

[B17 BS 1101]

**I B. Tech I Semester (R 17) Regular Examinations**

**ENGLISH-I**

(Common to all branches)

**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

1. A) Correct the following sentences. (7M)
- The machineries were expensive.
  - Suppose, if you arrive late, you will miss the show.
  - Choose the best of the two options.
  - I enjoyed during the holidays.
  - I have seen him yesterday.
  - The teacher gave us many advices.
  - My dog is better than him.
- B) a) Write appropriate quantifiers for each sentence. (3M)
- The project is ..... complicated than the last one
  - I have to buy .....pairs of blue and black jeans soon.
  - There is no ..... water in the bottle.
- b) Re-write the sentences by using Gerunds, to-infinitives or plain infinitive forms. (4M)
- I noticed him ..... (write) picture postcards.
  - I feel happy to be..... (sing) a song.
  - They felt surprised to ..... (select) by the manager.
  - .....(Garden) is a pleasant activity.
- (OR)
2. A) Fill in the blanks using the appropriate forms of verbs given in the brackets. (7M)
- In a fit of rage, she \_\_\_\_ up the letter. (Tear)
  - We couldn't have \_\_\_\_ a better day for organizing the party. (Choose)
  - It's high time you \_\_\_\_ your mistake. (Realise)
  - The poem 'The Gift of India' \_\_\_\_ (write) by Sarojini Naidu in 1915.
  - We \_\_\_\_ for five years now. (marry)
  - When I \_\_\_\_ home, I found that there was no edible oil left. (go)
  - The Journalist reported that the miscreants \_\_\_\_ a havoc in the city. (create)
- B) a) Fill in the blanks by using appropriate conjunctions (3M)
- Receptionists must be able to relay information \_\_\_\_ pass messages accurately.
  - Mary is a member of the Historical Society \_\_\_\_ the Literary Society.
  - My friend didn't work hard \_\_\_\_ he got through the exam.
- b) Punctuate the following sentences. (4M)
- sunil sharma is documentation development manager at cerner corporation one of the world's largest medical software developers
  - As part of his job Sunil writes web-based content for Cerner.
  - Hang him not leave him.
  - my friend suresh who is in bengaluru has come today.

## UNIT-II

3. A) Write one word substitutions to the following and write sentences by using them. Marks will be awarded only when both the points are correctly answered. (7M)
- Language which is confusing and unintelligible.
  - One who prepares plans for buildings.
  - A great lover of books
  - A person in charge of a museum
  - A man who thinks only for himself
  - One who kills animals and sells their flesh
  - A person with a long experience in a specific field
- B) a) Give synonyms for the following words and use them in your own sentences. (3M)
- Euphoria
  - Vicious
  - Ostentatious
- b) Give antonyms for the following words and use them in your own sentences. (4M)
- Truce
  - Terse
  - Supercilious
  - Emerge

### (OR)

4. A) Give meanings for the following idioms and also use them in your own sentences. (7M)
- The cream of the crop
  - An arm and a leg
  - Hand in glove
  - Hue and cry
  - Hard and fast
  - Explore all avenues
  - Spill the beans
- B) a) Give synonyms for the following words and use them in your own sentences. (3M)
- Sacrilege
  - Pugnacious
  - Vitiate
- b) Give antonyms for the following words and use them in your own sentences. (4M)
- Succinct
  - stigmatize
  - recalcitrant
  - Adamant

## UNIT-III

5. A) Read the following paragraph and answer the questions: (7M)

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.

- What is the central idea of this passage?
  - In the first paragraph, 'inferences' mean?
  - Which method of teaching history would the author of this passage support?
  - In the second paragraph, 'shaping of world affairs' Means.
  - What is the conclusive thought of the author?
  - Give an appropriate title for the written discourse.
  - How reliable is the written history; and/or is it just 'his' story?
- B) Develop a paragraph (200 words) based on the following hints and provide an appropriate title for the same. (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.

**(OR)**

6. A) Read the following paragraph and answer the questions: (7M)

Work expands so as to fill the time available for its completion. The general recognition of this fact is shown in the proverbial phrase, 'It is the busiest man who has time to spare.' Thus, an elderly lady at leisure can spend the entire day writing a postcard to her niece. An hour will be spent in finding the postcard, hunting for spectacles, half an hour to search for the address, an hour and a quarter in composition and twenty minutes in deciding whether or not take an umbrella when going to the pillar box in the street. The total effort that would occupy a busy man for three minutes, all told, may in this fashion leave another person completely exhausted after a day of doubt, anxiety and toil.

1. What happens when the time to be spent on some work increases?
2. Explain the sentence: 'Work expands so as to fill the time available for its completion.'
3. Who is the person likely to take more time to do work?
4. What is the total time spent by the elderly lady in writing a postcard?
5. What does the expression 'pillar box' stand for?
6. Suggest an appropriate title for the passage.
7. 'It is the busiest man who has time to spare' Elaborate the semantic content of it.

B) Develop a paragraph (200words) based on the following hints and provide an appropriate title for the same. (7M)

\_\_\_\_\_not luck but labor \_\_\_\_\_ Luck \_\_\_ever waiting\_\_\_\_\_ ;labour \_\_\_\_\_ strong-will turns up something. Luck \_\_\_\_\_ news of a legacy; labour \_\_\_\_\_ the foundation of competence. Luck \_\_\_\_\_on chance, labour \_\_\_\_\_ character.

#### **UNIT-IV**

7. A) Write an Essay on 'Terrorism, a social evil' (7M)  
B) Draft an E-Mail to your friend about your career plans. (7M)

**(OR)**

8. A) Write an essay on 'Facing a book vis-à-vis Facebook' (7M)  
B) Present an argument in about 250 words on 'Technology replacing Teachers'. Substantiate your argument with reasons. (7M)

#### **UNIT-V**

9. A) Write a feasibility report on 'Setting up a Water / Power Unit at your campus.' (7M)  
ii. Write a report on Educational Tour

B) Draft a pamphlet on any Electronic home appliances/Places of tourists' interest/an Educational institution/ an exhibition. (7M)

**(OR)**

- 10.A) Write a feasibility report on 'Educational Tour'. (7M)  
B) Write a letter to a renowned person, requesting him to be the Chief Guest for the cultural festival of your college. (7M)

**[B17 BS 1101]**

[B17 BS 1102]  
**I B. Tech I Semester(R17) Regular Examinations**  
**MATHEMATICS-I**  
(Common to all branches)

**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT – I**

1. (a) Solve  $\frac{dy}{dx} + (\tan x)y = (\sec x)y^3$ . (7M+7M)  
(b) Find the orthogonal trajectories of the family of parabolas  $ay^2 = x^3$ .

**(OR)**

2. (a) Solve  $(y^4 + 2y)dx + (xy^3 + 2y^4 - 4x)dy = 0$ . (7M+7M)  
(b) A body originally at  $80^{\circ}C$  cools down to  $60^{\circ}C$  in 20 minutes, the temperature of air being  $40^{\circ}C$ . What will be the temperature of the body after 40 minutes from the original?

**UNIT - II**

3. (a) Solve  $(D^3 - D)y = 2x + 1 + 4 \cos x$ . (7M+7M)  
(b) solve  $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = e^x \log x$  by the method of variation of parameters.

**(OR)**

4. (a) solve  $(D^2 + 3D + 2)y = e^{e^x}$ . (7M+7M)  
(b) The differential equation for a circuit in which self inductance and capacitance neutralize each other is  $L \frac{d^2i}{dt^2} + \frac{i}{C} = 0$ . Find the current  $i$  as a function of  $t$ , given that  $i$  is maximum current and  $i = 0$  when  $t = 0$ .

**UNIT - III**

5. (a) Find  $L\{t \cos at\}$  and  $L\left\{\int_0^t e^{-t} \cos t dt\right\}$ . (7M+7M)  
(b) Using convolution theorem evaluate  $L^{-1}\left\{\frac{1}{(s+a)(s+b)}\right\}$ .

**(OR)**

6. (a) Find  $L^{-1}\left\{\frac{5s+3}{(s-1)(s^2+2s+5)}\right\}$ . (7M+7M)

- (b) Solve  $\frac{d^2y}{dt^2} + 4\frac{dy}{dt} + 3y = e^{-t}$ ,  $y(0) = y'(0) = 1$  by using Laplace transforms.

#### UNIT – IV

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

$$x^2 U_{xx} + 2xy U_{xy} + y^2 U_{yy} = 2 \cos 3U \sin U. \quad (7M+7M)$$

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

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

**(OR)**

8. (a) Expand  $x^2y + 3y - 2$  in powers of  $(x - 1)$  and  $(y + 2)$  using Taylor's theorem.

(7M+7M)

(b) By using the method of differentiation under the integral sign

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

#### UNIT – V

9. (a) Solve  $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$ .

(7M+7M)

(b) solve  $(D^2 - DD' - 2D'^2)z = (y-1)e^x$ .

**(OR)**

10. (a) Solve  $x(y-z)p + y(z-x)q = z(x-y)$ .

(7M+7M)

(b) solve  $(D + D' - 1)(D + 2D' - 3)z = 3x + 6y + 4$ .

[B17 BS 1103]  
**I B. Tech I Semester (R 17) Regular Examinations**  
**MATHEMATICS-II**  
**(Mathematical Methods)**  
 (Common to CSE,ECE & IT)

**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT - I**

1.a) Find a root of  $x^3 - x - 11 = 0$  using the bisection method correct to three decimal places. (7M+7M)

b) Find the cube root of 41 using Newton-Raphson method.

**(OR)**

2. a) Find a real root of the equation  $x \log_{10} x = 1.2$  by Regula-false method correct to three decimal places. (7M+7M)

b) Find the positive root of the equation  $3x = \cos x + 1$  by iteration method.

**UNIT - II**

3. a) Using Gauss forward difference formula, Find Y (8), from the following table (7M+7M)

X	0	5	10	15	20	25
Y	7	11	14	18	24	32

b) Find the interpolating polynomial f(x) for the data of the following table

x	0	1	4	5
f(x)	4	3	24	39

**(OR)**

4. a) Using Gauss backward formula, find f(42), from the following table (7M+7M)

X	20	25	30	35	40	45
f(x)	354	332	291	260	231	204

b) Using Lagrange's interpolation formula find Y(10) from the following table

x	5	6	9	11
Y	12	13	14	16

**UNIT - III**

5. a) Evaluate  $\int_0^2 \frac{dx}{x^3 + x + 1}$  by using Simpsons  $1/3^{\text{rd}}$  rule with  $h = 0.25$  (7M+7M)

b) Evaluate  $y(0.8)$  using Runge Kutta method given  $y' = (x + y)^{\frac{1}{2}}$ ,  $y(0.4) = 0.41$

**(OR)**

6. a) A rocket is launched from the ground. Its acceleration  $a(t)$  measured every 5 seconds is tabulated below. Use trapezoidal rule to find the velocity and the position of the rocket at  $t = 40$  seconds. (7M+7M)

t	0	5	10	15	20	25	30	35	40
a(t)	40.0	45.25	48.50	51.25	54.35	59.48	61.5	64.3	68.7

- b) Given  $y' = x + \sin y$ ,  $y(0) = 1$ , compute  $y(0.2)$  and  $y(0.4)$  with  $h = 0.2$  using modified Euler's method.

#### UNIT – IV

7. a) Find the Fourier series to represent  $f(x) = x - x^2$  from  $x = -\pi$  to  $x = \pi$ . (7M+7M)

- b) Obtain the sine series for  $f(x) = x$  in  $0 \leq x \leq \pi$ .

(OR)

8. a) Obtain the Fourier series for the function  $f(x) = \begin{cases} \pi x, & 0 \leq x < 1 \\ \pi(2 - x), & 1 \leq x \leq 2 \end{cases}$  and deduce that  $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \dots = \frac{\pi^2}{8}$ . (7M+7M)

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

#### UNIT – V

9. a) Find the Fourier Transform of  $\frac{1}{\sqrt{|x|}}$ . (7M+7M)

- b) Find the Fourier integral representation for  $f(x) = \begin{cases} 1 - x^2, & \text{for } |x| \leq 1 \\ 0, & \text{for } |x| > 1 \end{cases}$

(OR)

10. a) Find the inverse Fourier transform  $f(x)$  of  $F_s(p) = \frac{p}{1+p^2}$ . (7M+7M)

- b) Find the Fourier cosine transform of  $e^{-ax}$ . Hence evaluate  $\int_0^{\infty} \frac{\cos \lambda x}{x^2 + a^2} dx$

[B17 BS 1104]  
**I B. Tech I Semester (R 17) Regular Examinations**  
**ENGINEERING PHYSICS**  
**(Common to CSE,ECE & IT)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT – I**

1. (a) Describe the interference phenomena In thin transparent films for reflected light and obtain the conditions for maxima and minima. [7M]  
(b) Discuss the Fraunhofer diffraction of monochromatic light at a single slit. [7M]

**(OR)**

2. (a) Describe, with a neat sketch, the design and working of Michelson's interferometer. [7M]  
(b) Explain how the resolving power of a grating can be determined. [7M]

**UNIT – II**

3. (a) Differentiate spontaneous and stimulated emission processes and obtain the Einstein's relation for spontaneous to stimulated emission coefficients. [7M]  
(b) Define numerical aperture of an optical fiber and derive an expression for the same. [7M]

**(OR)**

4. (a) With neat sketches, explain the principle and working of He – Ne gas laser system. [7M]  
(b) Explain the characteristics of lasers and mention the applications of lasers. [7M]

**UNIT – III**

5. (a) Discuss the electric fields induced due to time varying magnetic fields and deduce the Faraday's law. [7M]  
(b) Describe any one method of detecting ultrasonics and mention the important applications of Ultrasonics. [7M]

**(OR)**

6. (a) Explain the concept of displacement current, and describe the significance of Maxwell's equations. [7M]  
(b) What is magnetostriction and describe the magnetostriction method of producing Ultrasonics. [7M]

**UNIT – IV**

7. (a) What are matter waves and describe an experiment confirming the wave nature of electrons. [7M]  
(b) What are the salient features of Kronig - Penny model. [7M]

**(OR)**

8. (a) Explaining the physical significance of wave function of a particle derive the Schrodinger's time independent wave equation. [7M]  
(b) Using band theory of solids how do you classify the materials. [7M]

### UNIT - V

9. (a) What is a unit cell and describe the different crystal systems possible in solids. [7M]  
(b) What are nano materials and explain the chemical vapour deposition method of fabricating nano materials. [7M]
- (OR)
10. (a) Define packing fraction and deduce the packing fraction for a simple cubic structure. [7M]  
(b) Define the basic approaches of fabricating nano materials and discuss the sol-gel method. [7M]

[B17 BS 1105]  
**I B. Tech I Semester (R 17) Regular Examinations**  
**ENGINEERING CHEMISTRY**  
**(Common to CIV, EEE & ME)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT - I**

1. (a) Explain the mechanism of free radical Polymerization reaction with a suitable example. [7M]  
(b) Distinguish between thermoplastic and thermosetting resins. [7M]

**(OR)**

2. (a) What are conducting Polymers? Discuss the applications of conducting Polymers. [7M]  
(b) Write notes on Bu Na – S and Bu Na – N. [7M]

**UNIT - II**

3. (a) Explain the Proximate analysis of coal and give its significance. [7M]  
(b) Explain the fractional distillation of crude oil. [7M]

**(OR)**

4. (a) Write notes on (i) Knocking (ii) CNG [7M]  
(b) How Synthetic Petrol can be prepared by Bergius Process. [7M]

**UNIT - III**

5. (a) Explain the mechanism of electrochemical theory of corrosion with neat diagram. [7M]  
(b) Describe briefly about cathodic Protection. [7M]

**(OR)**

6. (a) Explain Hydrogen – Oxygen fuel cell with neat cell diagram [7M]  
(b) Discuss on various constituents of Paint. [7M]

**UNIT - IV**

7. (a) What is hardness? How it is determined by EDTA method? Explain. [7M]  
(b) Describe with equations how water can be softened using Lime & Soda Process [7M]

**(OR)**

8. (a) Discuss various sterilizing methods used in municipal water treatment. [7M]  
(b) Illustrate the reverse osmosis Process with a neat diagram. [7M]

**UNIT - V**

9. (a) Discuss chemistry involved in setting and hardening of cement? [7M]  
(b) What are refractories? Discuss the classification of refractories. [7M]

**(OR)**

10. (a) Write the engineering applications of Liquid Crystals. [7M]  
(b) Explain the stoichiometric defects in crystals. [7M]

[B17 BS 1105]

[B17 CS 1101]  
**I B. Tech I Semester (R 17) Regular Examinations**  
**COMPUTER PROGRAMMING USING C**  
**(Common to CSE,ECE & IT)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

1. a) Discuss about computer languages. [7M]  
b) Explain c tokens. [7M]

**(OR)**

2. a) Explain different c operators. [7M]  
b) write about algorithm, pseudo code and flowchart. [7M]

**UNIT-II**

3. a) Discuss various looping techniques in c. [7M]  
b) Write a c program for summation of n numbers. [7M]

**(OR)**

4. a) Explain 2-D arrays and character arrays in c. [7M]  
b) Write a c program to find frequency of characters of a string. [7M]

**UNIT-III**

5. a) Explain parameter passing techniques in c. [7M]  
b) Write a c program for towers of Hanoi using recursive function. [7M]

**(OR)**

6. a) Explain storage classes in c. [7M]  
b) Write a c program for Fibonacci series using recursive function. [7M]

**UNIT-IV**

7. a) What is a pointer? How pointer variables are initialized. [7M]  
b) Write a program to print command line arguments on the screen. [7M]

**(OR)**

8. a) Discuss character pointers with examples. [7M]  
b) Write a c program to pass pointer variables as function arguments. [7M]

**UNIT-V**

9. a) Explain the difference between structure and union and write a program to find sum of marks in 3 subjects for a student using structures. [7M]  
b) Explain different bit-wise operators in c. [7M]

**(OR)**

10. a) Explain about the input and output operations of a file. [7M]  
b) Write a c program to open a file and to print its contents on screen. [7M]

[B17 CS 1101]

[B17 CE 1101]  
**I B. Tech I Semester (R 17) Regular Examinations**  
**ENVIRONMENTAL STUDIES**  
**(Common to all Branches)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.  
All questions carry equal marks.

