

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

(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]

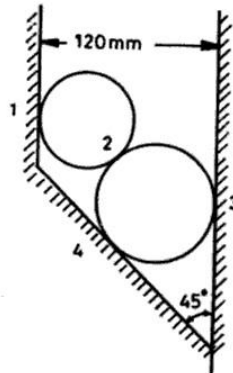


Figure 1

[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]

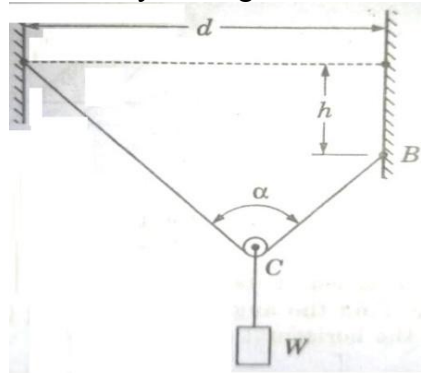


Figure 2

- (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]

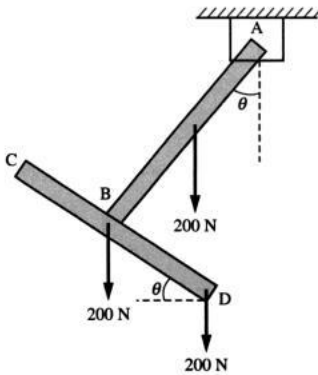


Figure 3

## 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]

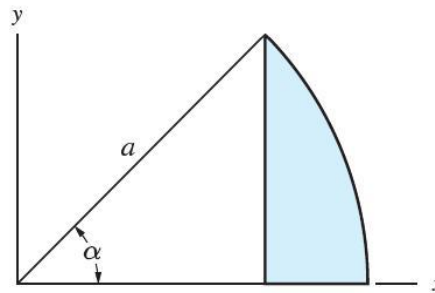


Figure 4

[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]

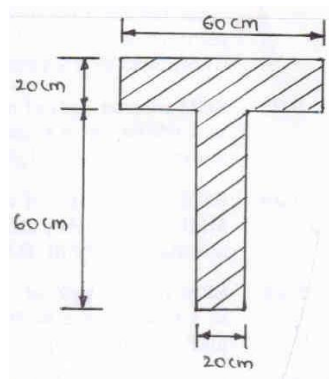


Figure 5

### 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]

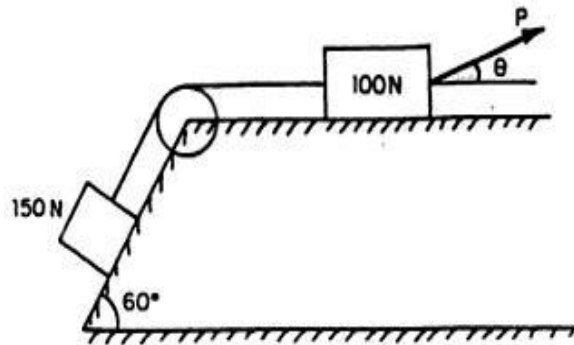


Figure 6

[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]

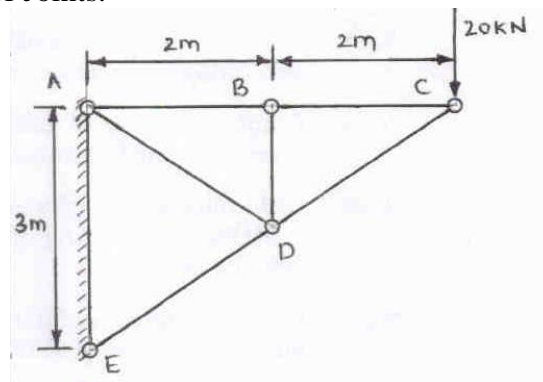


Figure 7

### 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]

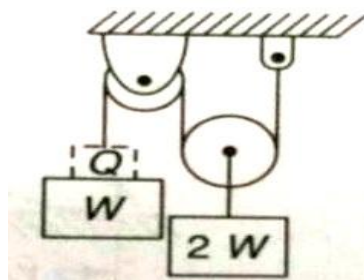


Figure 8

[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  $W = 1720$  N and radius of gyration  $k = 100$  mm is mounted on a horizontal shaft and set in rotation by a falling weight  $W = 1720$  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]

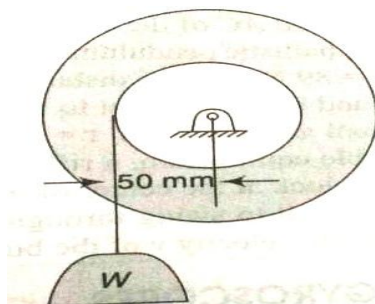


Figure 9

[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]

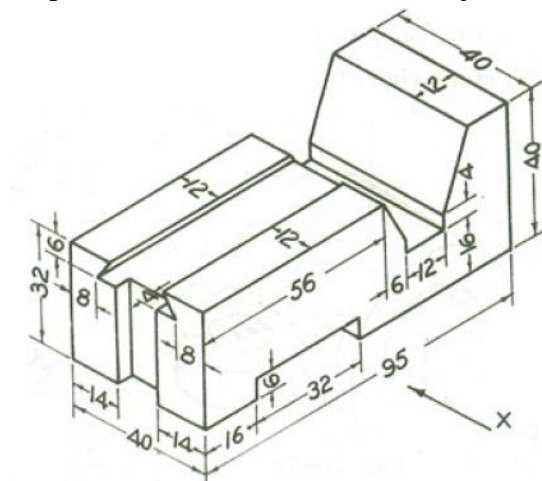
8. Draw the projections of a cylinder 75mm diameter and 100mm long, lying on the ground with its axis inclined at  $30^\circ$  to the VP and parallel to the ground. [14 M]

#### 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  $1/3^{\text{rd}}$  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 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**.

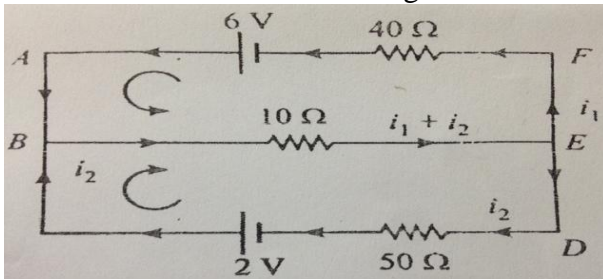
All questions carry equal marks.

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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

$$A = \begin{bmatrix} 1 & 0 & 3 \\ 2 & 1 & -1 \\ 1 & -1 & 1 \end{bmatrix}.$$
 (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

$$A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}.$$
 (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  $\phi(x, y, z) = x^2 yz + 4xz^2$  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.

\*\*\*\*\*

**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

\*\*\*\*\*

**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]

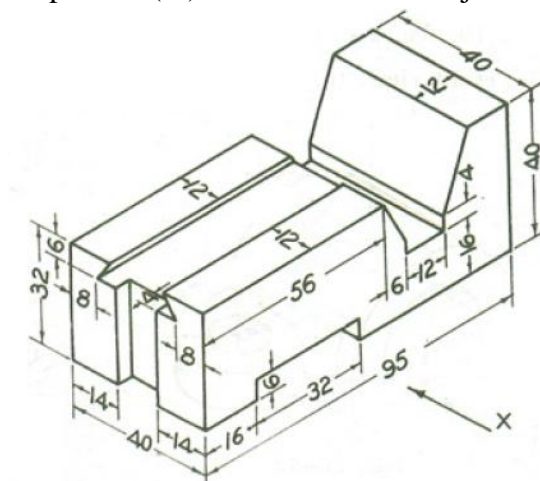
8. Draw the projections of a cylinder 75mm diameter and 100mm long, lying on the ground with its axis inclined at  $30^\circ$  to the VP and parallel to the ground. [14 M]

#### 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)

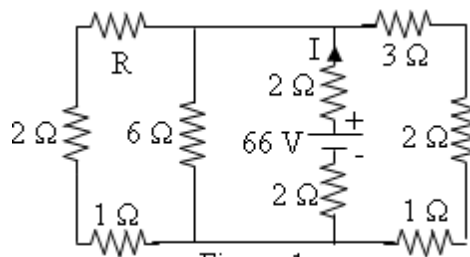


Figure:1

**(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)

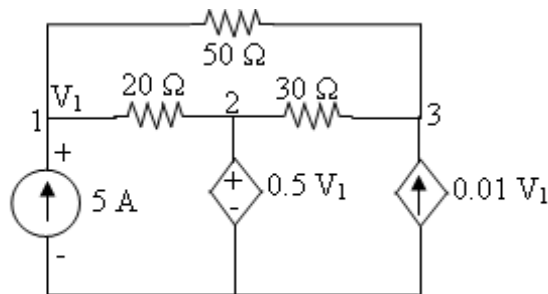


Figure:2

**UNIT-II**

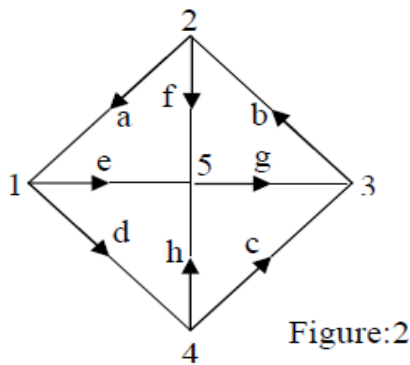
- 3.a) Explain the procedure for obtaining fundamental tie-set matrix of given network. (7M)
- b) Draw the oriented graph of a network with fundamental cut-set matrix as shown below. (7M)

