maximum and Minimum and find it time Complexity 7M
   b. Write an algorithm for Quick Sort. Sort the following list of elements Using Quick Sort algorithm 5 , 5 , 8 , 3 , 4 , 3 , 2 7M

3. a. Explain about Strassen's Matrix Multiplication using Divide-and-Conquer 7M
   b. Explain Convex Hull problem using Quick Hull Algorithm. 7M

4. a. Explain Knapsack Problem using The Greedy Method. 7M
   b. Write Prim's Algorithm. Explain with Example. 7M

5. a. Explain about Multi Stage Graphs using Dynamic Programming 7M
   b. Using Optimal Binary Search Tree(OBST) algorithm to compute w(i,j), r(i,j) and c(i,j), 0<=i<j<=4, for the identifier set (a1,a2,a3,a4)=(cout,float,if,while) with p(1)=1/20, p(2)=1/5 p(3)=1/10, p(4)=1/20, q(0)=1/5,q(1)=1/10,q(2)=1/5,q(3)=1/20,q(4)=1/20. Using r(i,j)'s construct the Optimal Binary Search Tree. 7M

6. a. Write an algorithm for Breadth First Search. Explain with example. 7M

b. Explain 4-Queen problem. 7M

7. a. Write about Sum of Subsets problem using Backtracking. 7M

b. Explain about Evaluation of polynomial using Horner's Rule. 7M

8. Find the solution for Traveling salesperson problem using Branch and Bound instance defined by the cost matrix 14M

∞	7	3	12	8
3	∞	6	14	9
5	8	∞	6	18
9	3	5	∞	11
18	14	9	8	∞

[B16 IT 3203]

[B16 IT 3204]

III/IV B.Tech. DEGREE EXAMINATION

Second Semester

COMPILER DESIGN

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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. Differentiate Pass & Phase 2M
   b. Define parsing tree 2M
   c. Define recursion 2M
   d. Terminal and variable 2M
   e. Define DAG 2M
   f. Differentiate between assembler and interpreter 2M
   g. Define handle 2M

2. a. Define FSM. Explain the application of FSM in the design of ‘LEXICAL ANALYSER'. 7M
   b. Explain the application of grammar in the design of 'COMPILER'. 7M

3. Construct First & Follow for the following grammar. 14M

   E -> TE1
   E’-> +TE1/€
   T -> FT1
   T’-> FT1/E
   F-> (E)/id

4. Define 'LEFT RECURSION'. Give algorithm for the elimination of "LEFT RECURSION". 14M

5. a. Translate a* - (b+c) into postfix form. 7M
   b. Write quadruples, triples for the expression. -(a+b) * (c+d) - (a+b+c) 7M

6. Construct SLR parsing table for the following grammar 14M
   S-> CC
   C->cC/d

7. Explain in brief in brief about intermediate code optimization algorithms. 14M

8. Explain the following 14M

a) Peephole optimization.

b) Error detection and recovery.

[B16 IT 3204]

[B16 IT 3205]

III/IV B.Tech. DEGREE EXAMINATION

Second Semester

CRYPTOGRAPHY AND NETWORK SECURITY

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 Stegnography. 2M
   b. Difference between Block Cipher and Stream Cipher 2M
   c. Write about need for security. 2M
   d. Explain about Logic Bomb. 2M
   e. Define Firewall. 2M
   f. Define Kerberos. 2M
   g. Write about IP Spoofing. 2M

2. Write about the following
   a. Digital Signatures 7M
   b. Public key certificates 7M

3. a. Difference between **Symmetric** key encryption and **Asymmetric** key encryption**.** 7M
   b. Write about different **types of attacks.** 7M

4. a. Explain different ways of **Means of Authentication** 7M
   b. Explain about different **sources** of Biometric Authentication and **operation of a Biometric Authentication System.** 7M

5. Write about **Role Based Access Control.** 14M

6. Explain about Host Based Intrusion Detection. 14M

7. Explain RSA algorithm with steps. Find the cipher text for the following data P=11 , q=3 and message m=7. 14M

8. Explain about SSL Security and write about protocols involved in SSL. 14M

[B16 IT 3206]