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**UNIT-I**

- 1 a). Define Environment. Write the scope and importance of the environmental studies. [7M]  
b). Elucidate the concept of Global Environmental crisis. [7M]

**(OR)**

- 2 a). What is an ecosystem? Write the structure and functions of an ecosystem. [7M]  
b). Write a brief note on forest resources. [7M]

**UNIT-II**

- 3 a). Describe the values of Biodiversity. [7M]  
b). Write about in-situ and ex-situ conservation. [7M]

**(OR)**

- 4 a). Describe Biogeographical Classification of India. [7M]  
b). India as a mega-diversity habitat – Explain [7M]

**UNIT-III**

- 5 a). Effects of modern agriculture on land. [7M]  
b). What are the benefits and problems of dams? [7M]

**(OR)**

- 6 a). Write about floods and droughts? [7M]  
b). Discuss the impact of energy use on environment. [7M]

**UNIT-IV**

- 7 a). What are the causes, effects and control measures of air pollution? [7M]  
b). What is solid waste management? Explain its methods. [7M]

**(OR)**

- 8 a). Elucidate the results of population growth on environment? [7M]  
b). Write notes on Rain water harvesting with a neat sketch [7M]

**UNIT-V**

- 9 a). Mention the different environmental acts and write about one. [7M]  
b). Write notes on Environmental impact Assessment. [7M]

**(OR)**

- 10 a). Write short notes on any two environmental case studies. [7M]  
b). Write a report on a visit to an environmental polluted area? [7M]

[B17 CE 1101]

[B17 ME 1101]  
**I B. Tech I Semester (R 17) Regular Examinations**  
**ENGINEERING MECHANICS**  
**(Common to CIV,EEE & ME)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

Assume the missing data if any, suitably

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**UNIT-1**

1. (a) State and prove Varignon's theorem. [7 M]  
 (b) Two cylinders of diameter 100 mm and 50 mm, weighing 200 N and 50 N, respectively are placed in a trough as shown in Figure 1. Assuming smooth surfaces, find the reactions at the points of supports 1, 2, 3 and 4. [7 M]

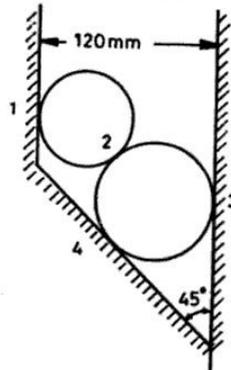


Figure 1

[OR]

- 2 (a) A string ABC of length  $l$  carries a small pulley C from which a Load  $W$  is suspended as shown in Figure 2. The string hangs between two vertical walls which are at a distance  $d$  apart. The end A is higher than the end B by height  $h$ . Find the position of equilibrium defined by the angle  $\alpha$ . Assume  $d = l/2$  and  $h = l/4$ . [7 M]

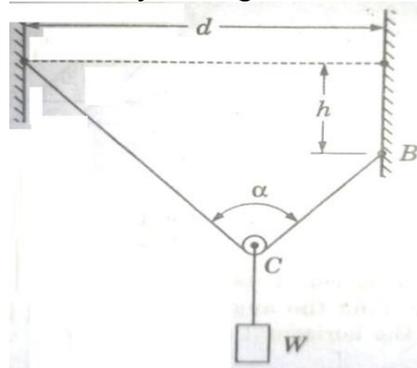


Figure 2

- (b) Two identical prismatic bars AB & CD each weighing 200 N are welded together to form a Tee and are suspended in a vertical plane as shown in Figure 3. Calculate the values of the  $\theta$  that the bar AB will make with the vertical when a vertical load of 200 N is applied at D. [7 M]

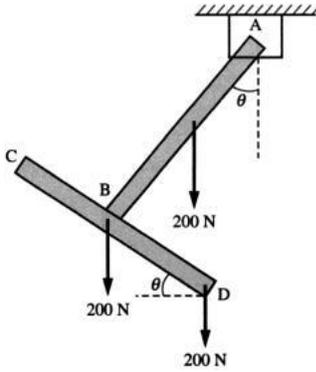


Figure 3

**UNIT-II**

- 3 (a) Derive the centroid of a wire bend in the form of a sector of an arc by taking the radius as 'r' and angle of sector as ' $\theta$ '. [7 M]  
 (b) Determine the centroid of the shaded segment for Figure 4 by taking  $a = 18$  m and  $\alpha = 45^\circ$ . [7 M]

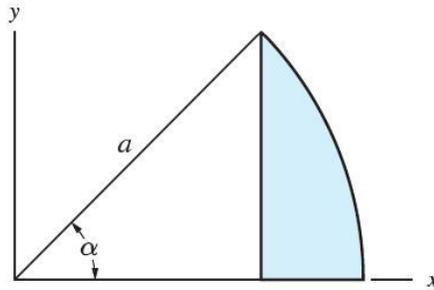


Figure 4

[OR]

- 4 (a) Derive the moment of inertia of triangle about its centroidal axis and also deduce the same about its base. [7 M]  
 (b) Determine the moment of Inertia of the T-section shown in Figure 5 about its centroidal axis. [7 M]

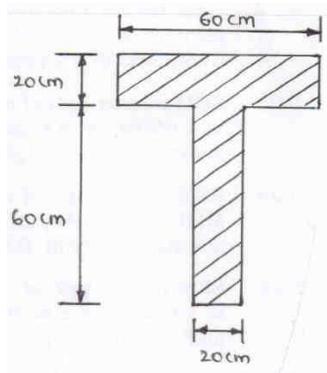


Figure 5

### UNIT-III

- 5 (a) Explain the terms angle of repose, cone of friction and write the laws of friction. [7 M]  
 (b) Referring to the Figure 6 given above, determine the least values of the force  $P$  to cause motion to impend right wards. Assume the coefficient of friction under the blocks to be 0.2 and pulley to be frictionless. [7 M]

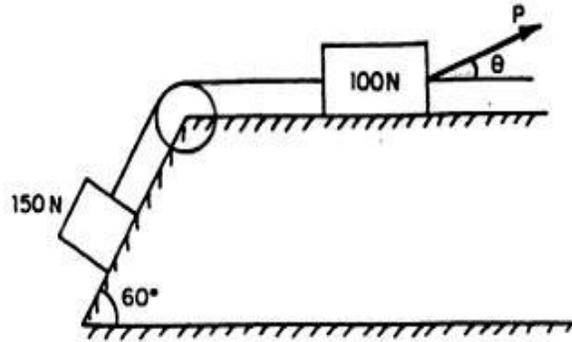


Figure 6

[OR]

- 6 (a) A uniform ladder 5m long on a horizontal ground and leans against a smooth vertical wall at an angle of  $70^\circ$  with the horizontal. The weight of the ladder is 90 N and acts at its middle. The ladder is at the point of sliding, when a man weighing 75N stands on a rung 3.5m from the top of the ladder. Calculate the co-efficient of the friction between the ladder and the floor. [7 M]

- (b) Find out the forces in all the members of a pin jointed truss as shown in Figure 7 by using method of Joints. [7 M]

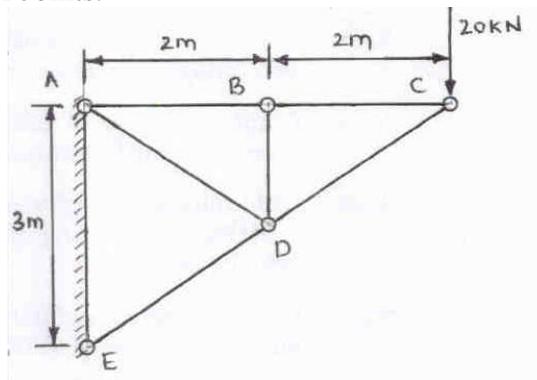


Figure 7

### UNIT-IV

- 7 (a) A stone is dropped from the top of a tower 60 m high. At the same instant, another stone is thrown vertically upwards from the foot of tower to meet the first stone at a height of 18 m. Determine (i) the time when the two stones meet; (ii) the velocity with which the second stone was thrown up. [7 M]  
 (b) Weight  $W$  and  $2W$  are supported in a vertical plane by a string and pulleys arranged as shown in Figure 8. Find the magnitude of an additional weight  $Q$  applied on the left which will give a downward acceleration  $a = 0.1g$  to the weight  $W$ . [7 M]

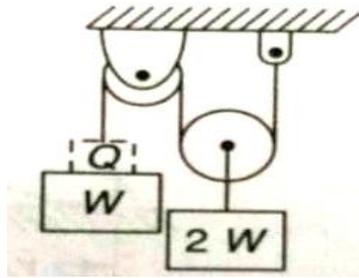


Figure 8

[OR]

- 8 (a) Define Time of Flight, Range and Maximum Height of a projectile. [7 M]  
 (b) Derive the general equation of projectile motion. [7 M]

UNIT-V

- 9 (a) A flywheel is rotating at 150 R.P.M. and after 8 seconds it is rotating at 120 R.P.M.. If the retardation is uniform, determine number of revolutions made by the flywheel and the time taken by the flywheel before it comes to rest from the speed of 150 R.P.M. [7 M]  
 (b) A rotor of weight  $W = 1720 \text{ N}$  and radius of gyration  $k = 100 \text{ mm}$  is mounted on a horizontal shaft and set in rotation by a falling weight  $W = 1720 \text{ N}$  as shown in Figure 9. If the system is released from rest, find the velocity of the block after it has fallen through a distance of 3 m. [7 M]

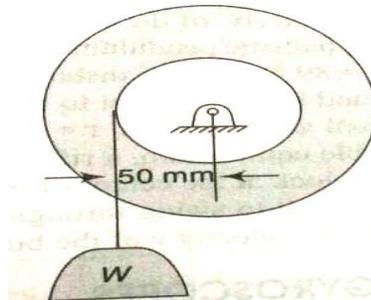


Figure 9

[OR]

- 10 (a) A body is rotating with an angular velocity of 8 radian/s. After 5 seconds, the angular velocity of the body becomes 28 radian/s. determine the angular acceleration of the body. [7 M]  
 (b) Three bodies, a sphere, a cylinder and a hoop each having the same mass and radius are released from rest from an inclined plane of angle  $\theta$ . Determine the velocity of each of the bodies after it has rolled down the incline plane through a distance  $s$ . [7 M]

[B17 ME 1102]  
**I B. Tech I Semester ( R 17) Regular Examinations**  
**ENGINEERING DRAWING**  
**(Common to CIV,EEE & ME)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

Assume the missing data if any, suitably

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**UNIT-I**

1. 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. [14 M]

[OR]

2. Two fixed points A and B are 100mm apart, Trace the complete path of a point P moving (in the same plane as that of A and B) in such a way that the sum of its distance from A and B is always the same and equal to 125mm. Name the curve and draw another curve parallel to and 25mm away from this curve. [14 M]

**UNIT-II**

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. [14 M]

[OR]

4. (a) Draw the projections of a 75mm long straight line in the following positions: (i) parallel to and 30mm above the HP and in the VP; (ii) perpendicular to the VP, 25mm above the HP and its one end in the VP; (iii) Inclined at  $30^\circ$  to the HP and its one end 20mm above it, parallel to and 30mm in front of the VP. [7 M]

(b) Draw the projections of the following points on the same ground line, keeping the projectors 25mm apart. (i) Point A in the HP and lying 20mm behind the VP; (ii) Point B is 40mm above the HP and 25mm in front of the VP; (iii) Point C is 25mm below the HP and 25mm behind the VP; (iv) Point D is 15mm above the HP and 50mm behind the VP. [7 M]

**UNIT-III**

5. 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. [14 M]

[OR]

6. A semicircular plate of 40mm diameter has its straight edge in the VP and inclined at  $45^\circ$  to the HP, the surface of the plate makes an angle of  $30^\circ$  with the VP. Draw its projections. [14 M]

### UNIT-IV

7. A hexagonal pyramid, base 25mm side and axis 50mm long, has an edge of its base on the ground. Its axis is inclined at  $30^\circ$  to the ground and parallel to the VP. Draw its projections. [14 M]

[OR]

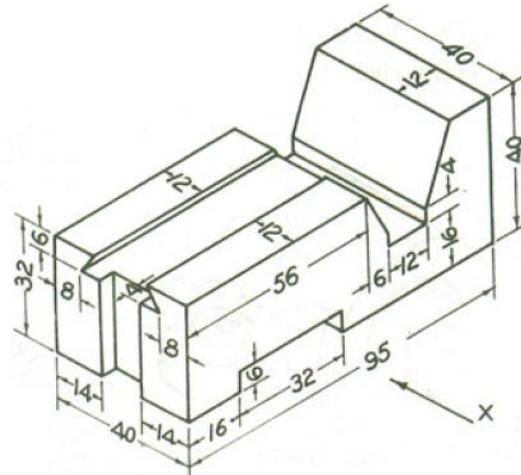
8. Draw the projections of a cylinder 75mm diameter and 100mm long, lying on the ground with its axis inclined at  $30^\circ$  to the VP and parallel to the ground. [14 M]

### UNIT-V

9. A square pyramid with base side 40mm and height 60mm is resting on a cube of sides 50mm, the axes of the cube and the pyramid being in the same line. Two sides of the base of the pyramid are parallel to the edges of the cube. Draw the isometric view. [14 M]

[OR]

10. Draw (i) Front View (ii) Top View (iii) Side View of the object shown below: [14 M]



All the dimensions are in mm

[B17 BS 1201]  
**I B. Tech II Semester ( R 17) Regular Examinations**  
**ENGLISH-II**  
**(Common to all Branches)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.  
All questions carry equal marks.

**UNIT-I**

1. A. i) Describe how education is the greatest resource. (4M)  
ii) Write a brief note on the great contribution made by Kalam to the science and technology. (3M)  
B. Imagine that you are a builder and draft a letter of tender quotation to the Chief Engineer of Department of Roads and Buildings of Karnataka for constructing an administrative building. (7M)

(OR)

2. A. i) What, according to the author, is the source of problems for civilizations? (4M)  
ii) Who had most influenced the value system of Kalam when he was young? (3M)  
B. Imagine that you are the managing Director of a big company that manufactures electronic goods like Music systems, DVDs, LCDs. Write a business letter addressed to the Board of directors requesting them to attend a meeting to be held in the ensuing month. Give the agenda of the meeting also. (7M)

**UNIT-II**

3. A. i) What is the layman's view of atomic bomb? How right is he in thinking so? Who do you think is to be held responsible for the destruction created by technology? Support your opinion with suitable examples. (4M)  
ii) What were some of the changes that Raman had initiated at the Indian Institute of Science? (3M)  
B. Make notes on the following passage. (7M)

Here is an excerpt from one of Abdul Kalam's essays.

Knowledge has many forms and it is available at many places. It is acquired through education, information, intelligence and experience. It is available in academic institutions with teachers, in libraries, in research papers, seminar proceedings and in various organizations and work places with workers, managers, in drawings, in process sheets and on the shop floors. Knowledge, though closely linked to education, comes equally from learning skills, such as those possessed by our artists, craftsmen, hakims, vaidyas, philosophers and saints, as also our housewives. Knowledge plays a very important role in their performance and output too. Our heritage and history, the rituals, epics and traditions that form part of our consciousness are also vast resources of knowledge as are our libraries and universities. There is an abundance of unorthodox, earthy wisdom in our villages. There are hidden treasures of knowledge in our environment, in the oceans, bio-reserves and deserts, in the plant and animal life. Every state in a country has a unique core competence for a knowledge society

(OR)

4. A. i) Describe any modern invention with its positive and negative effects on the society. (4M)  
ii) List out the awards and achievements of Sir C.V. Raman. (3M)  
B. Make notes on the following passage. (7M)

It is not luck but labor that makes a man. Luck, says an American writer, is ever waiting for something to turn up; labour with keen eyes and strong will always turns up something. Luck lies in bed and wishes the postman would bring him news of a legacy; labour turns out at six and with busy pen and ringing hammer lays the foundation of competence. Luck whines, labour watches. Luck relies on

chance, labour on character. Luck slips downwards to self-indulgence; labour strides upwards and aspires to independence. The conviction, therefore, is extending that diligence is the mother of good luck. In other words, that a man's success in life will be proportionate to his efforts, to his industry, to his attention to small things.

### UNIT-III

5. A.(i)How should one avoid culture shock before experiencing it when one goes to a new place? What precautions would help in living peacefully in a new place of new culture? (4M)  
(ii)Explain in brief Baba's theory on the hitting of cosmic rays on earth's atmosphere (3M)
- B. Write a paragraph on one of the following ideas. (7M)  
i) Facebook ii) Barking dog seldom bites.  
(OR)

- 6.A i) How does a person become a cultural entity ? (4M)  
ii) Imagine that you have been elected as the Cultural Secretary of the Students' Association and you have to give a ten-minute speech outlining your plans for the academic year. Write out your speech in about 75 words. (3M)
- B. Write an essay on Homi Bhabha's life and his academic and professional journey. (7M)

### UNIT-IV

7. A i) How does Shirley Jackson trivialize the grave practice of the communities traditional stoning and what message might Jackson be trying to convey to the reader through the treatment of the characters' behavior? (4M)  
ii) What were two types of services devised by the British in the Indian Education Services? Why? (3M)
- B. Rewrite the following sentences correcting the errors: (7M)  
i. He plays football when he was free  
ii. He drunk coffee everyday when he was young  
iii. Had your breakfast in the morning?  
iv. He drunk coffee everyday when he was young.  
v. Had your breakfast in the morning?  
vi. Why haven't you been along with me for the event last month?  
vii. Never I have seen such a person!