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)



- 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  $10 \text{ cm}^2$ . 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  $L_1$ ,  $L_2$ ,  $M$  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  $0.4 \text{ cm}^2$ . If the coil has resistance of  $10 \Omega$  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)

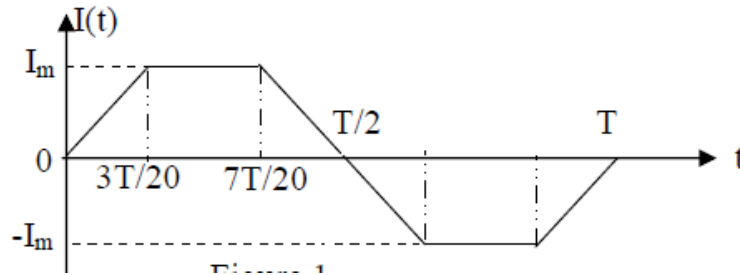
### UNIT-IV

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

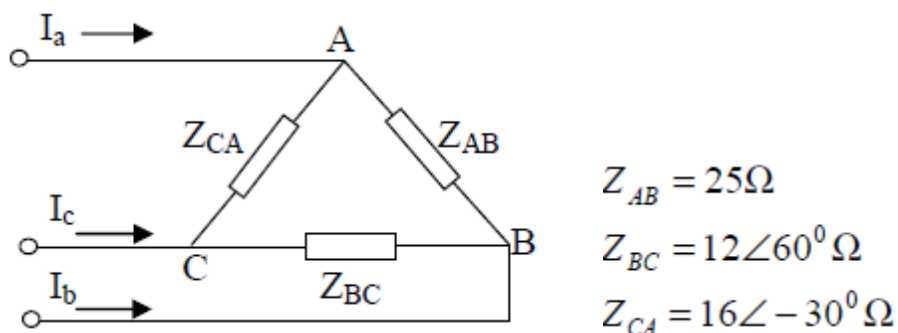
b) A balanced star connected load of  $(4+j3) \Omega$  per phase is connected to a balanced  $3\phi$  400V supply.

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)



[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**

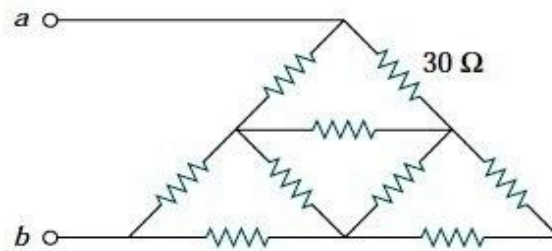
**Max. Marks: 70**

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 Kirchhoff'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]**

**[B17CS2101]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**DATA STRUCTURES**  
**COMPUTER SCIENCE & ENGINEERING**  
**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). Define Abstract Data Type. Explain ADT array.                                 | 7M |
|    | (b). Explain 2D array representation and dynamic memory allocation for a 2D array. | 7M |

**(OR)**

- |    |  |    |
|----|--|----|
| 2. | (a). Explain Polynomial ADT and array representation of Polynomial.  | 7M |
|    | (b). Explain the benefits of recursive programs over iterative programs. Write a recursive function for Binary Search. | 7M |

**UNIT-II**

- |    |  |    |
|----|--|----|
| 3. | (a). Apply Quick sort algorithm on the elements 42, 89, 63, 10,95,26, 77,3,49,38.              | 7M |
|    | (b). Compare Binary Search and Interpolation Search. Write a program for interpolation search. | 7M |

**(OR)**

- |    |   |    |
|----|---|----|
| 4. | (a). Write a recursive program to implement Merge sort.   | 7M |
|    | (b). Apply radix sort to sort the following elements 179, 208, 306, 93, 859, 984, 55, 9, 271, 33. | 7M |

**UNIT-III**

- |    |  |    |
|----|--|----|
| 5. | (a). Write a program to implement Queue using Linked list.   | 7M |
|    | (b). List the applications of stack and write a program to convert an infix expression to prefix expression. | 7M |

**(OR)**

- |    |  |     |
|----|--|-----|
| 6. | Explain the different operations of Doubly Linked Lists. | 14M |
|----|--|-----|

**UNIT-IV**

- |    |   |    |
|----|---|----|
| 7. | (a). Explain about the different representations of trees.  | 7M |
|    | (b). Write a program to create a binary search tree, perform inorder, preorder traversals of the tree, delete an element from the tree. | 7M |

**(OR)**

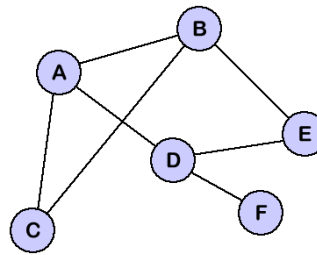
- |    |  |    |
|----|--|----|
| 8. | (a). Write a program to implement heap sort.                     | 7M |
|    | (b). Explain about threaded binary trees and their significance. | 7M |

### UNIT-V

9. (a). Apply DFS and BFS on following graph.  
(b).

7M

7M



(OR)

10. (a). Explain Warshall's algorithm with an example.  
(b). Explain Floyd's algorithm with the help of an example.

7M

7M

[B17CS2101]

**[B17BS2102]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**PROBABILITY, STATISTICS AND QUEUING THEORY**  
**COMPUTER SCIENCE & ENGINEERING**  
**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  
                  $p(x)$  :     $k$     $2k$     $2k$     $2k$     $3k$     $k^2$     $2k^2$     $7k^2 + k$   
i) Find  $k$ .  
ii) Evaluate  $p(0 < k < 5)$   
iii) if  $P(x \leq k) > 1/2$  find the minimum value of  $k$ .

**(OR)**

2. (a). Define Moment generating function and Mathematical Expectation write their **7M**  
properties.
- (b). The diameter of an electric cable is assumed to be a continuous random **7M**  
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.

**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 **7M**  
memory.
- (b). In a distribution exactly normal, 10.03% of the items are under 25 kilogram **7M**  
weight and 89.97% of the items are under 70 kilogram weight. What are mean  
and standard deviation of the distribution?

**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 varnish and the amount of **7M**  
an additive that is intended to reduce the drying time:

Amount of varnish 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 7M



ascertain the hourly cost of the queuing system relating to the quality control department.

**(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**

**[B17BS2102]**

**[B17BS2103]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**DISCRETE MATHEMATICAL STRUCTURES**  
**COMPUTER SCIENCE & ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**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**  
 $(x, y)R(u, v) \text{ iff } xv = yu$ . 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 **7M**  
many of these arrangements  
i) All girls together ii) No two girls together iii) Boys and girls come  
alternatively.  
(b). i. Find the term independent of  $x$  in the expansion of  $\left(x^2 + \frac{1}{x}\right)^{12}$  **7M**  
ii. Find the coefficient of  $x^5 y^{10} z^5 w^5$  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 at least 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

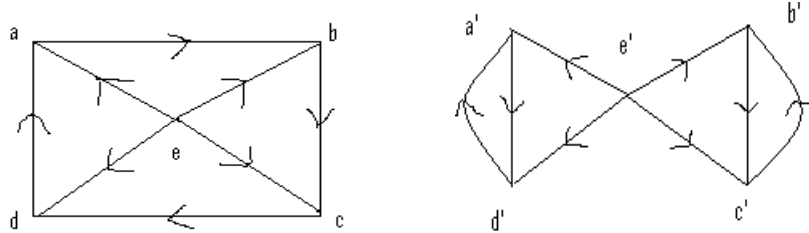
7. (a). How many integral solutions are there to  $x_1 + x_2 + x_3 + x_4 + x_5 = 20$  where  $x_1 \geq 3, x_2 \geq 2, x_3 \geq 4, x_4 \geq 6$  and  $x_5 \geq 0$ . 7M
- (b). Solve the recurrence relation  $S_n - 7S_{n-1} + 10S_{n-2} = 7 \cdot 3^n$  for  $n \geq 2$ . 7M

(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

[B17BS2103]

**[B17CS2102]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**COMPUTER GRAPHICS**  
**COMPUTER SCIENCE & ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

- |      |  |    |
|------|--|----|
| 1.   | (a). List and explain applications areas of Computer Graphics?             | 7M |
|      | (b). Differentiate Raster-Scan and Random-Scan systems with illustrations. | 7M |
| (OR) |  |    |
| 2.   | (a). Explain about LCD   | 7M |
|      | (b). Explain about Logical classification of Input Devices                 | 7M |

