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.
*****

UNIT-I

1. A) Correct the following sentences.   (7M)
    i. The machineries were expensive.
    ii. Suppose, if you arrive late, you will miss the show.
    iii. Choose the best of the two options.
    iv. I enjoyed during the holidays.
    v. I have seen him yesterday.
    vi. The teacher gave us many advices.
    vii.My dog is better than him.

  B) a)Write appropriate quantifiers for each sentence.   (3M)
    i. The project is .... complicated than the last one
    ii. I have to buy ....pairs of blue and black jeans soon.
    iii. There is no ………. water in the bottle.
    b) Re-write the sentences by using Gerunds, to-infinitives or plain infinitive forms.   (4M)
    i. I noticed him .... (write) picture postcards.
    ii. I feel happy to be……… (sing) a song.
    iii. They felt surprised to …….. (select) by the manager.
    iv. …………(Garden) is a pleasant activity.

(OR)

2. A) Fill in the blanks using the appropriate forms of verbs given in the brackets.   (7M)
    i. In a fit of rage, she _____ up the letter. (Tear)
    ii. We couldn't have _____ a better day for organizing the party. (Choose)
    iii. It's high time you_____ your mistake. (Realise)
    iv. The poem 'The Gift of India'_____ (write) by Sarojini Naidu in 1915.
    v. We ___ for five years now. (marry)
    vi. When I _____ home, I found that there was no edible oil left. (go)
    vii. The Journalist reported that the miscreants _____ a havoc in the city. (create)

  B) a) Fill in the blanks by using appropriate conjunctions   (3M)
    i. Receptionists must be able to relay information _____ pass messages accurately.
    ii. Mary is a member of the Historical Society _____ the Literary Society.
    iii. My friend didn't work hard_____ he got through the exam.
    b) Punctuate the following sentences.   (4M)
    i. sunil sharma is documentation development manager at cerner corporation one of
      the world's largest medical software developers
    ii. As part of his job Sunil writes web-based content for Cerner.
    iii. Hang him not leave him.
    iv. 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)
   i. Language which is confusing and unintelligible.
   ii. One who prepares plans for buildings.
   iii. A great lover of books
   iv. A person in charge of a museum
   v. A man who thinks only for himself
   vi. One who kills animals and sells their flesh
   vii. 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)
        i. Euphoria   ii. Vicious   iii. Ostentatious
      b) Give antonyms for the following words and use them in your own sentences. (4M)
        i. Truce   ii. Terse   iii. Supercilious   iv. Emerge

(OR)

4. A) Give meanings for the following idioms and also use them in your own sentences. (7M)

      i. The cream of the crop   ii. An arm and a leg
      iii. Hand in glove   iv. Hue and cry
      v. Hard and fast   vi. Explore all avenues
      vii. Spill the beans

   B) a) Give synonyms for the following words and use them in your own sentences. (3M)
        i. Sacrilege   ii. Pugnacious   iii. Vitiate
      b) Give antonyms for the following words and use them in your own sentences. (4M)
        i. Succinct   ii. stigmatize   iii. recalcitrant   iv. 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.
   i. What is the central idea of this passage?
   ii. In the first paragraph, 'inferences' mean?
   iii. Which method of teaching history would the author of this passage support?
   iv. In the second paragraph, 'shaping of world affairs' Means.
   v. What is the conclusive thought of the author?
   vi. Give an appropriate title for the written discourse.
   vii. 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]

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.
*****
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 80^0C cools down to 60^0C in 20 minutes, the temperature of air
       being 40^0C. 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 $L^{-1}\{ \frac{1}{(s+a)(s+b)} \}$.

(OR)

6. (a) Find $L^{-1}\{ \frac{5s+3}{(s-1)(s^2+2s+5)} \}$.   (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 $U = \tan^{-1}\dfrac{x^3 + y^3}{x - y}$ and $x\,U_X + y\,U_y = \sin 2U$, prove that

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

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

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

(OR)

8. (a) Expand $x^2 y + 3y - 2$ 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 $\displaystyle\int_0^\infty \dfrac{\tan^{-1}(ax)}{x(1 + x^2)}\,dx = \dfrac{\pi}{2}\log(1 + a)$, $a \geq 0$.