(OR)

8. A. i) What is black box? Who made it? When and why is it significant? (4M)  
ii) Fill in the blanks with appropriate prepositions. (3M)  
a. She was senior \_\_\_ me when we were with the academic project \_\_\_\_\_ some time.  
b. One who believes \_\_\_ and a devotee \_\_\_ God is a theist.  
c. He is angry \_\_\_ her behavior as she always lies \_\_\_ him.  
d. Write an essay on the contribution of J.C. Bose to the field of science. (7M)

### UNIT-V

9. A. i) How did the relationship between Microsoft and IBM begin? (4M)  
ii) Collocate the given words of the list A with those of the list B.
- | A             | B           |
|---------------|-------------|
| i. Resounding | enemies ( ) |
| ii. Bitter    | success ( ) |
| iii. Death    | blow ( )    |
- B. Write an essay on Dr. Prapulla Chandra Ray's life and his academic and professional journey (7M)

**(OR)**

10. A i) Describe How Gates worked for the development of Microsoft. (4M)  
ii) Describe the compound Ray discovered. What are its properties? (3M)  
B. Write a business report on 'Setting up a Pharmaceutical Lab and Manufacturing Unit at Visakhapatnam, Andhra Pradesh. (7M)

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[B17 BS 1202]  
**I B. Tech II Semester (R 17) Regular Examinations**  
**MATHEMATICS-II**  
**(Mathematical Methods)**  
**(Common to CIV, EEE & ME)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT - I**

1.a) Find a root of  $x^3 - x - 11 = 0$  using the bisection method correct to three decimal places. (7M+7M)

b) Find the cube root of 41 using Newton-Raphson method.

**(OR)**

2. a) Find a real root of the equation  $x \log_{10} x = 1.2$  by Regula-false method correct to three decimal places. (7M+7M)

b) Find the positive root of the equation  $3x = \cos x + 1$  by iteration method.

**UNIT - II**

3. a) Using Gauss forward difference formula, Find Y (8), from the following table (7M+7M)

X	0	5	10	15	20	25
Y	7	11	14	18	24	32

b) Find the interpolating polynomial f(x) for the data of the following table

x	0	1	4	5
f(x)	4	3	24	39

**(OR)**

4. a) Using Gauss backward formula, find f(42), from the following table (7M+7M)

X	20	25	30	35	40	45
f(x)	354	332	291	260	231	204

b) Using Lagrange's interpolation formula find Y(10) from the following table

x	5	6	9	11
Y	12	13	14	16

**UNIT - III**

5. a) Evaluate  $\int_0^2 \frac{dx}{x^3 + x + 1}$  by using Simpsons 1/3<sup>rd</sup> rule with  $h = 0.25$  (7M+7M)

b) Evaluate  $y(0.8)$  using Runge Kutta method given  $y' = (x + y)^{\frac{1}{2}}$ ,  $y(0.4) = 0.41$

**(OR)**

6. a) A rocket is launched from the ground. Its acceleration  $a(t)$  measured every 5 seconds is tabulated below. Use trapezoidal rule to find the velocity and the position of the rocket at  $t = 40$  seconds. (7M+7M)

t	0	5	10	15	20	25	30	35	40
a(t)	40.0	45.25	48.50	51.25	54.35	59.48	61.5	64.3	68.7

- b) Given  $y' = x + \sin y$ ,  $y(0) = 1$ , compute  $y(0.2)$  and  $y(0.4)$  with  $h = 0.2$  using modified Euler's method.

#### UNIT – IV

7. a) Find the Fourier series to represent  $f(x) = x - x^2$  from  $x = -\pi$  to  $x = \pi$ . (7M+7M)

- b) Obtain the sine series for  $f(x) = x$  in  $0 \leq x \leq \pi$ .

(OR)

8. a) Obtain the Fourier series for the function  $f(x) = \begin{cases} \pi x, & 0 \leq x < 1 \\ \pi(2 - x), & 1 \leq x \leq 2 \end{cases}$  and deduce that  $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \dots = \frac{\pi^2}{8}$ . (7M+7M)

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

#### UNIT – V

9. a) Find the Fourier Transform of  $\frac{1}{\sqrt{|x|}}$ . (7M+7M)

- b) Find the Fourier integral representation for  $f(x) = \begin{cases} 1 - x^2, & \text{for } |x| \leq 1 \\ 0, & \text{for } |x| > 1 \end{cases}$

(OR)

10. a) Find the inverse Fourier transform  $f(x)$  of  $F_s(p) = \frac{p}{1+p^2}$ . (7M+7M)

- b) Find the Fourier cosine transform of  $e^{-ax}$ . Hence evaluate  $\int_0^{\infty} \frac{\cos \lambda x}{x^2 + a^2} dx$

[B17 BS 1203]  
**I B. Tech II Semester ( R 17) Regular Examinations**  
**MATHEMATICS-III**  
**(Common to all Branches)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

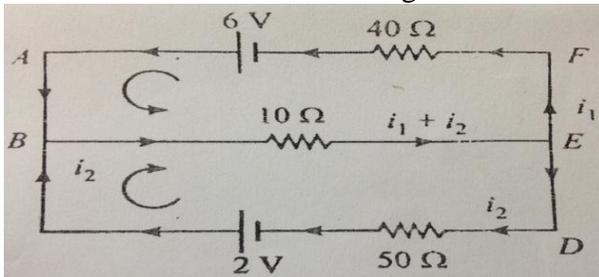
All questions carry equal marks.

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**UNIT - I**

- 1.a) Solve the system of equations  $20x + y - 2z = 17$ ,  $3x + 20y - z = -18$ ,  
 $2x - 3y + 20z = 25$  by Gauss –Siedel method. (7M+7M)

- b) Find the currents in the following circuit.



(OR)

2. a) Solve the system of equations  $10x + y + z = 12$ ,  $2x + 10y + z = 13$ ,  $2x + 2y + 10z = 14$  by Gauss-elimination method. (7M+7M)

- b) Define rank and find the rank of the matrix A by reducing it in to its normal form where

A is: 
$$A = \begin{bmatrix} 2 & 3 & -1 & -1 \\ 1 & -1 & -2 & -4 \\ 3 & 1 & 3 & -2 \\ 6 & 3 & 0 & -7 \end{bmatrix}$$

**UNIT - II**

3. a) Verify Cayley-Hamilton theorem and find the inverse of the matrix

$$A = \begin{bmatrix} 1 & 0 & 3 \\ 2 & 1 & -1 \\ 1 & -1 & 1 \end{bmatrix} \quad (7M+7M)$$

- b) Reduce the quadratic form  $2x^2 + 2y^2 + 2z^2 - 2xy - 2yz - 2zx$  to canonical form by orthogonal transformation and hence find rank, index, signature and nature of the quadratic form.

(OR)

4. a) Find the eigen values and the corresponding eigen vectors of the matrix

$$A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix} \quad (7M+7M)$$

- b) If  $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ , use Cayley-Hamilton theorem to find the value of  $2A^5 - 3A^4 + A^2 - 4I$ . Also find the inverse of A.

### UNIT - III

5. a) Evaluate  $\int_0^a \int_{\frac{x^2}{a}}^{2a-x} xy^2 dy dx$  by changing the order of integration. (7M+7M)

b) Establish the relation between Beta and Gamma functions.

(OR)

6. a) Evaluate  $\int_0^\infty \int_0^\infty e^{-(x^2+y^2)} dx dy$  by changing in to polar coordinates and hence deduce

$$\int_0^\infty e^{-x^2} dx = \frac{\sqrt{\pi}}{2}. \quad (7M+7M)$$

b) Express  $\int_0^1 x^m (1-x^n)^p dx$  in terms of  $\Gamma$  functions and hence evaluate

$$\int_0^1 x^5 (1-x^3)^{10} dx.$$

### UNIT - IV

7. a) Find the directional derivative of  $\phi(x, y, z) = x^2yz + 4xz^2$  at the point (1,-2,-1) in the direction of the normal to the surface  $f(x, y, z) = x \log z - y^2$  at (-1,2,1). (7M+7M)

b) Prove that  $\text{div}(\text{grad } r^n) = n(n+1)r^{n-2}$  and  $\text{curl}(\text{grad } \phi) = 0$  for any scalar function  $\phi$ .

(OR)

8. a) Show that the vector field  $\vec{F} = (x^2 + xy^2)\vec{i} + (y^2 + x^2y)\vec{j}$  is conservative and find the scalar potential function. (7M+7M)

b) Find the constants a, b such that the surfaces  $5x^2 - 2yz - 9x = 0$  and  $ax^2y + bz^3 = 4$  cut orthogonally at (1,-1,2).

### UNIT - V

9. a) Evaluate by Green's theorem  $\oint_C [(y - \sin x)dx + \cos x dy]$  where C is the triangle enclosed by the lines  $y=0, x=\pi/2, y=2x/\pi$ . (7M+7M)

b) State Gauss Divergence theorem and use it to evaluate  $\iint_S \vec{u} \cdot \vec{n} ds$  where  $\vec{u} = x\vec{i} + y\vec{j} + z\vec{k}$  and S is the surface of the sphere  $x^2 + y^2 + z^2 = 9$ .

(OR)

10. a) State Green's theorem in a plane and apply the theorem to evaluate

$$\oint_C (x^2y dx + y^3 dy) \text{ where C is the closed path formed by } y=x \text{ and } y=x^3 \text{ from } (0,0) \text{ to } (1,1). \quad (7M+7M)$$

b) Evaluate by Stokes' theorem  $\oint_C [(x+y)dx + (2x-z)dy + (y+z)dz]$  where C is the boundary of the triangle with vertices (0,0,0), (1,0,0) and (1,1,0)

[B17 BS 1204]  
**I B. Tech II Semester (R 17) Regular Examinations**  
**ENGINEERING PHYSICS**  
**(Common to CIV,EEE & ME)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.  
All questions carry equal marks.

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**UNIT – I**

1. (a) Describe the interference phenomena in thin transparent films for reflected light and obtain the conditions for maxima and minima. [7M]
- (b) Discuss the Fraunhofer diffraction of monochromatic light at a single slit. [7M]

**(OR)**

2. (a) Describe, with a neat sketch, the design and working of Michelson's interferometer. [7M]
- (b) Explain how the resolving power of a grating can be determined. [7M]

**UNIT – II**

3. (a) Differentiate spontaneous and stimulated emission processes and obtain the Einstein's relation for spontaneous to stimulated emission coefficients. [7M]
- (b) Define numerical aperture of an optical fiber and derive an expression for the same. [7M]

**(OR)**

4. (a) With neat sketches, explain the principle and working of He – Ne gas laser system. [7M]
- (b) Explain the characteristics of lasers and mention the applications of lasers. [7M]

**UNIT – III**

5. (a) Discuss the electric fields induced due to time varying magnetic fields and deduce the Faraday's law. [7M]
- (b) Describe any one method of detecting ultrasonics and mention the important applications of Ultrasonics. [7M]

**(OR)**

6. (a) Explain the concept of displacement current, and describe the significance of Maxwell's equations. [7M]
- (b) What is magnetostriction and describe the magnetostriction method of producing Ultrasonics. [7M]

**UNIT – IV**

7. (a) What are matter waves and describe an experiment confirming the wave nature of electrons. [7M]
- (b) What are the salient features of Kronig - Penny model. [7M]

**(OR)**

8. (a) Explaining the physical significance of wave function of a particle derive the Schrodinger's time independent wave equation. [7M]
- (b) Using band theory of solids how do you classify the materials. [7M]

**UNIT - V**

9. (a) What is a unit cell and describe the different crystal systems possible in solids. [7M]  
(b) What are nano materials and explain the chemical vapour deposition method of fabricating nano materials. [7M]
- (OR)
10. (a) Define packing fraction and deduce the packing fraction for a simple cubic structure. [7M]  
(b) Define the basic approaches of fabricating nano materials and discuss the sol-gel method. [7M]

**[B17 BS 1204]**

[B17 BS 1205]  
**I B. Tech II Semester ( R 17) Regular Examinations**  
**ENGINEERING CHEMISTRY**  
(Common to CSE,ECE & IT)  
MODEL QUESTION PAPER

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT - I**

1. (a) Explain the mechanism of free radical Polymerization reaction with a suitable example. [7M]  
(b) Distinguish between thermoplastic and thermosetting resins. [7M]
- (OR)**
2. (a) What are conducting Polymers? Discuss the applications of conducting Polymers. [7M]  
(b) Write notes on Bu Na – S and Bu Na – N. [7M]

**UNIT - II**

3. (a) Explain the Proximate analysis of coal and give its significance. [7M]  
(b) Explain the fractional distillation of crude oil. [7M]
- (OR)**
4. (a) Write notes on (i) Knocking (ii) CNG [7M]  
(b) How Synthetic Petrol can be prepared by Bergius Process. [7M]

**UNIT - III**

5. (a) Explain the mechanism of electrochemical theory of corrosion with neat diagram. [7M]  
(b) Describe briefly about cathodic Protection. [7M]
- (OR)**
6. (a) Explain Hydrogen – Oxygen fuel cell with neat cell diagram [7M]  
(b) Discuss on various constituents of Paint. [7M]

**UNIT - IV**

7. (a) What is hardness? How it is determined by EDTA method? Explain. [7M]  
(b) Describe with equations how water can be softened using Lime & Soda Process [7M]
- (OR)**
8. (a) Discuss various sterilizing methods used in municipal water treatment. [7M]  
(b) Illustrate the reverse osmosis Process with a neat diagram. [7M]

**UNIT - V**

9. (a) Discuss chemistry involved in setting and hardening of cement? [7M]  
(b) What are refractories? Discuss the classification of refractories. [7M]
- (OR)**
10. (a) Write the engineering applications of Liquid Crystals. [7M]  
(b) Explain the stoichiometric defects in crystals. [7M]

[B17 BS 1205]

[B17 CS 1201]  
**I B. Tech II Semester (R 17) Regular Examinations**  
**COMPUTER PROGRAMMING USING C**  
**(Common to CIV,EEE & ME)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

1. a) Discuss about computer languages. [7M]  
b) Explain c tokens. [7M]

**(OR)**

2. a) Explain different c operators. [7M]  
b) write about algorithm, pseudo code and flowchart. [7M]

**UNIT-II**

3. a) Discuss various looping techniques in c. [7M]  
b) Write a c program for summation of n numbers. [7M]

**(OR)**

4. a) Explain 2-D arrays and character arrays in c. [7M]  
b) Write a c program to find frequency of characters of a string. [7M]

**UNIT-III**

5. a) Explain parameter passing techniques in c. [7M]  
b) Write a c program for towers of Hanoi using recursive function. [7M]

**(OR)**

6. a) Explain storage classes in c. [7M]  
b) Write a c program for Fibonacci series using recursive function. [7M]

**UNIT-IV**

7. a) What is a pointer? How pointer variables are initialized. [7M]  
b) Write a program to print command line arguments on the screen. [7M]

**(OR)**

8. a) Discuss character pointers with examples. [7M]  
b) Write a c program to pass pointer variables as function arguments. [7M]

**UNIT-V**

9. a) Explain the difference between structure and union and write a program to find sum of marks in 3 subjects for a student using structures. [7M]  
b) Explain different bit-wise operators in c. [7M]

(or)

10. a) Explain about the input and output operations of a file. [7M]  
b) Write a c program to open a file and to print its contents on screen. [7M]

[B17 CS 1201]

[B17 CS 1202]  
**I B. Tech II Semester ( R 17) Regular Examinations**  
**OBJECT ORIENTED PROGRAMMING**  
**THROUGH C++**  
**(COMPUTER SCIENCE & ENGINEERING)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.  
All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. A. What are the features of object programming language? [7M]  
B. List the drawbacks of conventional programming? [7M]

**(OR)**

2. A. Explain array of objects with a suitable program? [7M]  
B. Explain inline function with an example? [7M]

**UNIT-II**

3. A. Explain constructor overloading with an example? [7M]  
B. Explain assignment overloading with a suitable example? [7M]

**(OR)**

4. A. Explain Dynamic initialization of Objects? [7M]  
B. What is operator overloading? Write a C++ program illustrating overloading binary operators? [7M]

**UNIT-III**

5. A. Explain the concepts of pointers to objects? [7M]  
B. What is virtual base class? Write a C++ program illustrating virtual base classes? [7M]

**(OR)**

6. A. Explain virtual function with an example? [7M]  
B. Explain hybrid inheritance with an example? [7M]

**UNIT-IV**

7. A. What is an Exception? Explain about try, throw and catch with example? [7M]  
B. Explain unformatted I/O operations with examples? [7M]

**(OR)**

8. A. Explain the principles of exception handling? [7M]  
B. What are the String Characteristics? [7M]

**UNIT-V**

9. A. Explain about different types of containers? [7M]  
B. Write a program for bubble sort using function templates? [7M]
- (OR)**
10. A. Explain the concepts of command line arguments. [7M]  
B. Explain differences between templates and macros? [7M]

**[B17 CS 1202]**

**[B17 CS 1203]**

**I B. Tech II Semester (R 17) Regular Examinations**  
**DATA STRUCTURES**  
**(Electronics and Communication Engineering)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. A) Define data structure. Discuss different types of data structure their implementations applications. (7M)  
B) Implement binary search technique using recursion. (7M)
- (OR)**
2. A) What is an array? Discuss different types of array with examples. (7M)  
B) Rearrange following numbers using quick sort: (7M)  
10, 6, 3, 7, 17, 26, 56, 32, 72