**UNIT-II**

- |      |  |    |
|------|--|----|
| 3.   | (a). Implement simple DDA-Line drawing algorithm in C.   | 7M |
|      | (b). Scan convert a circle with radius 5 units using Mid-Point Circle Algorithm.                           | 7M |
| (OR) |  |    |
| 4.   | (a). Scan convert a line starting at (0,0) and ending at (10,16) using Bresenham's Line drawing algorithm. | 7M |
|      | (b). Explain Flood fill algorithm.   | 7M |

**UNIT-III**

- |      |  |    |
|------|--|----|
| 5.   | (a). Explain basic Two-Dimensional geometric transformations.  | 7M |
|      | (b). Obtain the coordinates of a square with (-2,-2), (2,-2), (2,2) and (-2,2) as the corner points after rotating it by 90 degrees clockwise about the point (2,2). | 7M |
| (OR) |  |    |
| 6.   | (a). Derive transformation matrix for 2D fixed point scaling.  | 7M |
|      | (b). Explain transformation between coordinate systems   | 7M |

**UNIT-IV**

- |      |   |    |
|------|---|----|
| 7.   | (a). Derive the transformation matrix for Window-to-Viewport coordinate transformation. | 7M |
|      | (b). Demonstrate Cohen-Sutherland line Clipping Algorithm with diagrams.                | 7M |
| (OR) |   |    |
| 8.   | (a). Explain Liang-Barsky line clipping.  | 7M |
|      | (b). Explain Sutherland-Hodgeman polygon Clipping algorithm.                            | 7M |

**UNIT-V**

- |      |  |    |
|------|--|----|
| 9.   | (a). Construct basic Three-Dimensional geometric transformations using matrices. | 7M |
|      | (b). Derive transformation matrix for 3D Rotation about an arbitrary line.       | 7M |
| (OR) |  |    |
| 10.  | (a). What is a projection? Describe types of projections?                        | 7M |
|      | (b). Explain the properties of Bezier curves.                                    | 7M |

**[B17CS2102]**

**[B17CS2103]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**DIGITAL LOGIC DESIGN**  
**COMPUTER SCIENCE & ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. (a). i. Convert  $(1032.2)_4$  to decimal. **7M**  
ii. Perform the subtraction using 2's complement  $100-110000$   
(b). Reduce the Boolean Functions to minimum number of literals **7M**  
(i)  $ABC+A^1B^1C+A^1BC+ABC^1+A^1B^1C^1$  to five literals  
(ii)  $(A+C+D)(A+C+D^1)(A+C^1+D)(A+B^1)$  to four literals  
(OR)  
2. (a). Convert the function to another canonical form. **7M**  
 $F(x,y,z)=\pi(0,3,6,7)$   
(b). Implement the Boolean function  $F=xy+x^1y^1+y^1z$  with **7M**  
(i) AND ,OR and NOT gates  
(ii) OR,NOT gates  
(iii) AND, NOT gates

**UNIT-II**

3. (a). Simplify the Boolean Function using K-Map. **7M**  
 $F(A,B,C,D)=ACE+A^1CD^1E+A^1C^1DE$   
 $D(A,B,C,D)=DE^1+A^1D^1E+AD^1E^1$   
(b). Design and explain Binary Adder/ Subtractor. **7M**  
(OR)  
4. (a). Simplify the Boolean Function to product of sums. **7M**  
 $F(A,B,C,D)=\pi(0,1,2,3,4,10,11)$   
(b). Design and explain Decimal Adder. **7M**

**UNIT-III**

5. (a). Design and explain about JK Flip flop. **7M**  
(b). Explain about State Reduction and Assignment with example. **7M**  
(OR)  
6. Explain about design procedure of sequential circuits with an example **14M**

**UNIT-IV**

7. (a). Design and explain about Shift Register. **7M**  
(b). Design and explain about BCD Ripple counter. **7M**  
(OR)  
8. (a). Design and explain about Universal Shift Register. **7M**  
(b). Design and explain about Synchronous Binary counter. **7M**

**UNIT-V**

- |             |   |           |
|-------------|---|-----------|
| <b>9.</b>   | <b>(a).</b> Explain about Memory decoding of RAM.       | <b>7M</b> |
|             | <b>(b).</b> Explain about ROM Variants.                 | <b>7M</b> |
| <b>(OR)</b> |   |           |
| <b>10.</b>  | <b>(a).</b> Explain PLA and PAL.                        | <b>7M</b> |
|             | <b>(b).</b> Explain about Hamming code with an example. | <b>7M</b> |

**[B17CS2103]**

**[B17CS2104]**  
**II B. Tech I Semester (R 17) Regular Examinations**  
**DATA ANALYSIS AND VISULIZATION USING PYTHON**  
**COMPUTER SCIENCE & ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

- |    |      |  |    |
|----|------|--|----|
| 1. | (a). | Describe Python Features?                        | 7M |
|    | (b). | Discuss in detail about Methods and constructors | 7M |

**(OR)**

- |    |      |                                       |    |
|----|------|---------------------------------------|----|
| 2. | (a). | Explain OOP concepts in Python        | 7M |
|    | (b). | Discuss about exception with examples | 7M |

**UNIT-II**

- |    |      |  |    |
|----|------|--|----|
| 3. | (a). | Explain Indexing and slicing with examples           | 7M |
|    | (b). | Discuss in detail about Data processing using arrays | 7M |

**(OR)**

- |    |      |  |    |
|----|------|--|----|
| 4. | (a). | Explain control statements in Python with examples | 7M |
|    | (b). | Explain Linear algebra with NumPy                  | 7M |

**UNIT-III**

- |    |      |                                     |    |
|----|------|-------------------------------------|----|
| 5. | (a). | Discuss Pandas data structure       | 7M |
|    | (b). | Discuss about Functional statistics | 7M |

**(OR)**

- |    |      |   |    |
|----|------|---|----|
| 6. | (a). | Write about Computational tools                       | 7M |
|    | (b). | Write about advanced uses of Pandas for data analysis | 7M |

**UNIT-IV**

- |    |      |  |    |
|----|------|--|----|
| 7. | (a). | Discuss about mean, variance, and standard deviation             | 7M |
|    | (b). | Explain Pearson's correlation and rank correlation with examples | 7M |

**(OR)**

- |    |      |                                      |    |
|----|------|--------------------------------------|----|
| 8. | (a). | Explain probability density function | 7M |
|    | (b). | Explain linear regression            | 7M |

**UNIT-V**

- |    |      |  |    |
|----|------|--|----|
| 9. | (a). | Write a short note on Figures, subplots and plot types | 7M |
|    | (b). | Discuss about Plotting functions with Pandas           | 7M |

**(OR)**

- |     |      |   |    |
|-----|------|---|----|
| 10. | (a). | Explain how to read/write from/to text format | 7M |
|     | (b). | Explain in detail about Data munging          | 7M |

**[B17CS2104]**

**[B17CS2201]**  
**II B. Tech II Semester (R 17) Regular Examinations**  
**COMPUTER ORGANIZATION**  
**COMPUTER SCIENCE & ENGINEERING**  
**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 Register Transfer? Briefly explain construction of Bus system using multiplexers **7M**  
(b). Explain 4-bit binary adder subtractor with neat sketch. **7M**

**(OR)**

2. (a). Explain in detail about logic and shift micro operations. **7M**  
(b). Explain about arithmetic logic shift unit in detail. **7M**

**UNIT-II**

3. (a). Explain Memory reference instructions. **7M**  
(b). Describe Instruction cycle with flowchart. **7M**

**(OR)**

4. (a). What is control memory? Explain the concept of address sequencing. **7M**  
(b). Explain the design of microprogrammed control unit with the help of an example. **7M**

**UNIT-III**

5. (a). Explain the stack organization in digital computers. **7M**  
(b). Explain Array Processing. **7M**

**(OR)**

6. (a). Explain about Addressing Modes. **7M**  
(b). Explain about instruction Pipelining. **7M**

**UNIT-IV**

7. (a). Explain Isolated vs Memory mapped I/O. **7M**  
(b). Explain Handshaking mechanism in Asynchronous Data Transfer **7M**

**(OR)**

8. (a). Explain Daisy Chaining Priority Interrupt Technique. **7M**  
(b). Explain DMA Transfer. **7M**

**UNIT-V**

9. (a). Explain about Memory Hierarchy in a Computer System. **7M**  
(b). Explain about Associative Memory. **7M**

**(OR)**

10. (a). What is Cache Memory? Explain Direct Mapping in Cache Organization. **7M**  
(b). Explain about Virtual Memory. **7M**

**[B17CS2201]**



**[B17CS2202]**  
**II B. Tech II Semester (R 17) Regular Examinations**  
**OPERATING SYSTEMS**  
**COMPUTER SCIENCE & ENGINEERING**  
**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 operating system structure?                     | 7M |
|      | (b). | Describe the history of an operating system                  | 7M |
| (OR) |      |  |    |
| 2.   | (a). | Why Operating Systems is a good resource manager?            | 7M |
|      | (b). | What is operating system? Explain operating system concepts? | 7M |