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 1102]

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.
*****

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 $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \ldots\ldots\ldots = \frac{\pi^2}{8}.$ (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)=$\begin{cases} 1 - x^2 , for|x| \leq 1 \\ 0, for|x| > 1 \end{cases}$

(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 $\int\limits_{0}^{\infty} \frac{\cos \lambda x}{x^2 + a^2} dx$

[B17 BS 1103]

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.
*****

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 Fraunhoffer 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 1104]

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.

*****

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]

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.
****

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]

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.
*****

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]

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

*****

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,   [7 M]
   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.
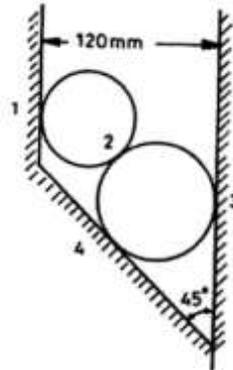
Figure 1

[OR]

2. (a) A string ABC of length *l* carries a small pulley C from which a Load W is   [7 M]
   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 α. Assume *d= l*/2 and *h=l*/4.

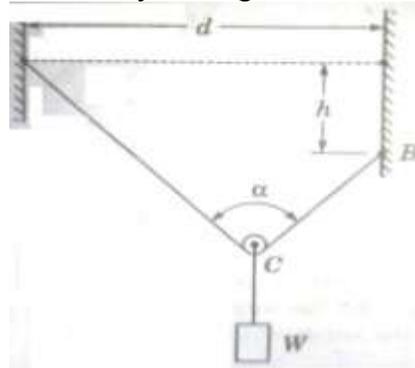Figure 2

(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 θ that the bar AB will make with the vertical when a vertical load of 200 N is applied at D. [7 M]
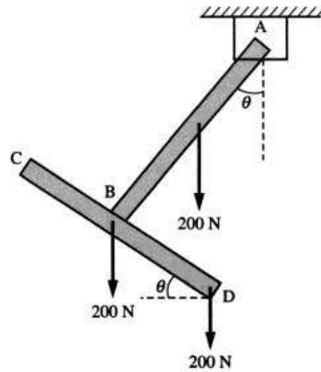

Figure 3

UNIT-II

3 (a) Derive the centriod of a wire bend in the form of a sector of an arc by taking the radius as 'r' and angle of sector as 'θ'. [7 M]

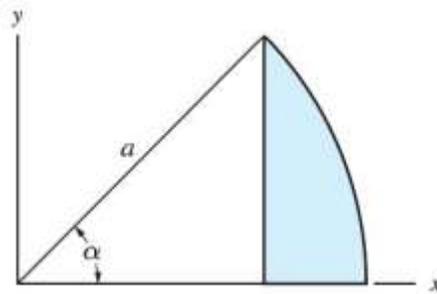(b) Determine the centriod of the shaded segment for Figure 4 by taking a = 18 m and α = 45⁰. [7 M]

Figure 4

[OR]

4 (a) Derive the moment of inertia of triangle about its centriodal 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]
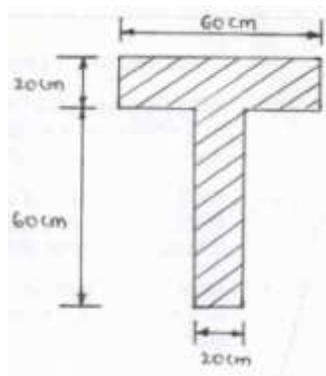

Figure 5

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]
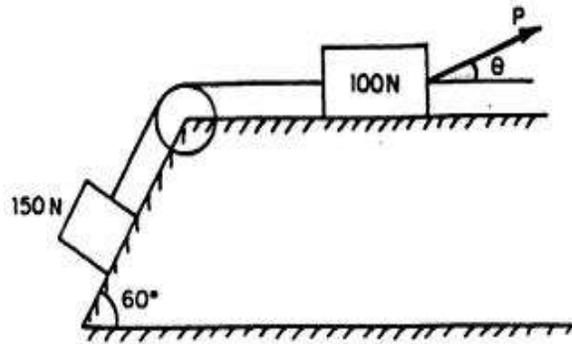