**UNIT-II**

3. A) Write an algorithm for basic operations of stack. (7M)  
B) Explain the procedure to evaluate postfix expression. Evaluate the following postfix expression  $7\ 3\ 4\ +\ -\ 2\ 4\ 5\ /\ +\ * \ 6\ /\ 7\ +\ ?$  (7M)
- (OR)**
4. A) Define Queue. Explain the operations of queue using arrays. (7M)  
B) Explain the advantages of circular queue (7M)

**UNIT-III**

5. A) Define pointer. Explain Dynamically allocated storage using pointers. (7M)  
B) Write an Algorithm for the operations of Linked stack (7M)
- (OR)**
6. A) Write an Algorithm for the operations of single Linked list (7M)  
B) Explain polynomial addition using Linked List (7M)

**UNIT-IV**

7. A) What is a Binary tree. Explain threaded binary tree. (7M)  
B) Explain Binary tree traversal techniques. (7M)
- (OR)**
8. A) Explain the operations of Binary search trees. (7M)  
B) Define Max Heap. Write an algorithm for deletion of elements from Max Heap. (7M)

**UNIT-V**

9. A) What is a graph? Explain the properties of graphs. (7M)  
B) Write breadth first traversal algorithm. Explain with an example. (7M)
- (OR)**
10. A) Define Minimum spanning tree. Explain Kruskal's Algorithm. (7M)  
B) Write an Algorithm to find shortest path in a Graph (7M)

[B17 CS 1203]

[B17 ME 1201]

**I B. Tech II Semester (R 17) Regular Examinations**  
**ENGINEERING DRAWING**  
**(Common to CSE,ECE & IT)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

Assume the missing data if any, suitably

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**UNIT-I**

1. 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. [14 M]

[OR]

2. Two fixed points A and B are 100mm apart, Trace the complete path of a point P moving (in the same plane as that of A and B) in such a way that the sum of its distance from A and B is always the same and equal to 125mm. Name the curve and draw another curve parallel to and 25mm away from this curve. [14 M]

**UNIT-II**

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. [14 M]

[OR]

4. (a) Draw the projections of a 75mm long straight line in the following positions: (i) parallel to and 30mm above the HP and in the VP; (ii) perpendicular to the VP, 25mm above the HP and its one end in the VP; (iii) Inclined at  $30^\circ$  to the HP and its one end 20mm above it, parallel to and 30mm in front of the VP. [7 M]

(b) Draw the projections of the following points on the same ground line, keeping the projectors 25mm apart. (i) Point A in the HP and lying 20mm behind the VP; (ii) Point B is 40mm above the HP and 25mm in front of the VP; (iii) Point C is 25mm below the HP and 25mm behind the VP; (iv) Point D is 15mm above the HP and 50mm behind the VP. [7 M]

**UNIT-III**

5. 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. [14 M]

[OR]

6. A semicircular plate of 40mm diameter has its straight edge in the VP and inclined at  $45^\circ$  to the HP, the surface of the plate makes an angle of  $30^\circ$  with the VP. Draw its projections. [14 M]

#### UNIT-IV

7. A hexagonal pyramid, base 25mm side and axis 50mm long, has an edge of its base on the ground. Its axis is inclined at  $30^\circ$  to the ground and parallel to the VP. Draw its projections. [14 M]

[OR]

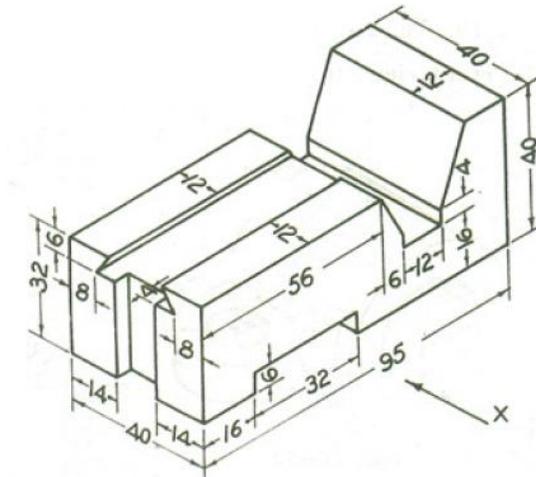
8. Draw the projections of a cylinder 75mm diameter and 100mm long, lying on the ground with its axis inclined at  $30^\circ$  to the VP and parallel to the ground. [14 M]

#### UNIT-V

9. A square pyramid with base side 40mm and height 60mm is resting on a cube of sides 50mm, the axes of the cube and the pyramid being in the same line. Two sides of the base of the pyramid are parallel to the edges of the cube. Draw the isometric view. [14 M]

[OR]

10. Draw (i) Front View (ii) Top View (iii) Side View of the object shown below: [14 M]



All the dimensions are in mm

[B17 ME 1201]

[B17 CE 1201]

I B. Tech II Semester (R 17) Regular Examinations

**BUILDING MATERIALS AND CONSTRUCTION**  
**(For Civil)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*

**UNIT-I**

1. a) Explain the classification of bricks. (Including IS classification) [7 M]  
b) Explain the following clay products: [7 M]  
    i) Stoneware  
    ii) Terra-cotta

**(OR)**

2. a) Explain the term “Quarrying of stones”? [7 M]  
b) Classify tiles and explain them with neat sketches. [7 M]

**UNIT-II**

3. a) What is seasoning of timber? Explain the defects due to seasoning of timber. [7 M]  
b) Explain the following wood based products: [7 M]  
    i) Block Boards  
    ii) Particle Boards

**(OR)**

4. a) List various classifications of plywood. [7 M]  
b) Draw the cross-section of a tree and explain the various details. [7 M]

**UNIT-III**

5. a) Define Specific gravity, Bulk density and Porosity of aggregates. [7 M]  
b) Explain the manufacturing process of cement by “Dry” process? [7 M]

**(OR)**

6. a) Explain the term “Bulking of sand”? [7 M]  
b) State and explain various laboratory tests for testing OPC? [7 M]

**UNIT-IV**

7. a) What are FAL-G blocks and Concrete blocks [7 M]  
b) What are the characteristics of an ideal paint? [7 M]

**(OR)**

8. a) Explain various closers in Brick masonry with neat sketches? [7 M]  
b) What is a foundation? Explain different types of foundations? [7 M]

**UNIT-V**

9. a) What is Roofing? Explain Madras terrace Roof? [7 M]  
b) Define Form work and explain the different types of form work. [7 M]

**(OR)**

10. a) What is Scaffolding? Explain the different types of Scaffoldings? [7 M]  
b) List out various staircases and explain any two them with neat sketches. [7 M]

**[B17 CE 1201]**

**[B17 EC 1201]**

**I B. Tech II Semester (R 17) Regular Examinations**

**ELEMENTS OF ELECTRONICS ENGINEERING  
(Common to CSE & IT)  
MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*\*

**UNIT I**

1. a) Explain in detail about drift and diffusion currents. (7M)
- b) Explain Hall Effect and its applications in detail. (7M)

**OR**

2. a) What are the differences between Avalanche breakdown and Zener Breakdown. (7M)
- b) Explain the basic operation of semiconductor diode with v-I characteristics. (7M)

**UNIT II**

3. a) Explain the V-I Characteristic of Zener Diode, and state its applications. (7M)
- b) Explain Tunneling phenomenon and V-I Characteristics of Tunnel diode. (7M)

**OR**

4. a) Derive expression for the ripple factor and efficiency of half wave rectifier without filter. (7M)
- b) With neat diagram, explain the operation of full wave rectifier and obtain expression for with filter Ripple factor. (7M)

**UNIT III**

5. a) Plot the input and output characteristics of transistor in CE configuration and explain the shape of the characteristics. (7M)
- b) What is early effect and what are its consequences. (7M)

**OR**

6. a). Plot the input and output characteristics of the transistor in CB configuration and explain shape of the curves. (7M)
- b) Define  $\alpha$  and  $\beta$ . Derive the relation between  $\alpha$  and  $\beta$ . (7M)

**UNIT IV**

7. a) Draw and explain the Self biasing circuit. Derive an expression for Stability factor S. (7M)
- b) Explain the phenomenon of Thermal runaway. (7M)

**OR**

8. a) Explain any two types of bias compensation. (7M)
- b) What are the reasons for the instability of operating point? Briefly explain the methods of stabilization of operating point. (7M)

**UNIT V**

9. a) Explain the operation of JFET with Drain and Transfer characteristics. (7M)
- b) What are the differences between JFET and BJT? (7M)

**OR**

10. a) Explain the operation of Enhancement MOSFET in details. (7M)
- b) Define  $g_m$ ,  $r_d$  and  $\mu$  of JFET and give the relation between them. (7M)

[B17 EC 1201]

[B17 EE 1201]

**I B. Tech II Semester (R 17) Regular Examinations**

**CIRCUIT THEORY**  
**(Electrical Electronics Engineering)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.  
 All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. a) Obtain the expressions for star-delta and delta-star equivalence of resistive network. (7M)
- b) Find the value of resistance R, if the current is  $I=11$  A and source voltage is 66 V as shown in figure. (7M)

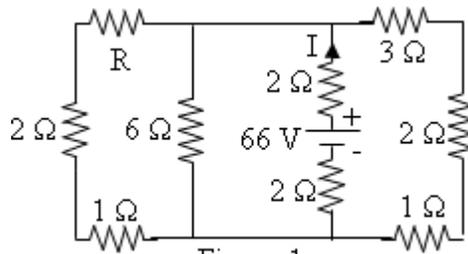


Figure:1

**(OR)**

2. a) Explain Source Transformation with suitable examples. (7M)
- b) Use the nodal analysis to determine voltage at node 1 and the power supplied by the dependent current source in the network shown in figure. (7M)

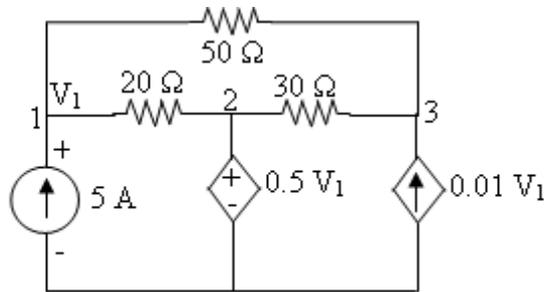


Figure:2

**UNIT-II**

- 3.a) Explain the procedure for obtaining fundamental tie-set matrix of given network. (7M)
- b) Draw the oriented graph of a network with fundamental cut-set matrix as shown below.(7M)

Twigs				Links		
1	2	3	4	5	6	7
1	0	0	0	-1	0	0
0	1	0	0	1	0	1
0	0	1	0	0	1	1
0	0	0	1	0	1	0

Also find number of cut-sets and draw them.

**(OR)**

- 4.a) For the network graph shown in figure, draw all possible trees. For any one of these trees, prepare a cut-set schedule and obtain the relation between tree-branch voltages and branch voltages. (7M)

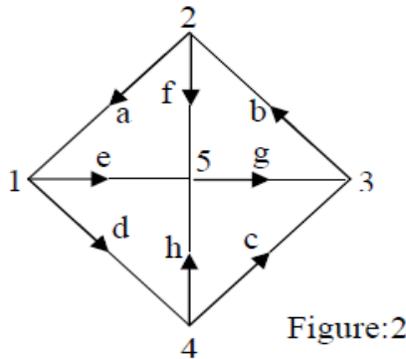


Figure:2

- b) Describe the procedure to construct the dual of a network with an example. (7M)

### UNIT-III

- 5.a) A ring has a mean diameter of 21 cm and cross sectional area of 10 cm<sup>2</sup>. The ring is made up of semi-circular sections of cast iron and cast steel with each joint having reluctance equal to an air gap of 0.2 mm. Find the ampere turns required to produce a flux of 0.8 milli Wb. The relative permeability of cast steel and cast iron are 800 & 166 respectively. Neglect fringing and leakage effects. (7M)
- b) Two identical coupled coils have an equivalent inductance of 80 mH when connected series aiding and 35 mH in series opposing. Find L<sub>1</sub>, L<sub>2</sub>, M and K. (7M)

**(OR)**

6. a) Derive the relationship between Flux,MMF and Reluctance. (7M)
- b)A coil is wound uniformly with 400 turns over an iron ring having a mean circumference of 50 cm and a cross section of 0.4 cm<sup>2</sup>. If the coil has resistance of 10Ω and is connected across a 50V DC supply, calculate the m.m.f of the coil, magnetic field strength, magnetic field density,total flux and reluctance of the ring. (7M)

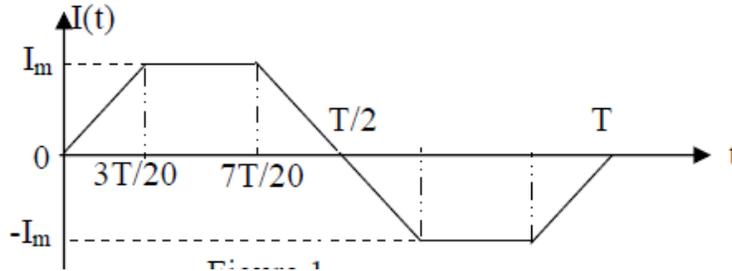
### UNIT-IV

7. a)Define the following: (7M)
- i) Amplitude of an alternating quantity
  - ii) Instantaneous value of an alternating quantity
  - iii) Frequency

b) Show that power consumed in a purely inductive circuit is zero when sinusoidal voltage is applied across it. (7M)

(OR)

8. a) Find the average value, r.m.s value, form factor and peak factor for the wave form shown in figure. (7M)



b) A coil of inductance  $L$  and resistance  $R$  in series with a capacitor is supplied at a constant voltage from a variable frequency source. If the frequency is  $\omega_r$ , find in terms of  $L$ ,  $R$  and  $\omega_r$  the values of those frequencies at which the circuit current would be half as much as that at resonance. Hence or otherwise determine the bandwidth and selectivity of the circuit. (7M)

UNIT-V

9. a) Explain the relationship between line and Phase quantities in delta connected circuits? (7M)

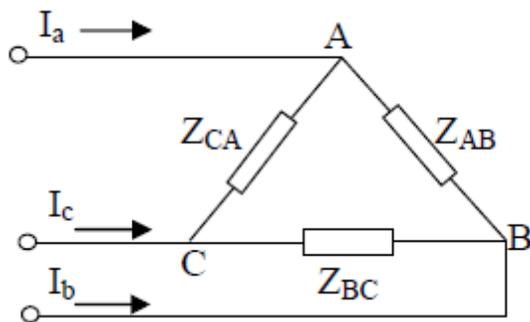
b) A balanced star connected load of  $(4+j3) \Omega$  per phase is connected to a balanced  $3\phi$  400v supply.

The phase current is 12 A. Find a) active power b) reactive power c) Apparent power (7M)

(OR)

10. a) A four-wire star-star circuit has  $V_{an} = 120 \angle 120^\circ$ ,  $V_{bn} = 120 \angle 0^\circ$ ,  $V_{cn} = 120 \angle -120^\circ$  V. If the impedances are  $Z_{an} = 20 \angle 60^\circ$ ,  $Z_{bn} = 30 \angle 0^\circ$  and  $Z_{cn} = 40 \angle 30^\circ \Omega$ , find the current in the neutra line. (7M)

b) For the circuit shown in figure 3, the line voltage is 240 V. Take  $V_{ab}$  as reference and determine following: i) phase currents, ii) line currents, iii) total power absorbed in the load. Also draw Phasor diagram (7M)



$$\begin{aligned} Z_{AB} &= 25 \Omega \\ Z_{BC} &= 12 \angle 60^\circ \Omega \\ Z_{CA} &= 16 \angle -30^\circ \Omega \end{aligned}$$

[B17 EE 1201]

[B17 EE 1202]  
**I B. Tech II Semester (R 17) Regular Examinations**  
**BASIC ELECTRICAL & ELECTRONICS ENGINEERING**  
**(Mechanical Engineering)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

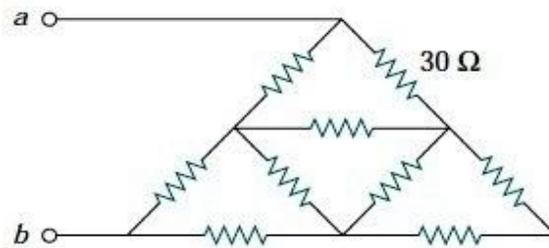
Answer **ONE Question** from **EACH UNIT**.  
All questions carry equal marks.