**UNIT-II**

- |      |      |  |    |
|------|------|--|----|
| 3.   | (a). | Explain Scheduling algorithms with examples                                  | 7M |
|      | (b). | Discuss in detail about threading.   | 7M |
| (OR) |      |  |    |
| 4.   | (a). | What is semaphore? Discuss semaphore solution to producer /consumer problem. | 7M |
|      | (b). | Explain Monitor solution to Dining Philosopher's problem                     | 7M |

**UNIT-III**

- |      |      |   |    |
|------|------|---|----|
| 5.   | (a). | What is deadlock? What are the necessary conditions for deadlock? | 7M |
|      | (b). | Discuss the algorithm for deadlock detection.                     | 7M |
| (OR) |      |   |    |
| 6.   | (a). | Explain Banker's algorithms for Multiple resource of each type    | 7M |
|      | (b). | Explain about Deadlock prevention and recovery                    | 7M |

**UNIT-IV**

- |      |      |   |    |
|------|------|---|----|
| 7.   | (a). | Differentiate between physical address and virtual address? | 7M |
|      | (b). | What is page fault? What happens when page fault occurs?    | 7M |
| (OR) |      |   |    |
| 8.   | (a). | Explain Page Replacement algorithms with examples           | 7M |
|      | (b). | Explain segmentation with paging                            | 7M |

**UNIT-V**

- |      |      |  |    |
|------|------|--|----|
| 9.   | (a). | Explain about Directory Structure            | 7M |
|      | (b). | Explain about File system structure          | 7M |
| (OR) |      |  |    |
| 10.  | (a). | Explain about Disk arm scheduling algorithms | 7M |
|      | (b). | Discuss UNIX and MS-DOS Case Studies         | 7M |

**[B17CS2202]**

**[B17CS2203]**  
**II B. Tech II Semester (R 17) Regular Examinations**  
**MICROPROCESSORS**  
**COMPUTER SCIENCE & ENGINEERING**  
**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 8085 architecture and describe its PIN operation | 7M |
|      | (b). | Explain the addressing modes of 8085 MPU                     | 7M |
| (OR) |      |  |    |
| 2.   | (a). | Explain the 8085 Instruction set                             | 7M |
|      | (b). | Write 8085 assembly language program to linear search        | 7M |

**UNIT-II**

- |      |      |   |     |
|------|------|---|-----|
| 3.   | (a). | Design the Timing diagram for the instruction MVI A,32H | 7M  |
|      | (b). | Explain Time delay subroutines                          | 7M  |
| (OR) |      |   |     |
| 4.   |      | Explain 8085 interrupt structure                        | 14M |

**UNIT-III**

- |      |      |   |    |
|------|------|---|----|
| 5.   | (a). | Explain the 8255 architecture and describe its MODEs of operation | 7M |
|      | (b). | Explain how a 8 K*8 SRAM is interfaced to 8085 Microprocessor     | 7M |
| (OR) |      |   |    |
| 6.   | (a). | Explain 8279 architecture   | 7M |
|      | (b). | Explain memory classification                                     | 7M |

**UNIT-IV**

- |      |      |                               |    |
|------|------|-------------------------------|----|
| 7.   |      | Explain the 8086 architecture |    |
|      | (a). | Maximum Mode                  | 7M |
|      | (b). | Minimum Mode                  | 7M |
| (OR) |      |                               |    |
| 8.   | (a). | Explain 8086 architecture     | 7M |
|      | (b). | Explain 8086 segmented memory | 7M |

**UNIT-V**

- |      |      |   |    |
|------|------|---|----|
| 9.   | (a). | Explain 8086 addressing modes.  | 7M |
|      | (b). | Write the 8086 string manipulation instructions                       | 7M |
| (OR) |      |   |    |
| 10.  | (a). | Explain Assembler directives  | 7M |
|      | (b). | Write 8086 assembly language program to separate even and odd numbers | 7M |

**[B17CS2203]**

**[B17CS2204]**  
**II B. Tech II Semester (R 17) Regular Examinations**  
**DATA COMMUNICATIONS**  
**COMPUTER SCIENCE & ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

- |      |   |    |
|------|---|----|
| 1.   | (a). Describe about various layers of OSI-ISO reference model.          | 7M |
|      | (b). Describe about Transmission impairments.                           | 7M |
| (OR) |   |    |
| 2.   | (a). Define protocol & Describe layered protocol architecture (TCP/IP)? | 7M |
|      | (b). Describe communication model.                                      | 4M |
|      | (c). Discuss about channel capacity                                     | 3M |

**UNIT-II**

- |      |   |    |
|------|---|----|
| 3.   | (a). Classify 'Guided TRANSMISSION MEDIA'.  | 7M |
|      | (b). A telephone line is known to have a loss of 20db. The input signal power is Measured as 4.5 micro watts using the information, calculate the output signal-to-noise ratio. | 3M |
|      | (c). Describe ASK, FSK, PSK with neat waveforms.  | 4M |
| (OR) |   |    |
| 4.   | (a). Classify 'Un-Guided TRANSMISSION MEDIA'.   | 7M |
|      | (b). Discuss about digital-to-digital encoding techniques.  | 7M |

**UNIT-III**

- |      |  |    |
|------|--|----|
| 5.   | (a). Discuss all Data link Flow-Control and Error-Control Protocols. | 7M |
|      | (b). Explain Error Detection Mechanisms.                             | 7M |
| (OR) |  |    |
| 6.   | (a). Explain High Level Data Link Control (HDLC).                    | 7M |
|      | (b). Distinguish between Asynchronous and Synchronous transmission.  | 7M |

**UNIT-IV**

- |      |   |     |
|------|---|-----|
| 7.   | Explain about various types of terminals. | 14M |
| (OR) |   |     |
| 8.   | Explain the following                     | 14M |
|      | (a). Switching processors                 |     |
|      | (b). Multiplexers                         |     |
|      | (c). Concentrators.                       |     |
|      | (d). Front-end processors                 |     |

**UNIT-V**

- |    |   |    |
|----|---|----|
| 9. | (a). Differentiate between Synchronous TDM and Statistical TDM. | 7M |
|    | (b). Discuss Digital Carrier Systems                            | 7M |

**(OR)**

- 10. (a).** Describe Frequency-Division Multiplexing  
**(b).** Discuss Analog Carrier Systems

**7M**

**7M**

**[B17CS2204]**

**[B17CS2205]**  
**II B. Tech II Semester (R 17) Regular Examinations**  
**ADVANCED DATA STRUCTURES**  
**COMPUTER SCIENCE & ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

- |    |   |    |
|----|---|----|
| 1. | (a). Define AVL Tree. Explain single and double Rotations in an AVL tree. | 7M |
|    | (b). Explain B-Tree with an Example.                                      | 7M |

**(OR)**

- |    |  |    |
|----|--|----|
| 2. | (a). Explain various steps involved during deleting a node in red-black tree                 | 7M |
|    | (b). Show the result of inserting 3, 1, 4, 6, 9, 2, 5, 7 in to an initially empty splay tree | 7M |

**UNIT-II**

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

**(OR)**

- |    |   |    |
|----|---|----|
| 4. | (a). Explain merge routine in leftist heap  | 7M |
|    | (b). Write a algorithm to build a binomial queue of N elements using at most N-1 comparisons between elements | 7M |

**UNIT-III**

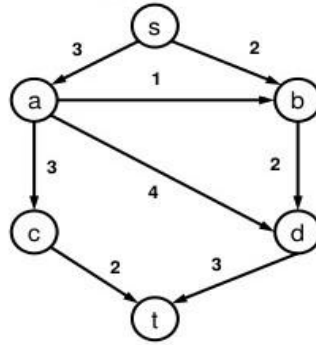
- |    |   |     |
|----|---|-----|
| 5. | What are the advantages and disadvantages of different Collision Resolution strategies? | 14M |
|----|---|-----|

**(OR)**

- |    |                            |     |
|----|----------------------------|-----|
| 6. | Explain the following.     | 14M |
|    | (a). Multi Way Merge       |     |
|    | (b). Poly-Phase Merge      |     |
|    | (c). Replacement Selection |     |

**UNIT-IV**

- |    |  |    |
|----|--|----|
| 7. | (a). Write a program to perform Topological sort on a Graph.   | 7M |
|    | (b). Find the maximum flow from s to t in the following graph. | 7M |



(OR)

8. (a). Explain about applications of DFS 7M  
 (b). Briefly explain about NP-Completeness 7M

#### UNIT-V

9. (a). Explain the Dynamic Equivalence problem 7M  
 (b). Write Smart Union algorithm and analyze its time complexity 7M

(OR)

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

[B17CS2205]

**[B17ME2207]**  
**II B. Tech II Semester (R 17) Regular Examinations**  
**OPERATIONS RESEARCH**  
**COMPUTER SCIENCE & ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. Solve the following LPP by Two phase method: **14M**  
 Maximize  $Z=12x_1+18x_2+15x_3$  Subject to the constraints:  
 $4x_1+8x_2+6x_3 \geq 64$   
 $3x_1+6x_2+12x_3 \geq 96$  and  $x_1, x_2, x_3 \geq 0$

**(OR)**

2. Solve the following LPP by Big - M Method: **14M**  
 Minimize  $Z=10x_1+15x_2+20x_3$  Subject to the constraints:  
 $2x_1+4x_2+6x_3 \geq 24$   
 $3x_1+9x_2+6x_3 \geq 30$  and  $x_1, x_2, x_3 \geq 0$

**UNIT-II**

3. Solve the following transportation problem. **14M**

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

**(OR)**

4. (a). Explain Hungarian method. **7M**  
 (b). Find the optimal assignment of salesmen to sales areas for the following cost matrix. **7M**

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

### UNIT-III

5. There are five jobs, each of which must go through the two machines A and B in the order AB. Processing times are given below. **14M**

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

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

(OR)

6. A machine owner find, from his past records the cost per year of maintaining a machine whose purchase price is Rs. 6000 are as follows **14M**

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

Determine at what age replacement is due.