III/IV B.Tech. DEGREE EXAMINATION

Second Semester

IMAGE PROCESSING

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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.	Describe Image Classification?	2M
	b.	Explain Smoothing Filters?	2M
	c.	Describe PREWITT Filter?	2M
	d.	Explain Huffman Code?	2M
	e.	Explain Segmentation of moving objects	2M
	f.	Define Hit-And-Miss Transform?	2M
	g.	Describe Properties of Fourier Transform?	2M
2.	a.	Definition and Algorithm of Histogram Equalization?	7M
	b.	Explain Operations Basing on Histograms Like Image Stretching, Image Sliding?	7M
3.		Explain briefly Image Enhancement in Spatial Domain?	14M
4.	a.	Explain Color fundamentals and color model?	7M
	b.	Describe Contrast based edge enhancement techniques?	7M
5.	a.	How to Run Length Encoding and modified run length encoding?	7M
	b.	Explain Image Compression Standards?	7M
6.	a.	Explain Segmentation by Pixel Aggregation and Sub Region Aggregation?	7M
	b.	Explain Different types of Segmentation Methods?	7M
7.	a.	Explain Morphology Methods?	7M
	b.	Explain Pruning Extensions to Gray Scale Images Application of Morphology?	7M
8.		Write short notes on the following	14M
	a.	Advantages of Filters in Frequency Domain?	
	b.	Explain Domain and Spatial Domain?	
	c.	Design of Low Pass, EDGE Enhancement Filters in Frequency Domain?	

[B16 IT 3206]

[B16 IT 3207]

III/IV B.Tech. DEGREE EXAMINATION

Second Semester

DISTRIBUTED DATABASE SYSTEMS

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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. Crash recovery 2M
   b. Transaction recovery 2M
   c. Database recovery. 2M
   d. Timestamp 2M
   e. Replication 2M
   f. Location transparency 2M
   g. Scalability 2M

2. a. Write about the concurrency control based on locking in distributed databases. 7M
   b. Discuss about deadlock detection using centralized and hierarchical controllers. 7M

3. Explain the following. 14M
   (a) Operator tree construction
   (b) Fragmented queries
   (c) Semi-joins with example
   (d) Relational algebra rules.

4. a. Write about horizontal and vertical fragmentation. 7M
   b. Write the mixed fragmentation definition and fragmentation tree of relation. 7M

5. Explain the following. 14M
   (a) Semi structured data
   (b) Client cache management
   (c) OLAP servers.

6. Explain the following 7M
   (a) Distributed garbage collection 7M
   (b) Pointer swizzling.

7. Explain the following

a. Discuss the problems in query optimization. 7M

b. Write about transaction management in DDB. 7M

8. a. Write about the concurrency control based on locking in distributed databases. 7M

b. Give the conditions to analyze the serializability of a schedule and the correctness of a concurrency control mechanism and explain. 7M

[B16 IT 3207]

[B16 IT 3208]

III/IV B.Tech. DEGREE EXAMINATION

Second Semester

COMPUTER GRAPHICS

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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. Write advantages of vector scan display over raster scan display systems. 2M
   b. Define refreshing of display devices & mention the purpose of refreshing the display. 2M
   c. Compare bitmap & pixmap of frame buffer 2M
   d. Discuss about pixel addressing. 2M
   e. Define transformation & list out the basic transformations. 2M
   f. Define outcode & mention what each bit represents in outcode. 2M
   g. Define projection & the purpose of projection in 3D viewing. 2M

2. a. Discuss application areas of computer graphics with examples. 8M
   b. Draw the circle with radius 5 at a centre (3,5) using midpoint circle drawing algorithm 6M

3. a. Explain the basic 2D transformations using homogenous representation 6M
   b. Find the final coordinates of line after clipping by considering the window coordinates { (10,10),(20,10),(20,20),(10,20)} and line coordinates are {(15,15),(30,15)} 8M