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**UNIT-I**

1. (a) State and explain Kirchhoff's Laws with example. [7M]

(b) Find the equivalent resistance  $R_{ab}$  for the circuit shown below. All the resistor values are  $30\Omega$ . [7M]



**OR**

2. (a) Define Dynamically Induced E.M.F and derive expression for it. [7M]

(b) A coil having an inductance  $60\text{mH}$  is carrying a current of  $60\text{A}$ . Calculate the Self-induced EMF in the coil. When the current in the coil reversed in  $30\text{milliseconds}$ . [7M]

**UNIT-II**

3. (a) Derive the EMF equation of DC generator [7M]

(b) A shunt generator supplies a load of  $7.5\text{KW}$  at  $200\text{V}$ , Calculate the generated emf if armature resistance is  $0.6\Omega$  and field resistance of  $80\Omega$ . [7M]

**OR**

4. (a) Derive the torque equation of the DC motor. [7M]

(b) An 8-pole, wave-connected armature has 600 conductors and is driven at  $625\text{ rev/min}$ . If the flux per pole is  $20\text{ mWb}$ , determine the generated E.M.F. [7M]

### UNIT-III

5. (a) Derive the EMF equation of a single phase transformer. [7M]  
(b) A 200 KVA rated transformer has a full-load copper loss of 1.5 kW and an iron loss of 1 kW. Determine the transformer efficiency at full load & half load for 0.85 power factor. [7M]

**OR**

6. (a) Explain the operation of Transformer under NO-LOAD with phasor diagram. [7M]  
(b) An ideal 25KVA Transformer has 500 turns on primary and 40 turns on the secondary winding. The primary winding is connected to 3000 V, 50Hz supply. Calculate (i) Primary and secondary currents (ii) Secondary EMF (iii) Maximum flux. [7M]

### UNIT-IV

7. (a) Draw and explain the slip-Torque Characteristics of Three phase Induction motor. [7M]  
(b) The frequency of the supply to the stator of a 6-pole induction motor is 50 Hz and the rotor frequency is 2 Hz. Determine (i) the slip, and (ii) the rotor speed in r.p.m [7M]

**OR**

8. (a) Derive the EMF equation of Alternator [7M]  
(b) Obtain the Voltage Regulation of Alternator by synchronous impedance method [7M]

### UNIT-V

9. a) Explain the operation of Diode in Forward and reverse bias conditions and draw V-I characteristics. [7M]  
(b) Explain the operation of Zener diode and draw its V-I characteristics [7M]

**OR**

10. (a) Draw the circuit diagram of Bridge rectifier and explain its operation. [7M]  
(b) Explain how the transistor acts as an amplifier. [7M]

[B17 EE 1203]  
**I B. Tech II Semester (R 17) Regular Examinations**  
**ELEMENTS OF ELECTRICAL ENGINEERING**  
**(Electronics and Communication Engineering)**  
**MODEL QUESTION PAPER**

**Time: 3 hours**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. (a) State and explain Kirchoff's Laws with example. [7M]
- (b) Derive star-delta and delta- star Transformation for Equal resistances [7M]

**(OR)**

2. (a) Define Dynamically Induced E.M.F and derive expression for it. [7 M]
- (b) A coil having an inductance 60mH is carrying a current of 60A. Calculate the Self-induced EMF in the coil. When the current in the coil reversed in 30milliseconds. [7M]

**UNIT-II**

3. (a) Derive the EMF equation of DC generator [7M]
- (b) A series motor drives a load at 1500 r.p.m and takes a current of 20A when the supply voltage is 250V if the total resistance of the motor is 1.5 ohms and the iron, friction and windage losses amount to 400W. Determine the efficiency of the motor. [7M]

**(OR)**

4. (a) Derive the Torque equation of DC motor. [7M]
- (b) A shunt generator supplies a load of 7.5KW at 200V, Calculate the generated emf if armature resistance is  $0.6\Omega$  and field resistance of  $80\Omega$ . [7M]

**UNIT-III**

5. (a) Explain the operation of Transformer under NO-LOAD with phasor diagram. [7M]
- (b) An ideal 25KVA Transformer has 500 turns on primary and 40 turns on the secondary winding. The primary winding is connected to 3000 V, 50Hz supply. Calculate (i) Primary and secondary currents (ii) Secondary EMF (iii) Maximum flux. [7M]

**(OR)**

6. (a) Derive the EMF equation of a single phase transformer. [7M]

(b) A 25-kVA transformer has 500 turns on the primary and 50 turns on the secondary winding. The primary is connected to 3000-V, 50-Hz supply. Find the full-load primary and secondary currents, the secondary e.m.f. and the maximum flux in the core. Neglect leakage drops and no-load primary current [7M]

#### UNIT-IV

- 7 (a) Explain the Slip - Torque Characteristics of Three phase Induction Motor. [7M]  
(b) A 3-Phase Induction Motor is Running at 5% slip. The Output is 36.75KW and Total Mechanical losses are 1.5KW. Estimate the copper losses in the rotor. If the stator losses are 4KW, estimate the efficiency of the Motor. [7M]

(OR)

8. (a) Define Slip and Rotor Frequency in Detail. [7M]  
(b) The Power Input to 3- $\phi$  Induction motor is 55Kw. Total stator losses Equal to 2.2Kw. Find (i) Rotor copper loss (ii) Mechanical Power developed if the motor is running at a speed of 720rpm at 50Hz supply with 4poles. [7M]

#### UNIT-V

9. (a) Derive the EMF equation of Alternator [7M]  
(b) Obtain the Voltage Regulation of Alternator by SYNCHRONOUS IMPEDENCE METHOD. [7M]

(OR)

10. (a) Explain the operation of PMMC with neat sketches [7M]  
(b) Explain Deflecting, controlling and damping Torques with neat sketches [7M]

[B17 EE 1203]

**[B17IT2101]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**DATA STRUCTURES**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

1. (a). Explain about Asymptotic Notations with Examples. 7M  
(b). Explain the procedure to evaluate postfix expression. Evaluate the following postfix expression  $7\ 3\ 4\ +\ -\ 2\ 4\ 5\ /\ +\ *\ 6\ /\ 7\ +\ ?$  7M  
(OR)
2. (a). What is an array? Discuss different types of array with examples. 7M  
(b). Define Queue. Explain the operations of queue using arrays. 7M

**UNIT-II**

3. (a). Write a C routines for the operations of single Linked list. 7M  
(b). Write a C routines for the operations of Stack using single Linked list 7M  
(OR)
4. (a). Explain polynomial addition using Linked List. 7M  
(b). Write a C routines for insertion and deletion using double linked lists 7M

**UNIT-III**

5. (a). What is a Binary tree. Explain threaded binary tree 7M  
(b). Define Binary Search Tree. Explain about insertion and deletion of an element from Binary Search Tree 7M  
(OR)
6. (a). Define Max Heap. Write an algorithms for insertion and deletion of elements from Max Heap 7M  
(b). Explain about Representations of Binary Tree 7M

**UNIT-IV**

7. (a). Write breadth first Search traversal algorithm. Explain with an example. 7M  
(b). Define Minimum spanning tree. Explain Kruskal's Algorithm with example 7M  
(OR)
8. (a). What is a graph? Explain the properties of graphs. 7M  
(b). Write an Algorithm to find single source shortest path in a Graph with Example 7M

**UNIT-V**

9. (a). Write an algorithm for Quick Sort and Rearrange following numbers using quick sort: 10, 6, 3, 7, 17, 26, 56, 32, 72 7M  
(b). Write an algorithm for binary search using iterative and Explain with Example 7M  
(OR)
10. (a). Rearrange following numbers using Heap Sort: 7M  
24, 12, 56, 43, 87, 65, 22,21  
(b). Explain about Interpolation Search. 7M

**[B17IT2101]**

**[B17IT2102]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**JAVA PROGRAMMING**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

**UNIT-I**

1. (a). Write any few differences between C,C++ and Java. 7M  
(b). Discuss the buzz words of java. 7M

**(OR)**

2. (a). Write about operators and expressions in java. 7M  
(b). What is a Class and Object? Is there any relationship between them? explain . 7M

**UNIT-II**

3. (a). Differentiate between call-by-value and call-by-reference. 7M  
(b). Write any three uses of super keyword. 7M

**(OR)**

4. (a). Define an Array with an example .Explain different types of arrays. 7M  
(b). Write a java program to add two matrices and print the result. 7M

**UNIT-III**

5. (a). Define an interface and explain how it is different from a class with an example. 7M  
(b). Explain **method overloading** and **method overriding** with examples. 7M

**(OR)**

6. (a). What is an Exception? Explain the keywords used for Exception Handling in java. 7M  
(b). What is a Thread? Explain different ways of creating a Thread in java with examples. 7M

**UNIT-IV**

7. (a). Explain the concept of a package. How new packages are created and used in other classes in java. 7M  
(b). Explain how to add a public class to an existing package with an example. 7M

**(OR)**

8. (a). Define File Class. Explain how to read and write in to a file in java. 7M  
(b). How to delete a file in Java using delete() ? 7M

**UNIT-V**

9. (a). Explain delegation event model. 7M  
(b). Write a java program to handle mouse events. 7M

**(OR)**

10. (a). Explain about different Layout Managers. 7M  
(b). Explain about passing parameters to applets. 7M

**[B17IT2102]**

**[B17BS2105]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

1. (a). Prove that  $\{(p \vee q) \rightarrow r\} \wedge (\neg p) \rightarrow (q \rightarrow r)$  is a tautology **7M**  
(b). Verify that the following argument is valid by using the rules of inference **7M**  
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
- (OR)**
2. (a). Verify that the following argument is valid by using the rules of inference, **7M**  
quantifiers.  
Babies are illogical.  
Nobody is despised who can manage a crocodile.  
Illogical people are despised.  
Hence, babies cannot manage crocodiles.
- (b). Find the PDNF and PCNF of  $p \vee \neg q$  **7M**

**UNIT-II**

3. (a). Let R denote a relation on the set of ordered pairs of positive integers by **7M**  
 $(x, y)R(u, v)$  iff  $xv = yu$ . Then show that 'R' is an equivalence  
relation.
- (b). Define Hasse diagram. Draw the Hasse diagram for the poset  $(P(S), \subseteq)$  where **7M**  
the operation " $\subseteq$ " on P(S), the power set of S as set inclusion.
- (OR)**
4. (a). Let  $(S, *)$  be a given semi group. There exists a homomorphism  $g: S \rightarrow S^S$  **7M**  
where  $(S^S, \circ)$  is a semi group of functions from  $S \rightarrow S$  under the operation of  
(left) composition.
- (b). Show that the four fourth roots of unity form a group with respect to **7M**  
multiplication.

**UNIT-III**

5. (a). Find the number of ways of arranging 6 boys and 6 girls in a row. In how many of these arrangements i) All girls together ii) No two girls together iii) Boys and girls come alternatively 7M
- (b). i) Find the term independent of  $x$  in the expansion of  $(x^2 + \frac{1}{x})^{12}$  7M  
 ii) Find the coefficient of  $x^5y^{10}z^5w^5$  in the expansion of  $(x + 7y + 3z + w)^5$

(OR)

6. (a). A cricket team of 11 is to be selected out of 14 players of whom 5 are bowlers. Find the number of ways in which this can be done so as to include atleast 3 bowlers. 7M
- (b). Find the number of integers between 1 and 250 which are divisible by any of the integers 2,3,5 or 7. 7M

**UNIT-IV**

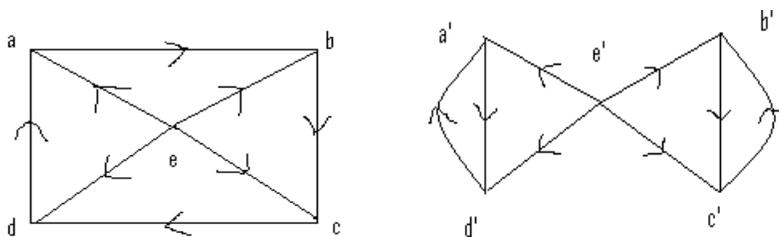
7. (a). How many integral solutions are there to  $x_1 + x_2 + x_3 + x_4 + x_5 = 20$  where  $x_1 \geq 3, x_2 \geq 2, x_3 \geq 4, x_4 \geq 6$  and  $x_5 \geq 0$ . 7M
- (b). Solve the recurrence relation  $S_n - 7S_{n-1} + 10S_{n-2} = 7 \cdot 3^n$  for  $n \geq 2$ . 7M

(OR)

8. (a). Find the coefficient of  $x^{14}$  in  $(1+x+x^2+x^3)^{10}$  7M
- (b). Solve the recurrence relation  $a_n - 5a_{n-1} + 6a_{n-2} = 0, n \geq 2$  by using generating functions 7M

**UNIT-V**

9. (a). Define isomorphism of graphs. Verify the following graphs are isomorphic or not. 7M



- (b). State and Prove Euler's formula for planar graphs. 7M

(OR)

10. (a). State and prove Fermat's theorem. 7M
- (b). Compute the inverse of each element in  $Z_7$ , using Fermat's theorem. 7M

[B17BS2105]

**[B17IT2103]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**COMPUTER GRAPHICS**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

1. (a). What is the role of digital to analog converter (DAC)? Where is it placed in video display devices? **7M**  
(b). Explain the mechanism of increasing the colors/gray levels without increasing the frame buffer memory. **7M**

**(OR)**

2. (a). Draw the flow chart for Bresenham's incremental circle algorithm in the first octant. **7M**  
(b). Discuss about the reflections required for generating the complete circle using the first octant of the origin centered circle. **7M**

**UNIT-II**

3. (a). Discuss about the basic transformations on object. **7M**  
(b). Discuss about reflection & shearing **7M**

**(OR)**

4. (a). Explain the approaches followed in different line clipping algorithms: compare and contrast the characteristics. **7M**  
(b). Explain boundary polygon filling algorithm in detail **7M**

**UNIT-III**

5. (a). Distinguish between isometric, parallel projections. **7M**  
(b). Explain with a neat sketch, how the view plane is defined with respect to centre of projections and the object defined in 3-D space **7M**

**(OR)**

6. (a). Explain various 3D object representation mechanisms **7M**  
(b). Explain the methods to view a 3d object. **7M**

**UNIT-IV**

7. (a). Explain General Projection Transformation **7M**  
(b). Explain Window to Viewport Transformation **7M**

**(OR)**

8. (a). Explain about B-spline curves **7M**  
(b). Explain about Beizer curves **7M**

**UNIT-V**

9. (a). Explain about Quadric Surfaces **7M**  
(b). Explain about Viewing pipeline **7M**

**(OR)**

10. (a). Explain about blobby objects and spline representation **7M**  
(b). Explain about modeling and coordinate transformation **7M**

**[B17IT2103]**

**[B17IT2104]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**DATA COMMUNICATIONS**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

- |    |  |    |
|----|--|----|
| 1. | (a). List various communication tasks that are being performed in a data communication system. | 7M |
|    | (b). Explain in detail about OSI layered protocol architecture.                                | 7M |
|    | (OR)   |    |
| 2. | (a). List and explain different transmission impairments.                                      | 7M |
|    | (b). Draw and explain a communication model.   | 7M |

**UNIT-II**

- |    |  |    |
|----|--|----|
| 3. | (a). Define the following terms with suitable examples : Data, signal, Analog data, Digital signal and data transmission | 7M |
|    | (b). How can you evaluate the performance of an encoding technique.  | 7M |
|    | (OR)   |    |
| 4. | (a). Explain about twisted pair cable media in detail and also give its advantages and disadvantages.                    | 7M |
|    | (b). Explain different encoding techniques for Digital data by Digital signal  | 7M |

**UNIT-III**

- |    |   |    |
|----|---|----|
| 5. | (a). Derive theoretically CRC error detection technique.                                | 7M |
|    | (b). Explain sliding window flow control with an example.                               | 7M |
|    | (OR)  |    |
| 6. | (a). Explain Go-back-N and mechanisms.  | 7M |
|    | (b). What is the difference between synchronous and asynchronous transmission? Discuss. | 7M |

**UNIT-IV**

- |    |   |    |
|----|---|----|
| 7. | (a). Explain Synchronous TDM.             | 7M |
|    | (b). Explain HDLC.                        | 7M |
|    | (OR)                                      |    |
| 8. | (a). Explain statistical TDM.             | 7M |
|    | (b). Write short notes on ISDN Interface. | 7M |

**UNIT-V**

- |     |   |    |
|-----|---|----|
| 9.  | (a). Briefly discuss about multiplexers.              | 7M |
|     | (b). Explain general purpose terminals in detail.     | 7M |
|     | (OR)  |    |
| 10. | (a). What is front end processor? Write its features. | 7M |
|     | (b). Discuss briefly about Switching processors.      | 7M |

**[B17IT2104]**

**[B17IT2105]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**DIGITAL LOGIC DESIGN**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT.**

All questions carry equal marks.

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**UNIT-I**

1. (a). Obtain the 1's and 2's complement of the following binary numbers: **7M**  
a) 11101010 b) 00000001 c) 10000000 d) 00000000
- (b). Determine the base of the numbers in each case for the following operations to be correct: **7M**  
(a)  $14/2 = 5$       (b)  $54/4 = 13$     (c)  $24+17=40$

**(OR)**

2. (a). Simplify the following Boolean expression to a minimum number literals: **7M**  
a)  $XY + XY'$     b)  $(X + Y)(X + Y')$     c)  $XYZ + X'Y + XYZ'$     d)  $(X+Y)(X'+Y)'$
- (b). Find 10's and 9's Complement for the following decimal numbers **7M**  
i) 178    ii) 265    iii) 346    iv) 190

**UNIT-II**

3. (a). Simplification using K-Map **7M**  
 $F(A,B,C,D)=\sum(1,4,7,9,12,15) + \sum d(3,6,13,14)$
- (b). Convert the following in to POS and SOP  $F=X+YZ$  **7M**
- (OR)**
4. (a). Implement  $(X+Y)'(X'+Y)'$  using NAND and NOR gates **7M**
- (b). Simplification using K-Map **7M**  
 $F(A,B,C,D)=\sum(1,4,7,9,12,15)$  Draw the Logic Diagram using logic gates

**UNIT-III**

5. (a). Design Even Parity generator **7M**
- (b). Design code converter which converts BCD into Ex-3 Code **7M**
- (OR)**
6. (a). Design full adder using Decoder **7M**
- (b). Design 3X2 Binary Multiplier **7M**

**UNIT-IV**

7. (a). Convert R-S Flip flop into J-K Flip Flop **7M**
- (b). Design Mod 6 Counter using D Flip Flop **7M**

(OR)

8. (a). Explain about SISO,PISO,PIPO,SIPO registers 7M  
(b). Design Mod 4 Up down Counter 7M

UNIT-V

9. (a). Design 5x32 decoder using PROM 7M  
(b). List out and describe the types of 1) RAM 2)ROM 7M

(OR)

10. (a). Design the following using PLA 7M  
 $F_0 = A + B' C'$      $F_1 = A C' + A B$      $F_2 = B' C' + A B$      $F_3 = B' C + A$   
(b). Design the using PAL which converts 3 bit Binary in to Gray 7M

[B17IT2105]

**[B17IT2201]**  
**II B. Tech II Semester (R 17) Regular Examinations**  
**COMPUTER ORGANIZATION**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT.**

All questions carry equal marks.