### UNIT-IV

7. Determine critical path, expected duration of the project and variance of the following: **14M**

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

(OR)

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



**UNIT-V**

9. For a 2x2 person zero sum game without any saddle point having the pay off matrix for Player A as follows, find optimum mixed strategies SA and SB and the value of the game. **14M**

		Player B	
		B <sub>1</sub>	B <sub>2</sub>
Player A	A <sub>1</sub>	a <sub>11</sub>	a <sub>12</sub>
	A <sub>2</sub>	a <sub>21</sub>	a <sub>22</sub>

**(OR)**

10. Solve the following 6x2 game graphically. **14M**

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

**[B17ME2207]**

**[B17CS3101]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**COMPUTER NETWORKS**  
**COMPUTER SCIENCE AND ENGINEERING**  
**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 Packet-Switching ? Explain the packet –switching principles and different virtual circuit types. 7 M
  - b. Explain X.25 virtual circuit service and packet format. 7M

OR

2.
  - a. Explain Frame-relay call control mechanism in detail. 7M
  - b. Describe ATM adaptation layer in detail. 7M

**UNIT-II**

3. Discuss Congestion control techniques. 14M

OR

4. Write a Short Note On Following Network Hardware
  - Switches & Routers 7M
  - Bridges 7M

**UNIT-III**

5. Discuss about different LAN topologies and MAC format. 14M

OR

6. Explain working of Ethernet and Fast Ethernet. 14M

**UNIT-IV**

7.
  - a. Explain Internet Protocol(IP)and its sub Protocols(ARP,ICMP,DHCP). 7M
  - b. Discuss Classes of IPV4 and Importance of Sub-netting 7M

OR

8.
  - a. Describe Routing Algorithms(Distance vector & Link State) . 7M
  - b. Discuss about CSMA/CA for Wire Less networks 7M

**UNIT-V**

9. Give the Header Format of TCP, UDP Segments and Describe Briefly about TCP Protocol Operations. 14M

OR

10. Discuss about Following Application layers protocols

- |                   |    |
|-------------------|----|
| a. DNS            | 5M |
| b. HTTP           | 5M |
| c. World Wide Web | 4M |

**[B17CS3101]**

**[B17CS3102]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**WEB TECHNOLOGIES**  
**COMPUTER SCIENCE AND ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. A. Explain different types of forms in HTML. [7 M]  
B. What are the different levels of style sheets and explain each one with example. [7 M]  
(OR)
2. A. Explain how events are handled in java script. [7 M]  
B. Write a Java script program to reverse the given string. [7 M]

**UNIT-II**

3. A. Define an XML Schema. Show how an XML Schema can be created. [7 M]  
B. Differentiate DOM and SAX. [7 M]  
(OR)
4. A. Explain different types of DTD with an example program. [7 M]  
B. Show how SAX is an alternate method for parsing XML documents. [7 M]

**UNIT-III**

5. A. Write a servlet program illustrating parameter-passing mechanism. [7 M]  
B. Explain java servlet life cycle with the help of a neat sketch. [7 M]  
(OR)
6. A. Differentiate HTTP doGet () and doPost () methods. [7 M]  
B. Explain cookies and session tracking in servlets. [7 M]

**UNIT-IV**

7. A. Explain an Associative Arrays in PHP with an example. [7 M]  
B. Write a PHP program to insert data into MYSQL database. [7 M]  
(OR)
8. A. Explain cookies and sessions with an example in PHP. [7 M]  
B. Write a PHP program to display results from the MYSQL database. [7 M]

**UNIT-V**

9. A. Explain AJAX Request and AJAX Response with an example. [7 M]  
B. Differentiate traditional web application and AJAX web application. [7 M]  
(OR)
10. A. Explain working mechanism of AJAX with an example. [7 M]  
B. Describe the integration of PHP and AJAX with an example. [7 M]

**[B17CS3102]**

**III B. Tech I Semester (R17) Regular Examinations  
FORMAL LANGUAGES & AUTOMATA THEORY  
COMPUTER SCIENCE AND ENGINEERING  
MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. a) Let L be a NDFA then show that there exist an equivalent DFA.  
b) Define Mealy and Moore Machines give an example for each. (7M+7M)

**(OR)**

2. a) Design NFA for accepting the strings { ab, ba } and then convert it to DFA.  
b) Explain about minimization of Deterministic finite automata. (7M+7M)

**UNIT-II**

3. a. Define Regular expression. Construct NFA with  $\epsilon$  moves equivalent to the Regular Expression ( ab+aab )<sup>\*</sup>  
b) Write the Regular expression and equivalent Finite automata for the following:
  - i. set of all strings beginning with 01 and ending with 10
  - ii. set of all strings having three consecutive zeros or three consecutive ones
  - iii. set of all strings ending with either 000 or 111

(7M+7M)

**(OR)**

4. a) State and prove Pumping lemma on Regular sets.  
b) Prove that the set of all even length palindrome strings is not regular.

**UNIT-III**

(7M+7M)

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

S → aSa / bSb / a~~a~~b (7M+7M)

**(OR)**

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

#### UNIT-IV

7. a) Define Pushdown Automata? Explain the acceptance of PDA by empty stack using an example.  
b) Design PDA for recognizing the Context free language  $L = \{ a^n c b^n / n=1 \}$   
(7M+7M)

(OR)

8. a) What is ID of PDA. Explain the acceptance of PDA by final state.  
b) Design a PDA to accept language of odd length palindrome strings (7M+7M)

#### UNIT-V

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

(OR)

10. a) What is PCP? Give an example.  
b) Write short notes on P and NP classes. (7M+7M)

[B17CS3103]

**[B17CS3104]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**DATABASE MANAGEMENT SYSTEMS**  
**COMPUTER SCIENCE AND ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT I**

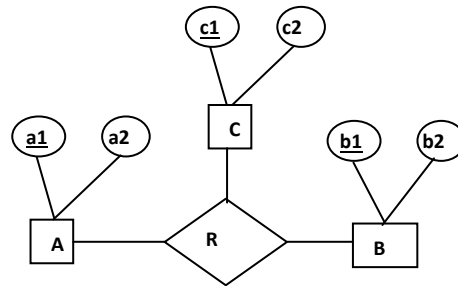
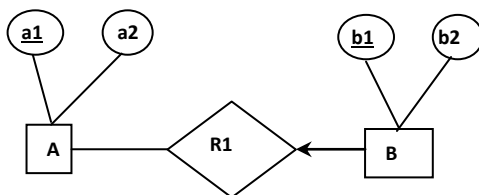
- |   |     |
|---|-----|
| 1. Write advantages of DBMS over File processing systems. | 14m |
| OR  |     |
| 2. a. Illustrate the structure of DBMS                    | 7m  |
| b. Explore different kinds of users and the duties of DBA | 7m  |

**UNIT II**

- |  |     |
|--|-----|
| 3. Demonstrate different join and set operations in SQL.           | 14m |
| OR   |     |
| 4. a. Explore the commands update, alter, delete with Examples.    | 7m  |
| b. Demonstrate with examples basic operations in relational model. | 7m  |

**UNIT III**

- |   |     |
|---|-----|
| 5. Illustrate the basic features of ER model.                             | 14m |
| OR  |     |
| 6. What is logical DB design? Convert the following ER diagrams to tables | 14m |



**UNIT IV**

- |   |     |
|---|-----|
| 7. Demonstrate different normal forms from 1NF to BCNF with examples. | 14m |
| OR  |     |
| 8. a. Explain loss-less join decomposition with example.              | 7m  |
| b. What are the anomalies of redundancy? Explain with example.        | 7m  |

**UNIT V**

- |   |     |
|---|-----|
| 9. a. What is a schedule? How do you test serializability?          | 7m  |
| b. Explain time stamp ordering protocol. What is Thomas write rule? | 7m  |
| OR  |     |
| 10. Describe in detail ARIES algorithm with figures.                | 14m |