Figure 6

[OR]

6 (a) A uniform ladder 5m long on a horizontal ground and leans against a smooth vertical wall at an angle of 70^0 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]
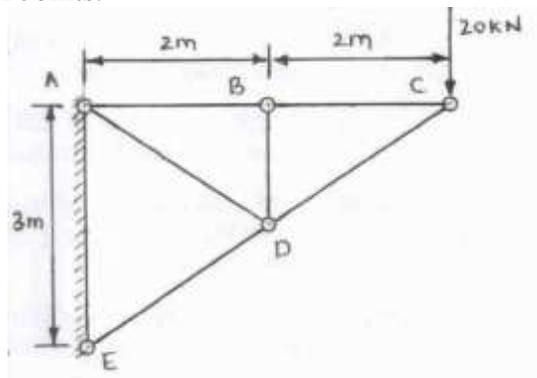

Figure 7

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]
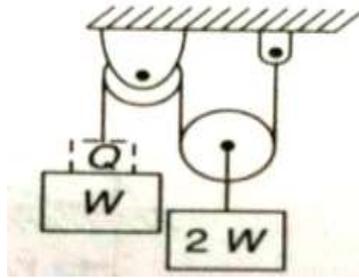
Figure 8

[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 [7 M]
   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.
   (b) A rotor of weight W = 1720 N and radius of gyration k = 100 mm is mounted [7 M]
   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.
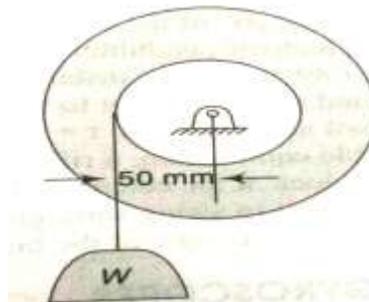
Figure 9

[OR]

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

[B17 ME 1101]

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
*****

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 30^0 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° to the HP, the surface of the plate makes an angle of 30° 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 30^0 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° 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 1102]

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 form 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 Homy Baba'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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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.
*****

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 1/3rd 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 $f(x) = x\ \ in\ 0 \le x \le \pi$.

(OR)

8. a) Obtain the Fourier series for the function $f(x) = \begin{cases} \pi x, & 0 \le x < 1 \\ \pi(2 - x), & 1 \le x \le 2 \end{cases}$ and

deduce that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \ldots\ldots\ldots = \frac{\pi^2}{8}$.

(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)= $\begin{cases} 1 - x^2, for |x| \le 1 \\ 0, for |x| > 1 \end{cases}$

(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 $\int\limits_{0}^{\infty} \frac{\cos \lambda x}{x^2 + a^2} dx$

[B17 BS 1202]

I B. Tech II Semester (R 17) Regular Examinations
MATHEMATICS-III
(Common to all Branches)
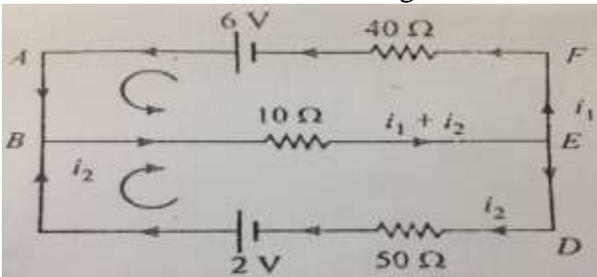### MODEL QUESTION PAPER

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

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

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

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

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

UNIT – IV

7. a) Find the directional derivative of $\emptyset(x,y,z) = x^2 yz + 4xz^2$ 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 div(grad r^n) = n (n+1) r^{n-2} and curl(grad $\emptyset$) = 0 for any scalar function $\emptyset$.