**UNIT-I**

1. (a). Explain RTL and Register Transfer 7M  
(b). Explain about Bus and Memory Transfer 7M  
(OR)
2. (a). Design Binary Adder and Subtractor and explain 7M  
(b). Design Arithmetic and Logic shift unit 7M

**UNIT-II**

3. (a). Describe Instruction cycle in computer system 7M  
(b). Discuss about Timing and Control of basic computer 7M  
(OR)
4. (a). Hardwired control Vs Micro programmed control 7M  
(b). Explain about Computer instructions 7M

**UNIT-III**

5. (a). Explain about General register organization with seven registers 7M  
(b). Expand the given statement in Three,Two,One ,Zero Addresses 7M  
 $A=(B+C)*(D+E)$
6. (a). Describe the Addressing Modes i) Direct ii) Relative iii) Auto Increment 7M  
(b). List out the Characteristics of RISC and CISC 7M

**UNIT-IV**

7. (a). Discuss that Differences between CPU and I/O Devices, Need of I/O Interface 7M  
(b). Explain about Asynchronous Communication interface with neat diagram 7M  
(OR)
8. (a). Explain about Asynchronous Data transfer 7M  
(b). Explain Modes of Transfer 7M

**UNIT-V**

9. (a). A. How many  $128 \times 8$  RAM chips are needed to provide a memory capacity of 2048 bytes?  
B. How many lines of the address bus must be used to access 2048 byte of memory? How many of these lines will be common to all chips?  
C. How many lines must be decoded for chip select? Specify the size of the decoders?  
(b). Discuss about Memory Hierarchy 7M  
(OR)
10. (a). Explain Memory Mapping Techniques of Cache Memory 7M  
(b). Discuss about Virtual memory 7M

**[B17IT2201]**

**[B17BS2202]**  
**II B. Tech II Semester (R 17) Regular Examinations**  
**PROBABILITY STATISTICS AND QUEUING THEORY**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT.**

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. (a). Define (i) Random variable and write its properties 7M  
(ii) Probability mass and density function  
(b). A random variable X has the following probability function; 7M  
Values of X : 0 1 2 3 4 5 6 7  
p(x) : k 2k 2k 2k 3k k<sup>2</sup> 2k<sup>2</sup> 7k<sup>2</sup> +k  
i) Find k.  
ii) Evaluate p(0<k<5)  
iii) if P(x≤k)> 1/2 find the minimum value of k.

**(OR)**

2. (a). Define Moment generating function and Mathematical Expectation write their properties. 7M  
(b). The diameter of an electric cable is assumed to be a continuous random variable with p.d.f  $f(x) = 6x(1-x)$ ,  $0 \leq x \leq 1$ , verify that the above is p.d.f. also find the mean and variance. 7M

**UNIT-II**

3. (a). Fit a poisson distribution for the following data 10M

x	0	1	2	3	4	5	6	7	8
f(x)	56	156	132	92	37	22	4	0	1

- (b). Derive Mean and Variance of Binomial distribution. 4M

**(OR)**

4. (a). Define exponential distribution, prove that exponential distribution lacks memory. 7M  
(b). In a distribution exactly normal, 10.03% of the items are under 25 kilogram weight and 89.97% of the items are under 70 kilogram weight. What are mean and standard deviation of the distribution? 7M

**UNIT-III**

5. (a). Explain fitting of a straight line and obtain the normal equations. 7M  
(b). The following are data on the drying time of a certain vanish and the amount of an additive that is intended to reduce the drying time: 7M

Amount of vanish additive (rams) x	0	1	2	3	4	5	6	7	8
Drying time (hours) y	12.0	10.5	10.0	8.0	7.0	8.0	7.5	8.5	9.0

Fit a second degree polynomial by the method of least squares.

(OR)

6. (a). A computer while calculating correlation coefficient between two variables X and Y from 25 pairs of observations obtained the following results:  $n = 25$ ,  $\Sigma x = 125$ ,  $\Sigma x^2 = 650$ ,  $\Sigma y = 100$ ,  $\Sigma xy = 508$ ,  $\Sigma y^2 = 460$ . It was, however, later discovered at the time of checking that he had copied down two pairs as

X	6	8
Y	14	6

While the correct values were

X	8	6
Y	12	8

Obtain the correct values of correlation coefficient.

- (b). In a partially destroyed laboratory, record of an analysis of correlation data, the following results only are legible. Variance of X = 9. Regression equations :  $8X - 10Y + 66 = 0$ ,  $40X - 18Y = 214$ . What are (i) the mean values X and Y (ii) the correlation coefficient between X and Y, and (iii) the standard deviation of Y? 7M

#### UNIT-IV

7. (a). A random sample of 10 boys had following I.Q's: 70, 120, 110, 101, 88, 83, 95, 98, 107, 100. Do these data support the assumptions of a population mean I.Q of 100? 7M
- (b). A sample analysis of examination results of 200 MBA'S was made. It was found that 46 students had failed, 68 secured a third division, 62 secured a second division and the rest were placed in first division. Are these figures commensurate with the general examination result which is in the ratio 4:3:2:1 for categories respectively. 7M

(OR)

8. (a). Define 7M
- (i) Sampling Distribution
  - (ii) Interval Estimation
  - (iii) Type-I & Type-II errors
- (b). Before an increase in excise duty on tea, 800 persons out of a sample of 1,000 persons were found to be tea drinkers. After an increase in duty, 800 people were tea drinkers in a sample of 1,200 people. Using standard error proportion, state whether there is a significant decrease in the consumption of tea after the increase in excise duty. 7M

**UNIT-V**

**9. (a).** Explain Queuing system with block diagram and discuss the characteristics of queuing models. **7M**

**(b).** A company quality control department managed by a clerk who takes 10 minutes on an average to check a machine. The machines usually arrive once in 15 mts. In order of the Poisson distribution. One hour of the machine is valued at Rs.15 and the clerk's time is valued at Rs.5 per hour. From above particulars ascertain the hourly cost of the queuing system relating to the quality control department. **7M**

**(OR)**

**10. (a).** A T.V. repairman finds that the time spent on his jobs has an exponential distribution with mean 30 mts..If he repairs sets in the order in which they come in, and if the arrival of sets is approximately Poisson with an average rate of 10 per 8 –hour day, what is repairman's expected idle time each day? How many jobs are ahead of the average set just brought in? **7M**

**(b).** Describe (M/M/1) : (N/FIFO) queuing system and mention its characteristics. **7M**

**[B17BS2202]**

**[B17IT2202]**  
**II B. Tech II Semester (R 17) Regular Examinations**  
**MICROPROCESSORS**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

- |    |      |   |    |
|----|------|---|----|
| 1. | (a). | Explain the architecture of 8085 with neat block diagram.         | 7M |
|    | (b). | Explain Different addressing modes in 8085.                       | 7M |
|    |      | (OR)  |    |
| 2. | (a). | Draw and explain signal description of 8085.                      | 7M |
|    | (b). | Explain in detail instruction formats and instruction set of 8085 | 7M |

**UNIT-II**

- |    |      |  |    |
|----|------|--|----|
| 3. | (a). | Explain in detail different programming techniques.  | 7M |
|    | (b). | Explain how instruction execution process occurs in 8085 for any one stack related instruction | 7M |
|    |      | (OR)   |    |
| 4. | (a). | Draw timing diagrams for CALL and RETURN instructions.   | 7M |
|    | (b). | Explain the complete interrupt structure of 8085   | 7M |

**UNIT-III**

- |    |      |   |    |
|----|------|---|----|
| 5. | (a). | Explain interfacing of memory unit with 8085.                       | 7M |
|    | (b). | Explain different I/O addressing modes                              | 7M |
|    |      | (OR)  |    |
| 6. | (a). | Draw and explain classification of memory units with a neat sketch. | 7M |
|    | (b). | Write an ALP to add two BCD numbers and show result in BCD.         | 7M |

**UNIT-IV**

- |    |      |   |    |
|----|------|---|----|
| 7. | (a). | Explain modes of operation for 8255.                | 7M |
|    | (b). | Explain about 8259 interrupt controller.            | 7M |
|    |      | (OR)  |    |
| 8. | (a). | Explain about Serial I/O Interface 8251             | 7M |
|    | (b). | Explain about memory mapped I/O and I/O mapped I/O. | 7M |

**UNIT-V**

- |     |      |   |    |
|-----|------|---|----|
| 9.  | (a). | Draw and explain the format of flag register in 8086.         | 7M |
|     | (b). | Explain addressing modes in 8086.                             | 7M |
|     |      | (OR)  |    |
| 10. | (a). | Write a 8086 program to calculate factorial of a given number | 7M |
|     | (b). | Draw and discuss about general 8089 system timing diagram.    | 7M |

**[B17IT2202]**

**[B17IT2203]**  
**II B. Tech II Semester (R 17) Regular Examinations**  
**FILE STRUCTURES**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT.**

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

- |           |             |  |           |
|-----------|-------------|--|-----------|
| <b>1.</b> | <b>(a).</b> | What are the operations to be performed on a file? | <b>7M</b> |
|           | <b>(b).</b> | Discuss various unix commands                      | <b>7M</b> |
| <b>2.</b> | <b>(a).</b> | Describe file structure & file systems in detail   | <b>7M</b> |
|           | <b>(b).</b> | Discuss physical file & need of logical file       | <b>7M</b> |

**UNIT-II**

- |           |             |   |           |
|-----------|-------------|---|-----------|
| <b>3.</b> | <b>(a).</b> | Write various memories for file storage                           | <b>7M</b> |
|           | <b>(b).</b> | Define access time & write various times for access time of disk. | <b>7M</b> |
| <b>4.</b> | <b>(a).</b> | Explain the track organization by sectors in disk                 | <b>7M</b> |
|           | <b>(b).</b> | Discuss about 9 track tape system                                 | <b>7M</b> |

**UNIT-III**

- |             |             |  |           |
|-------------|-------------|--|-----------|
| <b>5.</b>   | <b>(a).</b> | Discuss the advantages of small files than large files.            | <b>7M</b> |
|             | <b>(b).</b> | Discuss various compression mechanisms                             | <b>7M</b> |
| <b>(OR)</b> |             |  |           |
| <b>6.</b>   | <b>(a).</b> | Write about redundancy reduction & suppressing repeating sequence. | <b>7M</b> |
|             | <b>(b).</b> | Explain in detail about Huffman coding                             | <b>7M</b> |

**UNIT-IV**

- |             |             |   |           |
|-------------|-------------|---|-----------|
| <b>7.</b>   | <b>(a).</b> | What is index? What operations performed on index?      | <b>7M</b> |
|             | <b>(b).</b> | What is secondary index? Operations performed on index? | <b>7M</b> |
| <b>(OR)</b> |             |   |           |
| <b>8.</b>   | <b>(a).</b> | Write in detail about loading of simple prefix B+ tree  | <b>7M</b> |
|             | <b>(b).</b> | Write in detail about simple prefix B+ tree maintenance | <b>7M</b> |

**UNIT-V**

- |             |             |  |           |
|-------------|-------------|--|-----------|
| <b>9.</b>   | <b>(a).</b> | What is hashing & list out collision resolution techniques | <b>7M</b> |
|             | <b>(b).</b> | Explain about simple hashing algorithm                     | <b>7M</b> |
| <b>(OR)</b> |             |  |           |
| <b>10.</b>  | <b>(a).</b> | Explain about linear hashing                               | <b>7M</b> |
|             | <b>(b).</b> | Explain about dynamic hashing                              | <b>7M</b> |

**[B17IT2203]**

**[B17IT2204]**  
**II B. Tech II Semester (R 17) Regular Examinations**  
**UNIX AND SHELL PROGRAMMING**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

1. a) Explain the following commands with an example. [7M]  
i) cat      ii) wc  
b) Explain the following UNIX commands. [7M]  
i) ls      ii) uname      iii) more

**(OR)**

2. a) Explain the following commands with an example. [7M]  
i) egrep      ii) grep  
b) Explain the architecture of the UNIX operating system, With a neat sketch. [7M]

**UNIT-II**

3. a) What is the permission used for providing security for files? How to give permissions for a file? Explain. [7M]  
b) Write a program to display all files in a directory. [7M]

**(OR)**

4. a) Why should we use multiple expressions in chmod? Explain with an example. [7M]  
b) Explain the command that eliminates duplicate entries in a file along with options. [7M]

**UNIT-III**

5. a) Mention different types of loop statements in awk shell script. [7M]  
b) Explain the echo command in the C shell. Demonstrate the use of C shell character codes for each command. [7M]

**(OR)**

6. a) Write a 'sed' command to  
i) Display the lines through 10 to 15 in a given text file  
ii) Replace the word 'UNIX' with 'LINUX' in a given text file [7M]  
b) Write a shell program to check the given number is palindrome or not. [7M]

#### UNIT-IV

7. a) What is the exit status of a command in C Shell? Explain with example. [7M]

b) Explain the following statements in shell

(i) continue (ii) while (iii) if-else (iv) case-esac [7M]

**(OR)**

8. a) Differentiate between the special files of C shell and korn shell. [7M]

b) Explain the basic decision statement if-else with suitable example. [7M]

#### UNIT-V

9. a) Explain about system call umask with an example. [7M]

b) Explain the following System Call with syntax

i) close ii) lstat [7M]

**(OR)**

10. a) What is the difference between fork() and vfork() system calls? [7M]

b) Write a note on Daemon process. [7M]

**[B17IT2204]**

**[B17IT2205]**  
**II B. Tech II SEMESTER (R 17) REGULAR EXAMINATIONS**  
**FORMAL LANGUAGE AND AUTOMATA THEORY**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

**UNIT-I**

1. (a). Define i) Alphabet ii)String iii) Language iv) Kleen Closure. **4M**

(b). Design a DFA which accepts even number of 0's and 1's over alphabet  $\Sigma = \{0,1\}$ ,  
with neat transition table and diagram. **10M**

**(OR)**

2. (a). Let  $L_1 = \{010\}$ ,  $L_2 = \{01,0\}$  then find (i)  $L_1L_2$  (ii)  $L_1^*$  (iii)  $L_2^+$  (iv)  $L_1^* + L_2^*$  **7M**

(b). Define Moore and Mealy machines with examples **7M**

**UNIT-II**

3. Define DFA and Regular expression. DFA accepts all strings corresponding to the expression  $1^*01(0+11)^*$ . Also explain how to convert a regular expression to DFA. **14M**

**(OR)**

4. Convert the following regular expressions to NFA with epsilon transitions a)  $0^*+110$  **14M**  
b)  $(0+1)^*$

**UNIT-III**

5. Explain the following with examples **14M**

- i) Left Most Derivation
- ii) Right Most Derivation
- iii) Ambiguous grammar
- iv) Unit Production
- v) Null Production.

**(OR)**

6. (a). Define CFG and explain different types of Normal Forms in CFG with Examples. **7M**

(b). Convert the following productions into GNF **7M**

$A_1 \rightarrow A_2A_3$  ,  $A_2 \rightarrow A_3A_1/b$  ,  $A_3 \rightarrow A_1A_2/a$

**UNIT-IV**

7. (a). Define PDA and write about its acceptance of a Language. **4M**

(b). Construct PDA for the language  $L = \{ a^n b^n / n \geq 1 \}$  **10M**

(OR)

8. (a). Define Left Most and Right Most Derivations in CFG. **6M**  
(b). Design a **PDA** which accepts **Even length palindrome** strings formed over input alphabet  $\Sigma \in \{a,b\}$ . **8M**

**UNIT-V**

9. (a). Define Universal Turing Machine. **4M**  
(b). Design a Turing Machine for Language  $L = \{a^n b^n c^n / n \geq 1\}$  **10M**

(OR)

10. (a). Write about Church Thesis. **7M**  
(b). Define Post Correspondence Problem and Find whether the lists  $M = (abb, aa, aaa)$  and  $N = (bba, aaa, aa)$  have a Post Correspondence Solution? **8M**

[B17IT2205]

**[B17IT3101]**  
**III B. Tech I Semester (R 17) Regular Examinations**  
**COMPUTER NETWORKS**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

**UNIT-I**

1. (a). Explain the different topologies of the network 7M  
(b). Explain the TCP/IP model? 7M

**(OR)**

2. (a). Explain the significance of Switching? What are different switching techniques Used in computer networks? Discuss. 7M  
(b). What is the significance of layered architecture? Explain the OSI layered Architecture with neat sketch. 7M

**UNIT-II**

3. (a). Explain the following error detection techniques 7M  
i) Checksum ii) CRC  
(b). What is the significance of Bridges? Explain the different types of Bridges 7M

**(OR)**

4. (a). Write about different Flow control mechanism? 7M  
(b). Explain about medium access protocols. 7M

**UNIT-III**

5. (a). Explain about IPV4 header format with neat sketch. 7M  
(b). With an example explain the distance vector routing algorithms used in computer networks 7M

**(OR)**

6. (a). Explain about IPV6 header format with neat sketch. 7M  
(b). Explain briefly about IPV4 addressing. 7M

**UNIT-IV**

7. (a). Explain the Services of Transport layer 7M  
(b). Discuss about TCP and UDP Protocols 7M

**(OR)**

8. (a) What are the reasons for congestion? What are the problems with congestion?  
(b) Explain in detail about Connection management.