**[B17CS3104]**

**[B17CS3105]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**APPLICATION DEVELOPMENT USING JAVA**  
**COMPUTER SCIENCE AND ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. A. Explain Packages Briefly with an example. [7 M]  
B. Explain Thread Life cycle with the program. [7 M]  
(OR)
2. A. Explain any Four Exceptions with an Example. [7 M]  
B. Explain any four methods in String Class with an Example. [7 M]

**UNIT-II**

3. A. Explain life cycle of an Applet. [7 M]  
B. Explain Grid Layout and Border Layout Managers with an Example. [7 M]  
(OR)
4. A. Explain Card Layout and Flow Layout Managers with an Example. [7 M]  
B. Explain any FOUR AWT Components [7 M]

**UNIT-III**

5. A. Write a Program for JTabbedPane [7 M]  
B. Explain JSP Elements. [7 M]  
(OR)
6. A. Write a Program for JTable and JPasswordField [7 M]  
B. Explain any FOUR JSP implicit Objects [7 M]

**UNIT-IV**

7. A. Explain JDBC Architecture [7 M]  
B. Explain JDBC Drivers [7 M]  
(OR)
8. A. Write a program for JAVA Database connectivity through MYSQL. [7 M]  
B. Explain any three Classes and interfaces of java.sql.package [7 M]

**UNIT-V**

9. A. Differences between I/O and NIO. [7 M]  
B. Write a program for URLConnection Class [7 M]  
(OR)
10. A. Explain any three classes for Byte Stream. [7 M]  
B. Write the syntax and examples for the following terms [7 M]

**[B17CS3105]**



**[B17CS3106]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**EMBEDDED SYSTEMS**  
**COMPUTER SCIENCE AND ENGINEERING**  
**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 DMA? Give its working. [7M]  
B) What is shared data problem? How to solve the shared data problem by using interrupts. [7M]  
(OR)
2. A) Draw a neat sketch for 8051 architecture. [7M]  
B) Define interrupt latency? Give its parameters. [7M]

**UNIT-II**

3. A) Describe Function Queue scheduling architecture. [7M]  
B) Explain in detail about the working of Communication Bridge. [7M]  
(OR)
4. A) Explain Round Robin Architecture with example. [7M]  
B) Write a software routine for RTOS architecture. [7M]

**UNIT-III**

5. A) Explain how shared data problem is eliminated using semaphores. [7M]  
B) Explain semaphore variants. [7M]  
(OR)
6. A) Explain tasks and tasks Data in RTOS Environment. [7M]  
B) Explain interrupt routines in RTOS environment. [7M]

**UNIT-IV**

7. A) Describe Message Queues. [7M]  
B) Explain about encapsulating semaphores. [7M]  
(OR)
8. A) Explain the Hard-Real Time scheduling considerations. [7M]  
B) Explain the Problems of semaphores. [7M]

**UNIT-V**

9. A) Briefly describe about host and target machines. [7M]  
B) Explain Instruction Set Simulators. [7M]  
(OR)
10. A) Explain the ways of getting software into target machine. [7M]  
B) Describe Logic analyzers. [7M]

**[B17CS3106]**

**[B17CS3107]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**CYBER SECURITY**  
**COMPUTER SCIENCE AND ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

- |      |    |   |       |
|------|----|---|-------|
| 1.   | A. | Describe risk management processes in detail. | [7 M] |
|      | B. | Explain how Cyber stalking can be reduced.    | [7 M] |
| (OR) |    |   |       |
| 2.   | A. | Describe about Botnets.                       | [7 M] |
|      | B. | What is Attack Vector Cloud Computing?        | [7 M] |

**UNIT-II**

- |      |    |  |       |
|------|----|--|-------|
| 3.   | A. | What is Authentication Service Security?   | [7 M] |
|      | B. | Explain different types of Cyber Attacks on Mobile/Cell Phones.                      | [7 M] |
| (OR) |    |  |       |
| 4.   | A. | What are the measures that are to be taken in Mobile Computing to avoid Cybercrimes. | [7 M] |
|      | B. | Explain different Security Challenges Posed by Mobile Devices.                       | [7 M] |

**UNIT-III**

- |      |    |   |       |
|------|----|---|-------|
| 5.   | A. | Explain the following   | [7M]  |
|      |    | <ul style="list-style-type: none"><li>• CIA triangle.</li><li>• En case</li><li>• FTK</li></ul> |       |
|      | B. | Describe about Trojan Horses attack.  | [7 M] |
| (OR) |    |   |       |
| 6.   | A. | Explain about Phishing attacks.   | [7 M] |
|      | B. | What is vulnerability and explain different types of vulnerabilities.                           | [7 M] |

**UNIT-IV**

- |      |    |  |       |
|------|----|--|-------|
| 7.   | A. | Describe The Indian IT Act.                                | [7 M] |
|      | B. | Explain the Cybercrime Scenario in India.                  | [7 M] |
| (OR) |    |  |       |
| 8.   | A. | Explain why Digital Signatures are used in Cyber security. | [7 M] |
|      | B. | What is incident and explain incident handling mechanism.  | [7 M] |

**UNIT-V**

- |      |    |   |       |
|------|----|---|-------|
| 9.   | A. | Discuss briefly about Computer Forensics and Steganography. | [7 M] |
|      | B. | Explain about Digital Forensics Life Cycle.                 | [7 M] |
| (OR) |    |   |       |
| 10.  | A. | Describe the Challenges in Computer Forensics.              | [7 M] |
|      | B. | Explain digital evidence collection procedure in detail.    | [7 M] |

**[B17CS3107]**

**[B17EC3109]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**DIGITAL SIGNAL PROCESSING**  
**COMPUTER SCIENCE AND ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

- 1) a) Find the Z-transform of the signal  $x(n) = 2^n u(n) - 3^n u(-n - 1)$  and its region of convergence [6M]

- b) Realise the series & parallel canonical realizations of the following digital transfer function [8M]

$$X(Z) = \frac{z^2 + 2z + 4}{(z - 8)(z^2 - 0.9z + 0.14)}$$

**(OR)**

- 2) a) Compute the response of the system  $y(n) = 0.7y(n - 1) - 0.12y(n - 2) + x(n - 1) + x(n - 2)$  to the input  $x(n) = u(n)$ . Discuss the stability of the above DT system? [7M]

- b) Find the inverse Z transform of  $X(z) = \frac{z^2}{z^2 - 2rz \cos \theta + r^2}$  [7M]

**UNIT-II**

- 3) a) Compute the DFT of the following sequence using Radix-2 DIT FFT flow graph.

Show the all intermediate stage results:  $x(n) = \{0, 1, 2, 0, -2, -1, 0, 0\}$  [7M]

- b) Find the DFT of the sequence  $x(n) = \{3, 2, 5, 4\}$ . Using this result, find the DFT of  $\{25, 20, 15, 10\}$ . State the property of DFT used? [7M]

**(OR)**

- 4) a) Obtain the circular convolution of the two sequences given below using DFT method

$$x_1(n) = \{1, -2, 3, 1\} \quad , \quad x_2(n) = \{2, 3, 0, -4\} \quad [7M]$$

- b) Compare inplace computation and natural input-natural output computation methods. Discuss the computational complexities involved in direct DFT and FFT. [7M]

**UNIT-III**

- 5) a) Compare Chebyshev and Butterworth analog filters ? [6M]

- b) Design digital Butterworth lowpass IIR filter using BLT method. The filter specifications are given by i) -3dB cutoff frequency at  $0.5\pi$  rad, ii) atleast 15dB attenuation at  $0.75\pi$  rad [8M]

**(OR)**

- 6) a) Compare Impulse invariance and Bilinear transformation methods of IIR digital filter design. [7M]  
b) Convert the following analog filter with transfer function using impulse invariance method. [7M]

$$H_a(S) = \frac{s + 0.2}{(s + 0.2)^2 + 25}$$

#### **UNIT-IV**

- 7) a) Design a linear-phase low pass FIR digital filter to meet the following specifications: (i) Pass band = 0 to 10 kHz (ii) Sampling frequency = 100 kHz (iii) Filter order = 10. Compute the impulse response of the desired FIR digital filter using Hamming window [9M]  
b) What is Gibb's phenomenon? Discuss the selection criteria of windows with respect to FIR filter design. [5M]

**(OR)**

- 8) a) Show that FIR filters provide constant group delay and phase delay? [6M]  
b) Design a linear-phase band pass FIR digital filter to meet the following specifications:  
(i) Pass band = 100Hz to 200Hz (ii) Sampling frequency = 1000Hz  
(iii) No. of samples = 11. Compute the impulse response of the desired FIR digital filter using Rectangular and Hamming windows. [8M]

#### **UNIT-V**

- 9) a) Explain how Sub band coding of speech signals reduces the bit rate [7M]  
b) Illustrate the operation of up-sampler, down-sampler, Interpolator and Decimator in time and frequency domains with neat sketches [7M]

**(OR)**

- 10) a) What is a digital filter bank? Describe its operation & applications. [7M]  
b) Write short notes on the finite precision arithmetic effects in the realization of digital filters. [7M]