4. a. Find the coordinates of a triangle with vertices A(0,0),B(1,1),C(5,2) after scaling to twice by keeping point "C" is fixed. 8M
   b. Explain the boundary & flood fill algorithms with neat sketch. 6M

5. a. Explain Bezier & B Spline curves. 8M
   b. Write about surface rendering 6M

6. Prove that multiplication of 3D transformation matrices for each of the following sequence of operation is commutative
   a. Two successive scaling operations. 8M
   b. Two successive rotation operations. 6M

7.	a.	Define view volume ,depth cueing.	4M
	b.	Discuss about different types of parallel projections.	10M
8.	a.	Write & explain steps in animation design in detail.	8M
	b.	List out all possible components can be embedded in animation video.	6M

[B16 IT 3208]

[B16 IT 3209]

III/IV B.Tech. DEGREE EXAMINATION

Second Semester

MOBILE COMPUTING

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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. Explain the role of HLR entity of a GSM network. 2M
   b. Describe the advantages and disadvantages of WLAN. 2M
   c. Discuss the concept of tunneling and encapsulation. 2M
   d. Why standard TCP is not suitable for wireless networks? 2M
   e. List out the advantages of data broadcast over point-to-point access. 2M
   f. Describe features of MIDP 3.0? 2M
   g. What are the QoS issues? 2M

2. a. Show with a diagram the steps involved in a mobile terminated call (a station calling a mobile station) in GSM. 7M
   b. Give reasons for a handover in GSM and the problems associated with it. Discuss the typical steps for handover are and what types of handover can occur? 7M

3. a. Compare SDMA, FDMA, TDMA and CDMA. 7M
   b. How can we avoid hidden and exposed terminal problems? Explain. 7M

4. a. Discuss in detail about Dynamic Host Configuration Protocol. 7M
   b. Explain mechanism for IP packet delivery using mobile IP concept. 7M

5. a. Explain in detail about push based data delivery mechanisms. 7M
   b. Explain the following selective tuning and indexing techniques: 7M
      i). Directory method
      ii). Flexible indexing method

6. a. Explain about power aware computing. 7M
   b. Explain Query-processing architecture for processing a query using distributed databases? 7M

7.	a.	Draw the Bluetooth protocol stack and explain the core protocols.	7M
	b.	Write about J2ME in briefly.	7M
8.	a.	Write short notes on WAE.	7M
	b.	Explain in detail AODV routing algorithm for MANETS.	7M

[B16 IT 3209]

[B16 IT 3210]

III/IV B.Tech. DEGREE EXAMINATION

Second Semester

SOFT COMPUTING AND NEURAL NETWORKS

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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. Explain different parts of human brain. 2M
   - b. Explain model of an artificial neuron. 2M
   - c. Explain Adaline. 2M
   - d. Explain Neural Network architecture. 2M
   - e. Explain Unsupervised Learning Neural Networks. 2M
   - f. Explain Supervised Learning Neural Networks. 2M
   - g. Explain Competitive Learning Networks 2M

2. a. Write application of genetic algorithm. 7M
   b. Explain ANFIS. 7M

3. a. Explain RBFN. 7M
   b. Explain Evolving Connectionist model. 7M

4. a. Write applications for Adaptive Systems 7M
   b. Explain fuzzy associative memory. 7M

5. a. Explain Neuro-Genetic hybrid Systems. 7M
   b. Explain genetic algorithm based backpropagation network. 7M

6. a. Explain Adaptive Neuro-Fuzzy Inference Systems 7M
   b. Difference between Traditional Algorithms and Genetic Algorithm. 7M

7. a. Explain Unsupervised Learning Neural Networks. 7M
   b. Explain Supervised Learning Neural Networks. 7M

8. a. Explain Membership Function. 7M
   b. Explain Fuzzy Rule based system. 7M

[B16IT4101]