**UNIT-V**

9. (a). Write short notes on the following 7M  
i) DNS ii) FTP  
(b). Explain about MIME 1.1. 7M

**(OR)**

10. (a). Write in detail about 802.15 Ad hoc networks.  
(b). Explain in detail about HTTP Transaction and messages. 7M

**[B17IT3102]**  
**III B. Tech I Semester (R 17) Regular Examinations**  
**E-COMMERCE**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

**UNIT-I**

1. (a). A) What is e-commerce? Describe E-commerce with WWW/Internet. **7M**  
(b). Explain layered architecture Electronic Data Interchange. **7M**

**(OR)**

2. (a). Discuss models of electronic commerce. **7M**  
(b). What are the available communication apparatus in e-commerce environment? **7M**

**UNIT-II**

3. (a). Write short notes on **SET protocol**. **7M**  
(b). Write short notes on SEPP Protocol. **7M**

**(OR)**

4. (a). Explain about security on enterprise networks. **7M**  
(b). Explain RSA algorithm with example. **7M**

**UNIT-III**

5. (a). What are the security requirements for using online e-cash services? **7M**  
(b). Discuss about the Payment & Purchase Order process. **7M**

**(OR)**

6. (a). What is E-cash? Explain. **7M**  
(b). How to prevent double spending in E-Cash? Elaborate with an algorithm. **7M**

**UNIT-IV**

7. (a). Write the importance of electronic payment systems. What are the various types of e-payment systems? Discuss them in detail. **7M**  
(b). How does an E-mail work? State its advantages with regard to e-commerce. **7M**

**(OR)**

8. (a) Explain about ITU-T Model?  
(b) Write short notes on UUEncode/UUDecode

**UNIT-V**

9. (a). Write about how search engines are helpful to e-commerce. **7M**  
(b). What is Firewall? State the function of Firewall in e-commerce. **7M**

**(OR)**

10. (a). Discuss about internet access and architecture and internet applications for E-Commerce. **7M**  
(b). Describe Technologies for Web Servers in E-commerce. **7M**

**[B17IT3103]**  
**III B. Tech I Semester (R 17) Regular Examinations**  
**COMPILER DESIGN**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

1. (a). Write about phases of compiler in detail. 7M  
(b). Write a mechanism for converting the NFA to DFA 7M

**(OR)**

2. (a). Explain different Input Buffering methods. 7M  
(b). Write about Language Processors & its functionality. 7M

**UNIT-II**

3. (a). Write about ll(1) parsing mechanism 7M  
(b). Explain the rules to calculate first & follow. 7M

Calculate the first & follow for given grammar symbols.

$E \rightarrow E+E/E^*E/(E)/a/bc$

**(OR)**

4. (a). Write about LR(0) item set 7M  
(b). Implement CLR parser for the given grammar 7M  
 $S \rightarrow AB, A \rightarrow aaA \mid \epsilon, B \rightarrow Bb \mid \epsilon$

**UNIT-III**

5. (a). Explain evaluation Orders for SDD's 7M  
(b). Construct the SDD tree for the given expression evaluation 7M

$X=(a+b)*c*d-(x+g)$

**(OR)**

6. (a). Explain about syntax tree & dag representation of intermediate code 7M  
(b). Explain intermediate code for while loop & for loop. 7M

**UNIT-IV**

7. (a). Write about Run time storage methods. 7M  
(b). How to implement peep hole optimization. 7M

**(OR)**

8. (a). What is flow graph? Implement the mechanism to construct flow graph.  
(b). Discuss about simple code generation algorithm.

**UNIT-V**

9. (a). Explain the principle sources of optimization. 7M  
(b). Explain various methods of machine independent optimization. 7M

**(OR)**

10. Explain the global data flow analysis 14M

**[B17IT3104]**  
**III B. Tech I Semester (R 17) Regular Examinations**  
**OPERATING SYSTEMS**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

1. (a). What is Operating System? Explain different types of Operating Systems. **7M**  
(b). Explain about Process System calls and File system calls. **7M**  
(OR)
2. (a). What is Layered Structure? How it is different from Monolithic Structure? **7M**  
(b). What are the different Operating System Services? Explain. **7M**

**UNIT-II**

3. (a). What is Process? Explain Process State Chart diagram with a neat sketch. **7M**  
(b). Explain any two Non Preemptive Scheduling algorithms? **7M**  
(OR)
4. (a). What is Scheduler? Explain about Criteria for scheduling processes. **7M**  
(b). What is Thread? How Threads are Scheduled? **7M**

**UNIT-III**

5. (a). What is Paging? How the Page fault is handled by OS? **7M**  
(b). Explain Least Recently Used (LRU) Page replacement algorithm. **7M**  
(OR)
6. (a). What is Inverted Paging? How it is different from Paging? **7M**  
(b). What are the design issues of Page Replacement Algorithms? **7M**

**UNIT-IV**

7. (a). Explain briefly with example **7M**  
i) Race Condition  
ii) Mutual Exclusion  
iii) Critical Section  
(b). What is Semaphore? Design a Semaphore solution for Dining Philosophers problem. **7M**

**(OR)**

8. (a). What is Dead Lock? Explain Dead Lock Avoidance algorithm. **7M**  
(b). Design Monitor solution for the Producer Consumer Problem. **7M**

**UNIT-V**

9. (a). Describe and compare different File allocation methods. **7M**  
(b). What is Disk Management? Describe any two Disk Arm Scheduling Algorithms? **7M**

**(OR)**

10. (a). Differentiate Access Control List (ACL) and Capabilities List (C-List) protection mechanisms. **7M**  
(b). Explain Basic features of Linux operating System. **7M**

**[B17IT3105]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**DATABASE MANAGEMENT SYSTEMS**  
**INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

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

**(OR)**

2. (a). Explain about weak entity sets with a suitable example. **5M**  
(b). Consider the following database. Draw the complete E-R Diagram for the Bank Database. Assume in a city,  
-There are multiple banks and each bank has many branches.  
-Each branch has multiple customers.  
-Customers have various types of accounts.  
-Some customers also had taken different types of loans from these bank branches.  
-One customer can have multiple accounts and loans.

**9M**

**UNIT-II**

3. (a). Explain various Integrity constraints over Relationships. **7M**  
(b). Consider a binary relationship with key and participation constraints and translate it into a collection of tables. **7M**

**(OR)**

4. (a). Explain with suitable examples, selection, projection, cross product and join operators in Relational algebra. **7M**  
(b). What is a view? Explain about view updates in DBMS. **7M**

**UNIT-III**

5. (a). Consider the database Schema:

Employee(**ENO**, F\_Name, Initial, L\_name, DOB, Address, Salary, Dno)

Department(**Dno** ,Dname, ,Mgr\_ENO,Mgr\_startdate)

Project(**PNO**,P\_name, P\_location, Dno)

Works\_on(**ENO**, **PNO**, hours)

Dependent(**ENO**, **Dependent Name**, Gender, BDate, Relationship)

Answer the following queries in **SQL**.

- 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', of the department that controls the project.
- c) For each department, retrieve the department name and the
- d) Average salary of all employees working in that department.
- e) For each department find the details of eldest employees. **8M**
- (b). What is Trigger? Explain with an example. **6M**
- (OR)**
6. (a). Consider the following database and answer the following queries in SQL.
- Suppliers (**sid**, sname, address), Parts (**pid**, pname, color)  
 Catalog (**sid**, **pid**, cost)
- I) Find the pnames of parts for which there is some supplier.  
 II) Find the snames of suppliers who supply every red part.  
 III) For each part, find the sname of the supplier who charges the most for that part.  
 IV) Find the sids of suppliers who supply a red part and a green part. **8M**
- (b). Explain JDBC with an example.. **6M**
- UNIT-IV**
7. (a). What is redundancy? Discuss the anomalies due to redundancy in relations. **5M**
- (b). Discuss 2NF, 3NF and BCNF with suitable examples. **9M**
- (OR)**
8. (a). Consider a relation R(A,B,C,D,E) and set of FDs  $F=\{A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A\}$ . 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. **9M**
- (b). What is multi valued dependency? Explain 4NF with an example. **5M**
- UNIT-V**
9. (a). What is Transaction? Explain the properties of Transaction. **7M**
- (b). Explain the anomalies caused due to interleaved execution of transactions with examples. **7M**
- (OR)**
10. (a). Briefly explain any two specialized locking techniques. **7M**
- (b). Explain the three phases of recovery from a system crash. **7M**

**[B17IT3106]**  
**III B. Tech I Semester (R 17) Regular Examinations**  
**DESIGN AND ANALYSIS OF ALGORITHMS**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

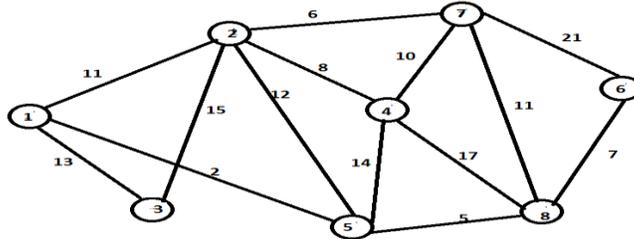
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**UNIT-I**

1. (a). Write an algorithm for finding the Maximum and Minimum and find its time complexity. **7M**
  - (b). Explain about Strassen's Matrix Multiplication using Divide-and-Conquer. **7M**
- (OR)**
2. (a). Write an algorithm for Quick Sort. Sort the following list of elements using Quick Sort algorithm: 5, 5, 8, 3, 4, 3, 2. **7M**
  - (b). Explain Convex Hull problem using Quick Hull Algorithm. **7M**

**UNIT-II**

3. (a). Find an optimal solution to the Knapsack Problem using Greedy Method:  $n=7$ ,  $m=15$ ,  $(p_1, p_2, p_3, p_4, p_5, p_6, p_7) = (10, 5, 15, 7, 6, 18, 3)$  and  $(w_1, w_2, w_3, w_4, w_5, w_6, w_7) = (2, 3, 5, 7, 1, 4, 1)$ . **7M**
- (b). Write Prim's Algorithm and find the Minimum cost Spanning Tree and cost for the following graph using Prim's Algorithm. **7M**



**(OR)**

4. (a). Find the solution for the following Job Sequencing with Deadlines problem using an algorithm when  $n=7$ ,  $(P_1, P_2, P_3, P_4, P_5, P_6, P_7) = (3, 5, 20, 18, 1, 6, 30)$  and  $(d_1, d_2, d_3, d_4, d_5, d_6, d_7) = (1, 3, 4, 3, 2, 1, 2)$ . **7M**
- (b). Find the set of optimal Huffman codes for the messages  $(M_1, M_2, M_3, M_4, M_5, M_6, M_7)$  with relative frequencies  $(q_1, q_2, q_3, q_4, q_5, q_6, q_7) = (4, 5, 7, 8, 10, 12, 20)$ . Draw the decode tree for this set of codes. **7M**

**UNIT-III**

5. Explain the Optimal Binary Search Tree problem and use the Optimal Binary Search Tree (OBST) algorithm to compute  $w(i, j)$ ,  $r(i, j)$  and  $c(i, j)$ ,  $0 \leq i < j \leq 4$ , for the identifier set  $(a_1, a_2, a_3, a_4) = (\text{cout}, \text{float}, \text{if}, \text{while})$  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. **14M**

**(OR)**

6. (a). Explain about Multi Stage Graphs using Dynamic Programming. **7M**

- (b). Explain Reliability Design using the Following example  $C=105$ ,  $(c_1,c_2,c_3) = (30,15,20)$  and  $(r_1,r_2,r_3) = (0.9,0.8,0.5)$  **7M**

**UNIT-IV**

7. (a). Write an algorithm for Breadth First Search. Explain with example. **7M**  
 (b). Explain 4-Queen problem. **7M**

**(OR)**

8. (a). Find the solution for the following Sum of Subsets problem using Backtracking **7M**  
 $m=35$ ,  $w = \{ 5, 7, 10, 12, 15, 18, 20 \}$   
 (b). Explain about Bi-Connected Components and DFS **7M**

**UNIT-V**

9. (a). Solve the following 0/1 Knapsack Problem using LC Branch-and-Bound  $n=4$ , **7M**  
 $(P_1,P_2,P_3,P_4) = (10,10,12,18)$ ,  $(w_1,w_2,w_3,w_4) = (2,4,6,9)$  and  $m=15$ .  
 (b). Write the Control Abstractions for LC-Search. **7M**

**(OR)**

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

$\infty$	7	3	12	8
3	$\infty$	6	14	9
5	8	$\infty$	6	18
9	3	5	$\infty$	1
18	14	9	8	$\infty$

**[B17IT3201]**  
**III B. Tech II Semester (R 17) Regular Examinations**  
**WEB TECHNOLOGIES**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

1. (a). Create a simple HTML page which demonstrates the use of the various types of lists. Try adding a definition list which uses an unordered list to define terms. **7M**  
(b). Show how group and alignment of table rows and columns is achieved using HTML. **7M**

**(OR)**

2. (a). Compare and contrast HTML and DHTML. **7M**  
(b). Explain the various ways you can reference a color in CSS. **7M**

**UNIT-II**

3. (a). Write a javascript to validate a form consisting of a username. Also navigate to another web page after validation. **7M**  
(b). Insert an image into a web page. Write a script which displays a message when the mouse is over the image. The co-ordinates of the mouse should be displayed if click is attempted on the image. **7M**

**(OR)**

4. (a). Describe the various Date Objects with suitable examples. **7M**  
(b). Develop a javascript to determine whether a given number is an 'ARMSTRONG NUMBER' or not. [Eg: 153 is an Armstrong number, since sum of the cube of the digits is equal to the number i.e.,  $1^3 + 5^3 + 3^3 = 153$ ] **7M**

**UNIT-III**

5. (a). What are the goals of XML? **7M**  
(b). Explain the four possible keywords in a DTD declaration with suitable examples. **7M**

**(OR)**

6. (a). Explain the advantages of XML schemas over DTDs. **7M**  
(b). What are the advantages and disadvantages of Ajax? What are all the [16M] technologies used by Ajax? Explain. **7M**

**UNIT-IV**

7. (a). Write the steps to run basic PHP? write any four string functions in php **7M**  
(b). Explain different types of arrays in php with example? **7M**

**(OR)**

8. (a) Write a PHP script to open, close, read and write into a file  
(b) Explain predefined and user defined functions in PHP with an example.

**UNIT-V**

9. (a). Explain about arrays creation, manipulation functions that support by RUBY with example. **7M**  
(b). Write about pattern matching in RUBY **7M**

**(OR)**

10. (a). Explain hashes and classes in ruby with suitable examples. **7M**  
(b). Write the significance of Singleton Method in Ruby with an example. **7M**

**[B17IT3202]**  
**III B. Tech II Semester (R 17) Regular Examinations**  
**OBJECT ORIENTED SOFTWARE ENGINEERING**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

1. (a). Explain about Types of Software 7M  
(b). Write about Spiral Model 7M

**(OR)**

2. (a). Write about Software Engineering Activities 7M  
(b). Explain about Evolutionary Model 7M

**UNIT-II**

3. (a). What is User-Centered Design 7M  
(b). Explain about Use case diagram 7M

**(OR)**

4. (a). What are Characteristics of Users 7M  
(b). Explain about State chart diagram 7M

**UNIT-III**

5. (a). What are the Essentials of UML Class Diagrams 7M  
(b). What is the necessity of Component Diagram in UML 7M

**(OR)**

6. (a). Write about Different relationship in UML 7M  
(b). Write about Activity Diagrams 7M

**UNIT-IV**

7. (a). Explain about Abstraction-Occurrence Pattern 7M  
(b). Write about Immutable Pattern 7M

**(OR)**

8. (a) Explain about Hierarchical Pattern  
(b) Write about MVC Architectural Pattern

**UNIT-V**

9. (a). Write about Testing Strategies 7M  
(b). Explain about Quality Assurance 7M

**(OR)**

10. What are the Activities of Software Project Management 14M

**[B17IT3203]**  
**III B. Tech II Semester (R 17) Regular Examinations**  
**CRYPTOGRAPHY AND NETWORK SECURITY**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

- |             |             |                                       |           |
|-------------|-------------|---------------------------------------|-----------|
| <b>1.</b>   | <b>(a).</b> | Explain about Principles of security  | <b>7M</b> |
|             | <b>(b).</b> | Explain substitution techniques       | <b>7M</b> |
| <b>(OR)</b> |             |                                       |           |
| <b>2.</b>   | <b>(a).</b> | Explain Play Fair Cipher with Example | <b>7M</b> |
|             | <b>(b).</b> | Explain RC-5 Algorithm                | <b>7M</b> |

**UNIT-II**

- |             |             |   |           |
|-------------|-------------|---|-----------|
| <b>3.</b>   | <b>(a).</b> | P=17, Q=37, E=7, M=2. What is Cipher Text using RSA?      | <b>7M</b> |
|             | <b>(b).</b> | Differences between Symmetric and Asymmetric Cryptography | <b>7M</b> |
| <b>(OR)</b> |             |   |           |
| <b>4.</b>   | <b>(a).</b> | Explain MD-5 Algorithm                                    | <b>7M</b> |
|             | <b>(b).</b> | Explain about Digital Signature algorithm                 | <b>7M</b> |

**UNIT-III**

- |             |             |  |           |
|-------------|-------------|--|-----------|
| <b>5.</b>   | <b>(a).</b> | Describe Authentication Token Mechanism    | <b>7M</b> |
|             | <b>(b).</b> | How to Sign and Verify Digital Certificate | <b>7M</b> |
| <b>(OR)</b> |             |  |           |
| <b>6.</b>   | <b>(a).</b> | Explain Digital certificate                | <b>7M</b> |
|             | <b>(b).</b> | Explain PKIX Model.                        | <b>7M</b> |

**UNIT-IV**

- |             |             |                                |           |
|-------------|-------------|--------------------------------|-----------|
| <b>7.</b>   | <b>(a).</b> | Explain PGP with neat diagrams | <b>7M</b> |
|             | <b>(b).</b> | Explain Security in GSM        | <b>7M</b> |
| <b>(OR)</b> |             |                                |           |
| <b>8.</b>   | <b>(a)</b>  | Explain Secure Socket Layer    |           |
|             | <b>(b)</b>  | Explain SET Protocol           |           |