**[B17EC3109]**

**[B17ME3110]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**INDUSTRIAL ROBOTICS**  
**COMPUTER SCIENCE AND ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. (a). How do you specify a robot? Is robotics automation? Discuss the different classification systems of robots. 7M
- (b). Define the terms 'Robot' and 'Robotics'. Discuss the role of robots in engineering. 7M

**(OR)**

2. (a). What are the different actuators used in the robots? Describe them briefly 7M
- (b). Discuss the different feedback components used in robots. 7M

**UNIT-II**

3. Explain briefly the two stage control of manipulator using interpolation of end effectors position method. 14M

**(OR)**

4. Explain in detail about forward and inverse transformations used in robotics 14M

**UNIT-III**

5. (a). Explain the following for smoothing of image: i) Neighborhood averaging ii) Image averaging method 7M
- (b). Discuss the current applications of machine vision system. 7M

**(OR)**

6. (a). Explain the working of magnet grippers used for robots. 7M
- (b). Discuss the applications and working principle of the following sensors. i) Range sensors ii) Acoustic sensors iii) Tactile sensors. 7M

**UNIT-IV**

7. Discuss the textual robot language structure with the help of block diagram. 14M

**(OR)**

8. Discuss the relative merits and demerits of different textual robot languages. 14M

**UNIT-V**

9. What are the various robot cell layouts? Describe any two with the help of neat sketches. 14M

**(OR)**

10. What are the various fields in which the robots used? Discuss them in detail. 14M

**[B17ME3110]**

**[B17CS3201]**  
**III B. Tech II Semester (R17) Regular Examinations**  
**DATA WARE HOUSING AND DATA MINING**  
**COMPUTER SCIENCE AND ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-1**

- |   |    |
|---|----|
| 1. (a) Explain about motivation and importance of DWDM. | 7M |
| (b) Explain data mining kinds of patterns.              | 7M |

**(or)**

- |   |    |
|---|----|
| 2. (a) Explain in detail about Statistical description of data. | 7M |
| (b) Discuss in detail about Major Issues in Data Mining.        | 7M |

**UNIT-II**

- |   |    |
|---|----|
| 3. (a) Discuss in detail about the Data Preprocessing Techniques. | 7M |
| (b) Explain about regression with example.                        | 7M |

**(or)**

- |   |    |
|---|----|
| 4. (a) Briefly describe Multidimensional data model representation. | 7M |
| (b) Briefly describe the architecture of a data warehouse system.   | 7M |

**UNIT-III**

- |  |    |
|--|----|
| 5. (a) Explain about Apriori algorithm with example. | 7M |
| (b) Explain about FP Growth algorithm with example.  | 7M |

**(or)**

- |  |    |
|--|----|
| 6. (a) Explain about Mining frequent pattern using vertical data format. | 7M |
| (b) Explain about mining in multi level association.                     | 7M |

**UNIT-IV**

- |  |    |
|--|----|
| 7. (a) Explain Decision tree induction with example. | 7M |
| (b) Explain about rule based classification.         | 7M |

**(or)**

- |   |    |
|---|----|
| 8. (a) Explain about naïve bayes classification with example.                                 | 7M |
| (b) Discuss about Back propagation algorithm for neural network-based classification of data. | 7M |

**UNIT-V**

- |   |    |
|---|----|
| 9. (a) Write about different types of data in cluster analysis. | 7M |
| (b) Explain in detail about Partitioning Methods.               | 7M |

**(or)**

- |                                       |    |
|---------------------------------------|----|
| 10. (a) Explain Density based method. | 7M |
| (b) Explain Grid based Method.        | 7M |

**[B17CS3201]**

**[B17CS3202]**  
**III B. Tech II Semester (R17) Regular Examinations**  
**OBJECT ORIENTED SOFTWARE ENGINEERING**  
**COMPUTER SCIENCE AND ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT – I**

- |      |  |    |
|------|--|----|
| 1.   | (a) Describe about software quality attributes.      | 7M |
|      | (b) Explain about waterfall model                    | 7M |
| (OR) |  |    |
| 2.   | (a) What is Software Engineering? List SE Activities | 7M |
|      | (b) With a neat diagram explain Spiral Model         | 7M |

**UNIT – II**

- |      |  |    |
|------|--|----|
| 3    | (a) Write about various techniques for gathering and Analyzing Requirements      | 7M |
|      | (b) What is Requirement? Explain about Types of Requirements.                    | 7M |
| (OR) |  |    |
| 4.   | (a) What is Modelling and Describe the basic concepts of modeling                | 7M |
|      | (b) What is analysis and explain concepts of analysis in OO Software Engineering | 7M |

**UNIT – III**

- |      |   |    |
|------|---|----|
| 5.   | (a) What are the various Relationships in Use Case Diagram with an Example.               | 7M |
|      | (b) Write the Advantages of Making User Centered  | 7M |
| (OR) |   |    |
| 6.   | (a) Write about associations and Multiplicity in Class Diagrams with suitable examples.   | 7M |
|      | (b) For attendance management system prepare SRS documents with respect to their Use Case | 7M |

**UNIT – IV**

- |    |  |                    |
|----|--|--------------------|
| 7. | (a) Write about the Design principles for good design.     | 7M                 |
|    | (b) Describe below Design patterns for software designing. | 7M                 |
|    | i) Player-Role Pattern                                     | ii) Façade Pattern |

(OR)

- |    |  |    |
|----|--|----|
| 8. | (a) What is Pattern? What are the techniques for making Good Design Document ? | 7M |
|    | (b) With suitable examples explain any two Architecture Patterns               | 7M |

**UNIT – V**

- |      |   |    |
|------|---|----|
| 9.   | (a) Discuss the goals of Testing process.                           | 7M |
|      | (b) Explain about System Testing.                                   | 7M |
| (OR) |   |    |
| 10.  | (a) Explain risk management in all software engineering activities. | 7M |
|      | (b) Explain about Project Scheduling and Tracking.                  | 7M |

**[B17CS3202]**

**[B17CS3203]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**DESIGN AND ANALYSIS OF ALGORITHMS**  
**COMPUTER SCIENCE AND ENGINEERING**  
**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 Heap Sort with example. | 7M |
| b) Explain Priority queues.              | 7M |

**(OR)**

- |                                       |    |
|---------------------------------------|----|
| 2 a) Explain merge sort with example. | 7M |
| b) Explain Convex hull Problem.       | 7M |

**UNIT-II**

- |   |    |
|---|----|
| 3 a) Explain Knapsack problem, Tree vertex splitting. | 7M |
| b) Explain Job sequencing with deadlines              | 7M |

**(OR)**

- |                                 |    |
|---------------------------------|----|
| 4 a) Explain Prim's algorithm   | 7M |
| b) Discuss about Huffman coding | 7M |

**UNIT-III**

- |  |    |
|--|----|
| 5 a) Explain all pairs shortest paths                        | 7M |
| b) Explain Single source shortest paths with general weights | 7M |

**(OR)**

- |   |    |
|---|----|
| 6 a) Explain Optimal binary search trees      | 7M |
| b) Explain The travelling salesperson problem | 7M |

**UNIT-IV**

- |   |    |
|---|----|
| 7 a) Discuss about 8-Queens problem                             | 7M |
| b) Explain Graph coloring, Hamiltonian cycles, Knapsack problem | 7M |

**(OR)**

- |                                     |    |
|-------------------------------------|----|
| 8 a) Explain The 15-puzzle problem, | 7M |
| b) Explain FIFO Branch-and-Bound.   | 7M |

**UNIT-V**

- |   |    |
|---|----|
| 9 a) Explain about Fast Fourier Transform | 7M |
| b) Explain about Comparison trees.        | 7M |

**(OR)**

- |  |    |
|--|----|
| 10 a) Explain about Nondeterministic Algorithms      | 7M |
| b) Discuss about the Classes NP-hard and NP-complete | 7M |

**[B17CS3203]**



**[B17CS3204]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**ARTIFICIAL INTELLIGENCE**  
**COMPUTER SCIENCE AND ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

1. A. Explain problem characteristics of AI [7 M]  
B. Explain A\* algorithm with an example. [7 M]  
(OR)
2. A. Explain AO\* algorithm with suitable example. [7 M]  
B. Explain Means-Ends analysis with an example. [7 M]

**UNIT-II**

3. A. Explain Forward Vs Backward Reasoning. [7 M]  
B. Explain semantic network and partitioned semantic network in detail. [7 M]  
(OR)
4. A. Write a short note on logic programming (prolog). [7 M]  
B. What is script and explain restaurant script in detail. [7 M]

**UNIT-III**

5. A. Explain unification algorithm with an example. [7 M]  
B. Explain Truth maintenance system in detail. [7 M]  
(OR)
6. A. Explain Resolution theorem with an example. [7 M]  
B. Explain monotonic and non-monotonic reasoning. [7 M]