IV/IV B.Tech. DEGREE EXAMINATION

First Semester

CLOUD COMPUTING

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 Cloud Computing?	2M
	b.	What is a memory virtualization?	2M
	c.	Benefits of DaaS?	2M
	d.	What is Hypervisor?	2M
	e.	What is Rackspace IaaS?	2M
	f.	What is packet Sniffing?	2M
	g.	What is data storage wiping?	2M
2.	a.	What is Cloud Computing? Explain about Cloud Components with neat diagrams.	7M
	b.	Distinguish and differentiate Full Virtualization and Para Virtualization.	7M
3.		Discuss about the tools and products available for virtualization.	14M
4.	a.	Define openSaaS Solution and Mashup..	7M
	b.	Explain about Service Oriented Architecture with neat diagram.	7M
5.	a	Define PaaS. Explain about Google App Engine and Force.com as PaaS	9M
	b.	Explain about the Benefits of PaaS.	5M
6.	a	What is IaaS? Explain about improving Performance through Load Balancing with neat diagrams..	7M
	b	Explain about the Cloud Data Storage and its Solutions?	7M
7.	a.	What is Client Server Distributed Architecture for Cloud? Differentiate between Traditional Apps Vs Cloud Apps.	7M
	b.	Write about the Designing the Cloud based Solutions?	7M
8.	a.	Discuss the business continuity and Disaster Recovery.	7M
	b.	Write about the Big data and its impact on Cloud.	7M

[B16IT4102]

III/IV B.Tech. DEGREE EXAMINATION

First Semester

BIG DATA ANALYTICS

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 the different categories of Big Data [2M]
   b) What is the role of Name Node in Hadoop [2M]
   c) Explain Rack Awareness in HDFS? [2M]
   d) What are Box Classes in Hadoop? [2M]
   e) What is Data Locality? [2M]
   f) What is the basic difference between MRv1 and MRv2? [2M]
   g) What is the role of Combiner in MapReduce Framework? [2M]

2. a) What is BigData? Explain characteristics of Bigdata in detail. [7M]
   b) What are the basic differences between SQL Database and Hadoop in data handling? [7M]

3. a) Explain the basic building blocks of Hadoop with a neat sketch. [5M]
   b) Explain the implementation architecture of Map Reduce with word count example. [9M]

4. a) What is Hadoop Streaming? How it is different from Hadoop Piping? [7M]
   b) Explain Map side and Reduce side Job tuning in Hadoop. [7M]

5. a) Explain the Anatomy of Map Reduce Programming? [7M]
   b) Explain how the Hadoop Archives helps in handling large number of small files? [7M]

6. a)What is Partitioning in MapReduce programming? How the user defined Partitioner class is implemented? [7M]
   b) What is combiner? Write a MapReduce program using Combiner to solve word cout problem? 7M]

7. a) What is Page Ranking? How page ranking is implemented in mapreduce environment?[7M]
   b) Write a MapReduce program to implement Friends of Friends algorithm for the given data? [7M]

8. a) Explain Shortest Path Algorithm in mapreduce environment? [7M]
   b) Write about The Design of HDFS [7M]

[B16ENG4101]

IV/IV B.Tech. DEGREE EXAMINATION

First Semester

Principles Of Economics And Management

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. Write short notes for the following

   a) Scarcity definition 2M

   b) Demand 2M

   c) Oligopoly 2M

   d) Sole proprietorship 2M

   e) Plant location 2M

   f) Distribution channels 2M

   g) Phases of installing a project 2M

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

[B16IT4201]

IV/IV B.Tech. DEGREE EXAMINATION

Second Semester

EMBEDDED SYSTEMS

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

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 an Embedded system and list out its applications 2M
   b) Explain about Memories 2M
   c) What are semaphore variants 2M
   d) Write about mailboxes and message queues 2M
   e) Define IOT 2M
   f) Define Web of things 2M
   g) Explain about priority inversion 2M

2. a)Explain 8051 Micro Controller Architecture with a block diagram 7M
   b)Illustrate shared data problem and prevention techniques with example 7M

3. Explain Round robin with interrupts architecture and Function queue scheduling architecture 14M

4. a) Discuss the need of semaphore ?How the shared data problems handled using examples 7M
   b) Explain the Interrupt Routines in an RTOS Environment. 7M