**UNIT-V**

- |             |             |                                       |            |
|-------------|-------------|---------------------------------------|------------|
| <b>9.</b>   | <b>(a).</b> | Explain IP Security                   | <b>7M</b>  |
|             | <b>(b).</b> | Explain Countermeasures to worms      | <b>7M</b>  |
| <b>(OR)</b> |             |                                       |            |
| <b>10.</b>  |             | Explain Fire walls with neat diagrams | <b>14M</b> |

**[B17IT3204]**  
**III B. Tech II Semester (R 17) Regular Examinations**  
**STATISTICS WITH R PROGRAMMING**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

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**UNIT-I**

1. (a). Write about complex objects and set operations in R. 7M  
(b). Find median and mode of following numbers 7M  
12,13,11,10,9,11,7,11,10,15,16,11  
(OR)
2. (a). Explain different data structures in R. 7M  
(b). Write about data frame? Write about operations on data frame. 7M

**UNIT-II**

3. (a). Write about control statements in R 7M  
(b). Implement binary search tree with R 7M  
(OR)
4. (a). Write about user defined functions in R with suitable example? Explain about default values and in return statements in functions? 7M  
(b). Write R code to generate first n terms of a Fibonacci series 7M

**UNIT-III**

5. (a). Write about sort, rank and order functions with examples. Write about functions for statistical distributions. 7M  
(b). Write about the following functions with example 7M  
a)points() b) legend() c)text() d) locator()  
(OR)
6. (a). Explain about Finding Stationary Distributions of Markov Chains 7M  
(b). Explain functions for accessing the keyboard and monitor, Reading and writing files 7M

**UNIT-IV**

7. (a). Write R script to create a linegraph. 7M  
(b). How to plot multiple curves in same graph? Explain with example? 7M  
(OR)

8. (a) What is Box plot? Explain importance of boxplot with example?.  
(b) Draw a pie chart for the following data  
Section I, II, III, IV, V  
No.of workers 220,370, 190, 70, 250

**UNIT-V**

9. (a). Following are the runs scored by a batsman in 10 consecutive matches:  
22,98,13,54,77,61,45,32,19,85 Compute coefficient of variation. 7M  
(b). Explain about logistic regression. 7M  
(OR)
10. (a). Write in detail about Random Forest.  
(b). Fit a polynomial of degree 2 to the following data 7M  
X 0 1 2      Y 1 6 17

**[B17IT3205]**  
**III B. Tech II Semester (R 17) Regular Examinations**  
**DATA WARE HOUSING AND BUSINESS INTELLIGENCE**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

- |           |             |   |           |
|-----------|-------------|---|-----------|
| <b>1.</b> | <b>(a).</b> | Write about Classification of Data Mining systems | <b>7M</b> |
|           | <b>(b).</b> | Explain about operations of OLAP                  | <b>7M</b> |

**(OR)**

- |           |             |  |           |
|-----------|-------------|--|-----------|
| <b>2.</b> | <b>(a).</b> | Write about functionalities of Data Mining | <b>7M</b> |
|           | <b>(b).</b> | What are the Major issues in Data Mining   | <b>7M</b> |

**UNIT-II**

- |           |             |                                    |           |
|-----------|-------------|------------------------------------|-----------|
| <b>3.</b> | <b>(a).</b> | Write about Data Integration       | <b>7M</b> |
|           | <b>(b).</b> | Explain about Numerosity Reduction | <b>7M</b> |

**(OR)**

- |           |             |                                   |           |
|-----------|-------------|-----------------------------------|-----------|
| <b>4.</b> | <b>(a).</b> | Write about Data Cube Aggregation | <b>7M</b> |
|           | <b>(b).</b> | Write about Data Transformation   | <b>7M</b> |

**UNIT-III**

- |           |             |   |           |
|-----------|-------------|---|-----------|
| <b>5.</b> | <b>(a).</b> | What is Market Basket Analysis                    | <b>7M</b> |
|           | <b>(b).</b> | Explain about Constraint-Based Association Mining | <b>7M</b> |

**(OR)**

- |           |             |  |           |
|-----------|-------------|--|-----------|
| <b>6.</b> | <b>(a).</b> | Write about Frequent Pattern Mining        | <b>7M</b> |
|           | <b>(b).</b> | Explain about Multilevel Association Rules | <b>7M</b> |

**UNIT-IV**

- |           |             |  |           |
|-----------|-------------|--|-----------|
| <b>7.</b> | <b>(a).</b> | Explain about Decision tree algorithm        | <b>7M</b> |
|           | <b>(b).</b> | Write about Categories of clustering methods | <b>7M</b> |

**(OR)**

- |           |            |                                       |  |
|-----------|------------|---------------------------------------|--|
| <b>8.</b> | <b>(a)</b> | Explain about Bayesian Classification |  |
|           | <b>(b)</b> | Write about K-Means Algorithm         |  |

**UNIT-V**

- |           |             |   |           |
|-----------|-------------|---|-----------|
| <b>9.</b> | <b>(a).</b> | Write about Web Content Mining                          | <b>7M</b> |
|           | <b>(b).</b> | Explain about Automatic Classification of web Documents | <b>7M</b> |

**(OR)**

- |            |   |            |
|------------|---|------------|
| <b>10.</b> | What are the Data Mining for Business Intelligence Applications | <b>14M</b> |
|------------|---|------------|

**[B17IT3206]**  
**III B. Tech II Semester (R 17) Regular Examinations**  
**ARTIFICIAL INTELLIGENCE**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. (a). Define Artificial Intelligence. Explain the techniques of A.I. 7M  
Also describe the Characteristics of Artificial Intelligence.

(b). Explain the state space representation of Water Jug problem. 7M

**(OR)**

2. (a). Define Heuristic search? What are the advantages of Heuristic search? 7M

(b). Describe the mini max algorithm with an example. 7M

**UNIT-II**

3. (a). What is predicate logic? Explain the predicate logic representation with reference to suitable example 7M

(b). Consider the following sentences: 7M

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

**(OR)**

4. (a). Describe your chair using a semantic net 7M

(b). Knowledge Representation using Frames. 7M

**UNIT-III**

5. (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

**(OR)**

6. (a). Define certainty factor. What are the components of certainty factor? 7M

(b). Explain Bayesian method of reasoning 7M

**UNIT-IV**

7. (a). Explain Supervised and unsupervised Learning. Methods in detail. 7M

(b). How to implement inductive learning? 7M

**(OR)**

8. (a) Design Issues of Artificial Neural Networks, Recurrent Networks. 7M

(b) Explain functionality of Recurrent Networks 7M

**UNIT-V**

9. Explain the phases of language processors in detail. 14M

**(OR)**

10. Explain various types of Parsers and Universal Networking Knowledge. 14M

**[B17IT3207]**  
**III B. Tech II Semester (R 17) Regular Examinations**  
**SEMANTIC WEB AND SOCIAL NETWORKS**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. (a). Explain about intelligent web applications. 7M  
(b). What are the features of next generation web? 7M

**(OR)**

2. (a). Give an overview of the following 7M  
Inference engines  
(b). Software agents 7M

**UNIT-II**

3. (a). Explain the features of Ontology? 7M  
(b). Explain how UML is used for knowledge representation? 7M

**(OR)**

4. Explain resource description framework (RDF) schema. 14M

**UNIT-III**

5. (a). Explain the process of constructing ontology. 7M  
(b). Explain ontology sharing 7M

**(OR)**

6. (a) Explain the OWL-S service profiles? Explain how OWL-S ontology is created for web services. 14M

**UNIT-IV**

7. (a). Explain the key concepts of social network analysis. 7M  
(b). Explain the global structure of social networks. 7M

**(OR)**

8. (a) Write about XML based web services 7M  
(b) Explain in detail about Web Search Agent and Semantic Methods 7M

**UNIT-V**

9. (a) Build Semantic Web Applications with social network features. 14M

**(OR)**

10. (a). Write short notes on: 7M  
Electronic discussion networks  
(b). blogs 7M

**[B17EC3210]**  
**III B. Tech II Semester (R 17) Regular Examinations**  
**DIGITAL SIGNAL PROCESSING**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

- |           |             |   |           |
|-----------|-------------|---|-----------|
| <b>1.</b> | <b>(a).</b> | A) Determine the impulse response $h(n)$ for the system described by the second order difference equation $y(n) - 4y(n-1) + 4y(n-2) = x(n-1)$ | <b>7M</b> |
|           | <b>(b).</b> | Find the magnitude and phase response for the system characterized by the difference equation $y(n) = x(n) + x(n-1) + x(n-2)$                 | <b>7M</b> |

**(OR)**

- |           |             |  |           |
|-----------|-------------|--|-----------|
| <b>2.</b> | <b>(a).</b> | Check the following filter for time invariant, causal and linear $y(n) = (n-1)(n+1)$ | <b>7M</b> |
|           | <b>(b).</b> | Check the following filter for time invariant, causal and linear $y(n) = x(n-2)$     | <b>7M</b> |

**UNIT-II**

- |           |   |            |
|-----------|---|------------|
| <b>3.</b> | Explain the canonical form of digital filter realization. | <b>14M</b> |
|-----------|---|------------|

**(OR)**

- |           |   |            |
|-----------|---|------------|
| <b>4.</b> | Discuss the concept of stability and causality with examples. | <b>14M</b> |
|-----------|---|------------|

**UNIT-III**

- |           |                                |            |
|-----------|--------------------------------|------------|
| <b>5.</b> | Explain the properties of DFT. | <b>14M</b> |
|-----------|--------------------------------|------------|

**(OR)**

- |           |  |            |
|-----------|--|------------|
| <b>6.</b> | Explain Radix-2 Decimation-in-Time algorithms. | <b>14M</b> |
|-----------|--|------------|

**UNIT-IV**

- |           |  |            |
|-----------|--|------------|
| <b>7.</b> | For the analog transfer function $H(s) = 2 / \{(s+2)(s+3)\}$ . Determine $H(z)$ using impulse invariance method. Assume $T = 1$ sec. | <b>14M</b> |
|-----------|--|------------|

**(OR)**

- |           |   |            |
|-----------|---|------------|
| <b>8.</b> | Design a digital second order Low-Pass Butterworth filter with cut-off frequency 2.2KHz using Bilinear Transformation. Sampling rate 8 KHz. | <b>14M</b> |
|-----------|---|------------|

**UNIT-V**

- |           |  |            |
|-----------|--|------------|
| <b>9.</b> | Using a rectangular window technique, design a low pass filter with pass band gain of unity, cut-off frequency of 1000Hz and working at a sampling frequency of 5 KHz. The length of the impulse response should be 7. | <b>14M</b> |
|-----------|--|------------|

**(OR)**

- |            |   |            |
|------------|---|------------|
| <b>10.</b> | Consider a second order IIR filter with $(1 - 0.5z^{-1})(1 - 0.45z^{-1}) / (1 - z^{-1}) = z^{-1}H(z)$ . Find the effect on quantization on pole locations of the given system function in direct form and in cascade form. Assume $b=3$ bits. | <b>14M</b> |
|------------|---|------------|

**[B17ME3211]**  
**III B. Tech II Semester (R 17) Regular Examinations**  
**ROBOTICS**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. (a). Discuss Robot Languages and Derive matrix that represents pure rotation about y-axis of reference frame. **7M**

(b). What is actuator and What are the characteristics of actuator system **7M**

**(OR)**

2. (a). Write short notes on potentiometers and encoders? **7M**

(b). Discuss sensor characteristics? **7M**

**UNIT-II**

3. What is Robot? What are the components of the Robot? **14M**

**(OR)**

4. Explain the Robot Applications? **14M**

**UNIT-III**

5. What are the advantages and disadvantages of robotics? **14M**

**(OR)**

6. Derive pitch,roll,yaw, Euler's angles? **14M**

**UNIT-IV**

7. Discuss Forward and Inverse kinematics of robot? **14M**

**(OR)**

8. Explain various stepper motors? Compare Hydraulic, electric, pneumatic actuating system? **14M**

**UNIT-V**

9. Explain Hydraulic actuators? What is position sensor? What are various position sensors and explain it? **14M**

**(OR)**

10. Write Short notes on the Following

a) Basic principle on velocity sensors

b) force and pressure sensors

c) Matrix representation of Robot Mechanism

**14M**

**[B17IT3208]**  
**III B. Tech II Semester (R 17) Regular Examinations (elective)**  
**IMAGE PROCESSING**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

**UNIT-I**

1. (a). Explain about image model and quantization. **7M**  
(b). What is a Histogram? Explain decision of contrast based on histogram. **7M**

**(OR)**

2. (a). What is histogram Equalization? Explain in detail? **7M**  
(b). Write about image acquisition, sampling and pixels? **7M**

**UNIT-II**

3. (a). What are the advantages of adaptive filters? Explain about adaptive medianfilter. **7M**  
(b). Explain about image restoration using inverse filtering. Write the draw backs of this method. **7M**

**(OR)**

4. (a). With necessary equations, explain about Homo morphic filtering **7M**  
(b). Explain how periodic noise can be reduced using frequency domain filtering **7M**

**UNIT-III**

5. (a). Explain about Color fundamentals and color model. **7M**  
(b). Explain different edge enhancement filters in spatial domain. **7M**

**(OR)**

6. (a). Explain about Contrast based edge enhancement techniques? **7M**  
(b). Explain SOBEL, LAPLACIAN filters? **7M**

**UNIT-IV**

7. (a). Explain Run Length Encoding and suggest some modification to run length encoding **7M**  
(b). Discuss about Image compression standards? **7M**

**(OR)**

8. (a) What is image compression? Discuss Huffman coding with an example? **7M**  
(b) Explain the effect of compression due to quantization. **7M**

**UNIT-V**

9. (a). What is the need for image segmentation? What are the characteristics of segmentation ? **7M**  
(b). Differentiate between Region and pixel based segmentations? **7M**

**(OR)**

10. (a). What are morphological characteristics of an image? **7M**  
(b). Write about segmentation by sub region aggregation and pixel aggregation? **7M**

**[B17IT3209]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**OPERATIONS RESEARCH**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. (a). What is Operations Research? Explain different Phases of OR. **7M**  
 (b). A Diet for sick person must contain at least 3000 units of vitamins 5 units of minerals and 450calories. Two foods A & B are available at a cost of Rs. 4/- and Rs.3/- per unit respectively. If one unit of food A contains 200 units of vitamins, 1 unit of minerals and 40 calories and one unit of food B contains 100 units of vitamins, 2 unit of minerals and 40 calories. Formulate the LPP and find the combination of foods to be used to have least cost using Simplex method? **7M**

**(OR)**

2. (a). What is Degeneracy in LPP? How to resolve it? **4M**  
 (b). Use the Simplex method to solve the following LPP **10M**  

$$\text{Max (Z)} = 3X_1 + 5X_2 + 4X_3$$
 Subjected to constraints:  $2X_1 + 3X_2 \leq 8$ ,  $2X_2 + 5X_3 \leq 10$ ,  $3X_1 + 2X_2 + 4X_3 \leq 15$  and  $X_1, X_2, X_3 \geq 0$

**UNIT-II**

3. (a). What is Degeneracy in Transportation problem? How to resolve it? **4M**  
 (b). Solve the Following LPP using Dual Simplex method? **10M**  

$$\text{Max(Z)} = X_1 + X_2$$
 Subjected to constraints  $2X_1 + X_2 \geq 2$ ,  $-X_1 - X_2 \geq 1$  and  $X_1, X_2 \geq 0$
4. (a). What is the difference between Simplex method and Dual Simplex method? **4M**  
 (b). Determine an Initial Basic Feasible Solution to the following Transportation Problem **10M**  
 by using: i) North West Corner Rule ii) Vogel's Approximation method

	D1	D2	D3	D4	Supply
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	25	

**UNIT-III**

5. (a). What is the difference between Travelling Salesman problem and Assignment problem? **4M**  
 (b). Find the Optimal assignment between four Jobs to Four Men whose effectiveness matrix is given below. **10M**

Man\ Job	A	B	C	D
I	5	3	2	8
II	7	9	2	6
III	6	4	5	7
IV	5	7	7	8

**(OR)**

6. (a). Explain Hungarian method to solve Assignment problems? **4M**

(b). Solve the Travelling Salesman problem in the matrix shown below?

10M

	I	II	III	IV	V
A	-	6	12	6	4
B	6	-	10	5	4
C	8	7	-	11	3
D	5	4	11	-	5
E	5	2	7	8	-

**UNIT-IV**

7. (a). Derive the equation for “EOQ” when lead Time is zero and No Shortages are allowed? 4M

(b). The Project being planned involved the following activities [6M]

10M

Activity	A	B	C	D	E	F	G	H	I	J
Predecessor	-	-	-	A	A	A	B,C	C	D	E,G
To	4	1	2	1	1	1	1	4	2	6
Tm	4	2	5	4	2	5	2	4	2	7
Tp	10	9	14	7	3	9	9	4	8	8

- i. Construct the network diagram.
- ii. Find out the Critical path?
- iii. What is the probability of completing the project within 20 days?

(OR)

8. (a). An oil engine manufacturer purchases lubricants at the rate of Rs.42 per piece from vendor. The requirements of these lubricants are 1,800 per year. What should be the order quantity per order, if the cost of placement of an order is Rs.16 and inventory carrying cost per rupee per year is 20 paisa? 7M

(b). What is PERT Technique in Network analysis? How it is different from CPM Technique 7M

**UNIT-V**

9. (a). What is value of Game? How to calculate value of game for Two person Zero Sum game. 4M

(b). Two Companies are competing for same product. Their different strategies are in the following payoff matrix. Use dominance principle to find the solution. 10M

		Company-B			
		I	II	III	IV
Company-A	I	3	2	4	0
	II	3	4	2	4
	III	4	2	4	0
	IV	0	4	0	8

(OR)

10. (a). Explain Dominance principle in game theory? 4M

(b). Find the optimal solution for the game using graphical method whose payoff matrix is given below? 10M

		Player B				
		I	II	III	IV	
Player A	I	4	2	5	-6	6
	II	7	-9	7	4	8