**UNIT-IV**

7. A. Explain Bayesian Networks with an example. [7 M]  
B. Explain Augmented transition nets in detail. [7 M]  
(OR)
8. A. Explain Dempster-Shafer Theory. [7 M]  
B. Explain various steps in the natural language processing. [7 M]

**UNIT-V**

9. A. Explain Goal stack planning with an example. [7 M]  
B. Explain the architecture of Expert system. [7 M]  
(OR)
10. A. Explain Non-linear planning with an example. [7 M]  
B. Explain Rule-based expert system with an example. [7 M]

**[B17CS3204]**

**[B17CS3205]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**COMPILER DESIGN**  
**COMPUTER SCIENCE AND ENGINEERING**  
**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 the structure of a compiler with a neat diagram. 7M  
b) Explain the role of Lexical analysis. 7M  
(OR)
2. a) Explain the output of different phases of compiler for the statement  
POS:=INITIAL + RATE \* 60. 7M  
b) Explain about Recognition of tokens. 7M

**UNIT-II**

3. a) Explain the role of parser. 7M  
b) Explain about Shift-Reduce parsing. 7M  
(OR)
4. a) Differentiate Top-down and Bottom-up parsers and explain about elimination of left recursion in CFG with an example. 7M  
b) Explain about Predictive parser. 7M

**UNIT-III**

5. a) What is LR parser and construct SLR parsing table using a CFG 7M  
b) Explain about Dependency graph 7M  
(OR)
6. a) Explain about evaluation of SDD at nodes of a parse tree by taking an example. 7M  
b) Explain CLR parser by taking an example. 7M

**UNIT-IV**

7. a) Explain about different types of Three-Address code statements 7M  
b) What are principle sources of optimization 7M  
(OR)
8. a) Explain about DAG and value number method of constructing DAG 7M  
b) Explain about optimization of basic blocks. 7M

**UNIT-V**

9. a) Explain about peephole optimization 7M  
b) Explain about Heap Management. 7M  
(OR)
10. a) Explain about simple code generator. 7M  
b) Explain about storage organization 7M

**[B17CS3205]**

**[B17CS3206]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**CLOUD COMPUTING**  
**COMPUTER SCIENCE AND ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT – I**

1. (a) Define HPC and HTC systems. Mention the applications of HPC and HTC Systems. **7M**  
(b) Mention the technologies for Memory, Storage and Wide area networking. **7M**  
**(OR)**
2. (a) Explain Peer-to-peer network families. **7M**  
(b) Write short note on parallel and distributed programming models **7M**

**UNIT – II**

3. (a) What is virtualization? Explain the implementation levels of virtualization **7M**  
(b) Explain paravirtualization architecture. **7M**  
**(OR)**
4. (a) Explain Live VM migration steps **7M**  
(b) Explain trust management in virtualized data centers **7M**

**UNIT – III**

5. (a) Explain cloud computing service models **7M**  
(b) Explain Generic Cloud Architecture Design and explain architectural design Challenges **7M**  
**(OR)**
6. (a) Define OGSA and its architecture. Explain the different services offered by OGSA **7M**  
(b) Write short note on Message-oriented middleware **7M**

**UNIT – IV**

7. (a) Explain traditional features common to grids and clouds **7M**  
(b) Write short note on Hadoop library from Apache. **7M**  
**(OR)**
8. (a) Write short note on Programming support of Google APP engine **7M**  
(b) Write short note on Open Source Eucalyptus, Nimbus, OpenNebula and OpenStack **7M**

**UNIT – V**

9. (a) Write short note on Networks and services in cloud computing **7M**  
(b) Briefly explain web APIs **7M**  
**(OR)**
10. (a) What are the different services offered in Microsoft **7M**  
(b) Mention the services offered in Intuit QuickBase, CastIron Cloud, Bungee Connect. **7M**

**[B17CS3206]**

**[B17CS3207]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**MOBILE COMPUTING**  
**COMPUTER SCIENCE AND ENGINEERING**  
**MODEL QUESTION PAPER**

**TIME: 3Hrs.**

**Max. Marks:70**

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

All questions carry equal marks.

\*\*\*\*\*

**UNIT-I**

- |  |    |
|--|----|
| 1. a. Explain Ubiquitous networks.                             | 7M |
| b. Explain Three-tier architecture for mobile computing.       | 7M |
| (OR)   |    |
| 2. a. Explain system Architecture of GSM with a neat diagram.  | 9M |
| b. What is handover? Explain types of handovers in GSM system. | 5M |

**UNIT-II**

- |  |     |
|--|-----|
| 3. a. Explain WLAN Standard IEEE 802.11 in detail.       | 7M  |
| b. Compare IEEE 802.11a, B, G and N Standards.           | 7M  |
| (OR)   |     |
| 4. Explain TDMA, SDMA, FDMA and CDMA. Discuss in detail. | 14M |

**UNIT-III**

- |   |     |
|---|-----|
| 5. a. Explain Classification of Packet delivery mechanisms. | 7M  |
| b. Explain Cellular IP.                                     | 7M  |
| (OR)  |     |
| 6. a. Describe Tunneling and Encapsulation in mobile IP.    | 10M |
| b. Explain DHCP.  | 4M  |

**UNIT-IV**

- |  |     |
|--|-----|
| 7. a. Explain Indirect TCP.                              | 7M  |
| b. Explain Mobile TCP.                                   | 7M  |
| (OR)   |     |
| 8. Discuss various Data base Issues in Mobile Computing. | 14M |

**UNIT-V**

- |   |     |
|---|-----|
| 9. Write various classifications of routing algorithms with examples. | 14M |
| (OR)  |     |
| 10. a. Explain about selective tuning and indexing.                   | 7M  |
| b. Discuss in detail about WAP.                                       | 7M  |

**[B17CS3207]**

**[B17CS3208]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**DISTRIBUTED SYSTEMS**  
**COMPUTER SCIENCE AND ENGINEERING**  
**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 Distributed Systems, What is a Distributed System, Hard ware concepts 7M

b) Discuss about Design issues in distributed systems. Communication in Distributed 7M

**(OR)**

2a) Explain about ATM networks 7M

b) Explain about Remote Procedure call 7M

**UNIT-II**

3 a) Explain about Synchronization in Distributed System 7M

b) Explain about Clock Synchronization, Mutual Exclusion 7M

**(OR)**

4 a) Explain about Atomic transactions 7M

b) Explain about Deadlocks in Distributed Systems. 7M

**UNIT-III**

5 a) Explain about Process and processors in Distributed System threads, 7M

b) Explain about System Models 7M

**(OR)**

6a) Explain about Processors allocation 7M

b) Explain about Scheduling in Distributed System 7M

**UNIT-IV**

7 a) Explain about Distributed File Systems 7M

b) Explain about Distributed File System Design 7M

**(OR)**

8 a) Explain about Distributed File System implementation 7M

b) Discuss Trends in Distributed File System. 7M

**UNIT-V**

9 a) Explain about Distributed Shared Memory 7M

b) Explain about Page based Distributed Shared memory 7M

**(OR)**

10 a) Explain about Shared variable Distributed Shared memory 7M

b) Explain about Object based Distributed Shared Memory. 7M

**[B17CS3208]**

**[B17CS3209]**  
**III B. Tech I Semester (R17) Regular Examinations**  
**INFORMATION RETRIEVAL SYSTEMS**  
**COMPUTER SCIENCE AND ENGINEERING**  
**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 Domain Analysis of IR systems | 7M |
| b) Information Systems, IR System Evaluation.    | 7M |

**(OR)**

- |   |    |
|---|----|
| 2 a) Explain about Data Structures and Algorithms related to Information Retrieval basic Concepts | 7M |
| b) Explain about Data structures and algorithms in information retrieval systems                  | 7M |

**UNIT- II**

- |  |    |
|--|----|
| 3 a) Explain about Structures used in Inverted Files | 7M |
| b) Explain about Modifications to Basic Techniques.  | 7M |

**(OR)**

- |  |    |
|--|----|
| 4 a) Explain about Concepts of Signature Files | 7M |
| b) about Horizontal Partitioning.              | 7M |

**UNIT- III**

- |   |    |
|---|----|
| 5 a) Explain about PAT Trees and PAT Arrays: Introduction | 7M |
| b) Explain about PAT Tree structure                       | 7M |

**(OR)**

- |  |    |
|--|----|
| 6 a) Explain about algorithms on the PAT Trees | 7M |
| b) Explain about PAT representation as arrays. | 7M |

**UNIT- IV**

- |                                     |     |
|-------------------------------------|-----|
| 7 Explain about Stemming Algorithms | 14M |
|-------------------------------------|-----|

**(OR)**

- |   |     |
|---|-----|
| 8 Explain about Experimental Evaluations of Stemming to Compress Inverted Files | 14M |
|---|-----|

**UNIT- V**

- |   |    |
|---|----|
| 9 a) Explain about Features of Thesauri | 7M |
| b) Explain about Thesaurus Construction | 7M |

**(OR)**

- |  |     |
|--|-----|
| 10 Thesaurus construction from Texts, Merging existing Thesauri. | 14M |
|--|-----|

**[B17CS3209]**