5. a) Explain the design principles for an Real time operating 7M
   b) Explain the ways of saving memory space and saving power system 7M

6. a) Explain the ways of getting embedded software in to target system 7M

   b) Explain various laboratory tools used for debugging the embedded software 7M

7. a)Describe the linker/locator for embedded software development tools 7M
   b) Explain the IOT protocol Architecture 7M

8 .Give a brief notes on
   a) In circuit emulators.
   b) Instruction set Simulators.
   c) Software only monitors
   d) Events
   e)Memory management 14M

[B16IT4202]

IV/IV B.Tech. DEGREE EXAMINATION

Second Semester

ARTIFICIAL INTELLIGENCE

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

Time: 3 Hrs. **Max. Marks: 70**

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

1. a) what are the applications of AI?
   b) What is heuristic search technique? Explain it with example?
   c) What is Resolution?
   d) What is a semantic net? Give examples?
   e) Describe in brief about rule based expert system.
   f) What are the operations in fuzzy set?
   g) Explain Goal State Planning 14M

2 a) Define Artificial Intelligence. Explain the techniques of A.I. Also describe the, Characteristics of Artificial Intelligence. 7M
   b) Explain the state space representation of Water – Jug problem. 7M

3. a) Define Heuristic search? What are the advantages of Heuristic search? 7M
   b) Describe the mini max algorithm with an example. 7M

4. a) What is predicate logic? Explain the predicate logic representation with reference to suitable example. 7M
   b) Consider the following sentences:
      Marcus was a man
      Marcus was a Pompeian
      Marcus was born in 40 AD
      All men are m
      All pompeians died the Volcano erupted in 79 AD 7M

5. a) Give semantic nets to describe the following:
      1. Narayan is a writer
      2. Narayan lives in Bombay
      3. Ishwar is a teacher
      4. Ishwar lives in Bangalore.
      5. Narayan sent a copy of his book to Ishwar
      6. Ishwar sent his thanks to Narayan. 7M
   b) Describe your chair using a semantic net. 7M

6. a) Explain the process of knowledge acquisition and validation for expert systems 7M
   b) List out and explain the characteristics features of expert system. 7M

7. a) Define certainty factor. What are the components of certainty factor? 7M
   b) Explain Bayesian method of reasoning 7M

8. a)Discuss Natural language pragmatic processing. 7M
   b) Write a short note on Explanation. 7M

[B16IT4203]

IV/IV B.Tech DEGREE EXAMINATION

Second Semester

INFORMATION RETRIEVAL

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

Time: 3Hrs **Max.Marks:70**

Question No. 1 Compulsory

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All Parts of a questions must be answered at one place only

1. a) What is finite automata?	2M
b) Write a note on tries.	2M
c) Define the compression performance.	2M
d) What is proximity searching?	2M
e) Write a note on affix removal stemmers.	2M
f) What is data	2M
g) Write about Features of Thesauri	2M
2. a) Explain the data structures in detail.	7M
b) Describe the IR system evaluation.	7M
3. a) Define the building an inverted files using a sorted array.	7M
b) Explain the Structures used in inverted Files.	7M
4.a) Define the compressed bit slices.	7M
b) Describe the Gustafson's method.	7M
5. a) Write a note on delayed reading paradigm.	7M
b) Explain about PAT tree represented as arrays.	7M
6. a) Write about the experimental evaluations of stemming.	7M
b) Explain the stemming to compress inverted file.	7M
7. a) What are the features of thesauri?	7M
b) Write about the construction of vocabulary.	7M
8. a) Describe the Gustafson's method	7M
b) Explain about PAT tree represented as arrays	7M

[B16IT4204]

IV/IV B.Tech. DEGREE EXAMINATION

Second Semester

ADVNCED OPERATING SYSTEMS

INFORMATION TECHNOLOGY

ODEL 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:

   a) What are the advantages of distributed system over centralized system ? 2M
   b) List out the steps in RPC. 2M
   c) What is the difference between logical and physical clocks ? 2M
   d) How is client server communication achieved ? 2M
   e) What is the difference between flat file service and directory service ? 2M
   f) Explain briefly about switched multiprocessors. 2M
   g) What is the difference between multiprocessor and multicomputer ? 2M