(OR)

8. a) Show that the vector field $\bar{F} = (x^2 + xy^2)\bar{I} + (y^2 + x^2 y)\bar{J}$ 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^{2}y + 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=π/2, y=2x/π. (7M+7M)

   b) State Gauss Divergence theorem and use it to evaluate $\iint_S \bar{u}.\bar{n} \, ds$
   where $\bar{u} = \bar{r} = x\bar{I} + y\bar{J} + z\bar{K}$ 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

   $\oint_C (x^2 y \, dx + y^3 dy)$ where C is the closed path formed by y=x and y= x^3 from (0,0) to (1,1). (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 1203]

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.
*****

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 Fraunhoffer 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]

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.
*****

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]

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]

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 30^0 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° to the HP, the surface of the plate makes an angle of 30° 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 30^0 to the ground and parallel to the VP. Draw its projections. [14 M]
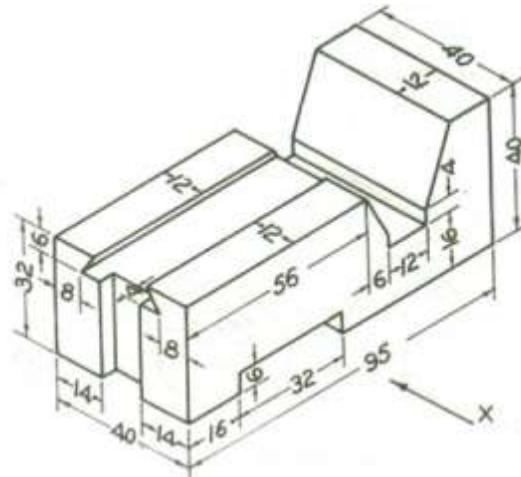
[OR]

8. Draw the projections of a cylinder 75mm diameter and 100mm long, lying on the ground with its axis inclined at 30° 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]

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 it's applications in detail.   (7M)
OR
2. a) What are the differences between Avalanche breakdown andZener Breakdown.   (7M)
   b) Explain the basic operation of semiconductor diode with v-I characteristics.   (7M)

UNIT II
3. a)Explain the V-I Characteristic ofzenerDiode, 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 aneat 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 α and β.Derive the relation between α and β.   (7M)

UNIT IV
7. a)Draw and explain the Self biasingcircuit. 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 andBJT?   (7M)

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

[B17 EC 1201]

[B17 EE 1201]
I B. Tech II Semester (R 17) Regular Examinations

CIRCUIT THEORY
(Electrical Electronics Engineering)
MODEL QUESTION PAPER

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

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

1. a) Obtain the expressions for star-delta and delta-star equivalence of resistive network.   (7M)

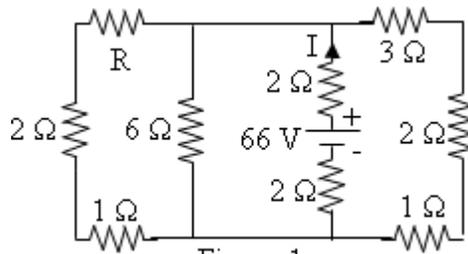   b) Find the value of resistance R, if the current is I=11 A and source voltage is 66 V as shown
      in figure.   (7M)

Figure:1

(OR)

2. a) Explain Source Transformation with suitable examples.   (7M)

   b) Use the nodal analysis to determine voltage at node 1 and the power supplied by the
      dependent current source in the network shown in figure.

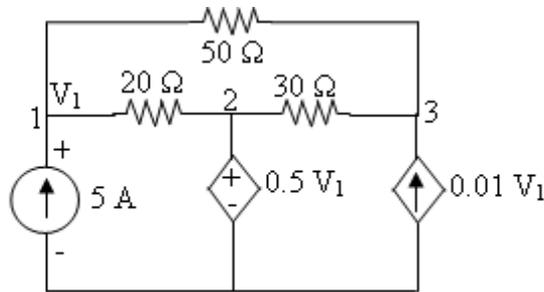   (7M)

Figure:2

UNIT-II

3.a) Explain the procedure for obtaining fundamental tie-set matrix of given network.   (7M)

   b) Draw the oriented graph of a network with fundamental cut-set matrix as shown below.(7M)

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

Also find number of cut-sets and draw them.