2. a) Explain the design issues of distributed systems. 7M
   b) Explain the working of ATM layer and Adaptation layer in ATM reference model.7M

3. a) Explain implementation issues of RPC. 7M
   b) Explain the difference between local and remote procedure calls with an example 7M

4. a) Explain in detail any two clock synchronization algorithms. 7M
   b) Explain algorithms to handle deadlocks in distributed systems. 7M

5 a) Explain the design issues of file system. 7M
   b) Explain briefly Sun's network file system. 7M

6 a) Explain the features of work station model. 7M
   b) Discuss various options to organize threads and construct a server using threads. 7M

7 a) Explain any two processor allocation algorithms. 7M
   b) Explain briefly Strict, sequential and Causal consistency models with an example For each. 7M

8 a) Explain the design and working of Ring based multiprocessor. 7M
   b) Explain the features of " Munin" Shared variable Distributed Shared memory. 7M

[B16IT4205]

IV/IV B.Tech. DEGREE EXAMINATION

Second Semester

SOFTWARE PROJECT MANAGEMENT

INFORMATION TECHNOLOGY

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. a) what are the Stakeholders in Project [2M]
   b) How do you define Software Economics? [2M]
   c) How many phases in project Lifecycle [2M]
   d) Explain COCOMO [2M]
   e) What is Risk Management? [2M]
   f) Explain Defects Tracking [2M]
   g) Write about Planning Quality [2M]

2. a) Describe the various objectives used for the measurement of software size? [7M]

   b) State and explain the principles of conventional Software Engineering? [7M]

3. a) What are primary objectives and essential activities of elaboration phase? [7M]

   b) Write engineering artifacts available at the life-cycle architecture milestone. [7M]

4 . What is a model? Explain about technical perspective of model-based architecture. [14M]

5. a) Explain about periodic status assessment. [7M]

   b) Explain the typical minor milestones in the lifecycle of iteration. [7M]

6. a) Define round-trip engineering. What is the primary reason for round-trip engineering? Explain. [7M]

b) With a neat diagram, explain the software project team evolution. [7M]

7. a) Define architectural risk. Write process discriminators that result from differences in architectural risk. [7M]

   b) Explain the process discrimination that result from differences in stakeholder

cohesion. [7M]

8. a) State and explain the nine best practices for software management. [7M]

   b) What is the crucial mechanism for promoting team work among stakeholders? [7M]

[B16IT4206]

IV/IV B.Tech DEGREE EXAMINATION

Second Semester

E-COMMERCE

MODEL QUESTION PAPER

INFORMATION TECHNOLOGY

Time: 3Hrs **Max.Marks:70**

Question No. 1 Compulsory

Answer any FOUR questions from the remaining.

All Questions Carry equal marks

All Parts of a questions must be answered at one place only

1. a) Explain the use of EDI. 2M

   b) What is spider? 2M

   c) What is meant by network security? 2M

   d) Explain DNS. 2M

   e) How is cardholder account authentication done in SET protocol? 2M

   f) What is the difference between credit card and debit card? 2M

   g) What is E-cash? 2M

2. What is e-commerce? Describe E-commerce with WWW/Internet. 14M

3. a) Explain layered architecture Electronic Data Interchange. 7M

   b) Give an overview of EDI and discuss their advantages and disadvantages. 7M

4. Write the importance of electronic payment systems. What are the various types of e-payment systems? Discuss them in detail. 14M

5. a) Write about how search engines are helpful to e-commerce. 7M

   b) What are the security requirements for using online e-cash services? 7M

6. Write short notes on the following

   a) RSA algorithm. 4M

   b) SET protocol. 5M

   c) SEPP Protocol. 5M

7. How does e-mail work? State its advantages with regard to e-commerce. 14M

8. a) What is Firewall? State the function of Firewall in e-commerce. 7M

   b) Write short notes on the following 7M

   a) Smart card b) Digital signature c) Internet architecture 5M