(OR)

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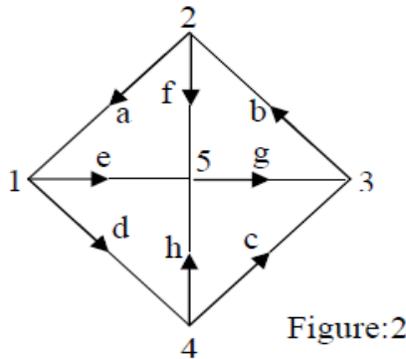

Figure:2

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

UNIT-III

5.a) A ring has a mean diameter of 21 cm and cross sectional area of 10 cm². 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 cm². If the coil has resistance of 10Ω and is connected across a 50V DC supply, calculate the m.m.f of the coil, magnetic field strength, magnetic field density,total flux and reluctance of the ring. (7M)
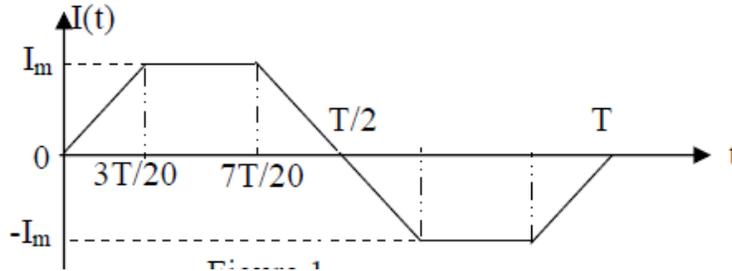
UNIT-IV

7. a)Define the following: (7M)

i) Amplitude of an alternating quantity

ii) Instantaneous value of an alternating quantity

iii) Frequency

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

(OR)

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

b) A coil of inductance L and resistance R in series with a capacitor is supplied at a constant voltage from a variable frequency source. If the frequency is ω_r, find in terms of L, R and ω_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 $(4+j3)$ Ω per phase is connected to a balanced 3¢ 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 Van = $120\angle120^0$, Vbn = $120 \angle0^0$ Vcn = $120 \angle- 120^0$ V. If the impedances are Zan = $20\angle 60^0$, Zbn= $30\angle 0^0$ and Zcn = $40 \angle30^0$ Ω, find the current in the neutra line. (7M)

b) For the circuit shown in figure 3, the line voltage is 240 V. Take Vab as reference and determine following: i) phase currents, ii) line currents, iii) total power absorbed in the load. Also draw Phasor diagram (7M)
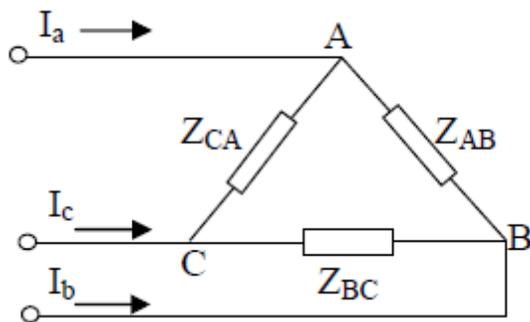
$$Z_{AB} = 25\Omega$$
$$Z_{BC} = 12\angle60^0\Omega$$
$$Z_{CA} = 16\angle-30^0\Omega$$

[B17 EE 1201]

I B. Tech II Semester (R 17) Regular Examinations
BASIC ELECTRICAL & ELECTRONICS ENGINEERING
(Mechanical Engineering)
MODEL QUESTION PAPER

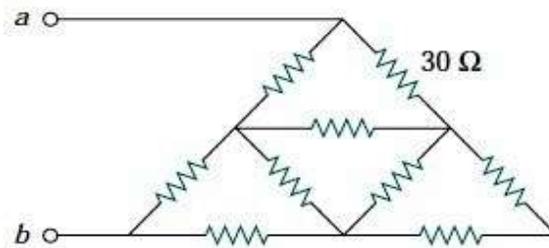**Time: 3 hours**   **Max. Marks: 70**

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

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

    (b) Find the equivalent resistance Rab for the circuit shown below. All the resistor

    Values are 30Ω.   [7M]

OR

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

    (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 shunt generator supplies a load of 7.5KW at 200V, Calculate the generated emf if

    armature resistance is 0.6Ω and field resistance of 80Ω.   [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

    rev/min. If the flux per pole is 20 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 1202]

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 is250V 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 0.6Ω and field resistance of 80Ω.   [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-φ 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]