AR18

CODE: 18CET315 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, September-2022
TRANSPORTATION ENGINEERING-I
(Civil Engineering)

Time: 3 Hours   Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Explain about the four most important recommendations made by the Jayakar committee	6M
	b)	How the preparation of master plan is done?	6M

(OR)

2.	a)	Write the salient features of Nagpur Road Plan	6M
	b)	Write a detailed note on various engineering surveys to be done in Highway planning	6M

UNIT-II

3.	a)	Explain the elements of highway geometric design	6M
	b)	How the attainment of super elevation can be done? Describe briefly with neat sketch.	6M

(OR)

4.	a)	Calculate the SSD for V =50kmph for (a) two-way traffic on a two lane road (b) Two-way traffic on single lane road. Assume reaction time =2s.	6M
	b)	Derive an expression for extra widening on highway pavement with neat skecth	6M

UNIT-III

5.	a)	Explain the requirements of design mix	6M
	b)	Write down the principles of various tests carried out on bitumen. Explain any two tests in detail with a neat sketch.	6M

(OR)

6.		Explain briefly desirable properties of road aggregates.	12M

UNIT-IV

7.	a)	Explain various steps involved in construction of cement concrete pavement	6M
	b)	Write a detailed note on Arborical Culture	6M

(OR)

8.	a)	Write a detailed note on failures of cement concrete roads	6M
	b)	Explain the significance and requirements of highway drainage	6M

UNIT-V

9.	a)	Write a detailed note on various types of intersections	6M
	b)	Draw a neat sketch of a full clover leaf and show the movement of traffic.	6M

(OR)

10.	a)	Explain briefly about grade separated intersections. Discuss the advantages and Limitations.	6M
	b)	Explain the design considerations of rotary elements.	6M

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, September-2022
POWER SYSTEM ANALYSIS
(Electrical and Electronics Engineering)

Time: 3 Hours   Max Marks: 60
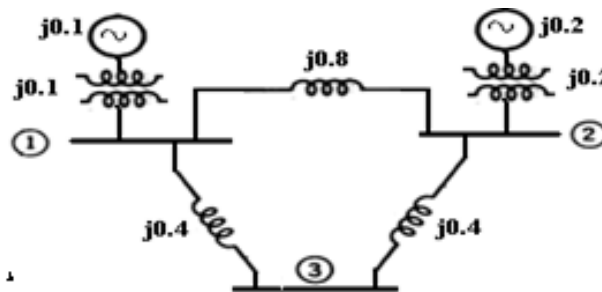
Answer ONE Question from each Unit
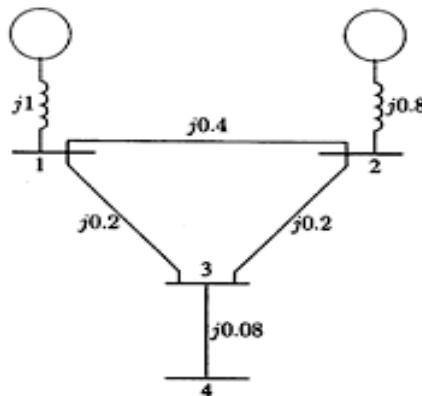All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Determine the Y_{bus} matrix for the network shown in fig if all [6M] the values are in pu reactances.

   b) Find Y_{bus} for the given power system network [6M]

(OR)

2. a) A power system is shown in fig.1, the reactance of each [6M] generator is j0.2p.u and reactance of each line is j0.3p.u. Find Ybus matrix by direct inspection method.

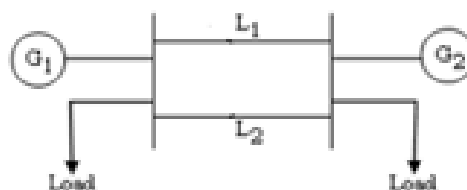fig 1 Power System

b) The p.u. impedance value of alternator and synchronous [6M] motor corresponding to base values 11kV, 75MVA is 0.4 p.u and 0.6 p.u. respectively. Calculate the p.u values of alternator and synchronous motor for the base values of 33kV and 100MVA.

UNIT-II

3. a) The following is the system data for a load flow solution: [8M]
The line admittances:

Bus code	Admittance
1-2	2-j8.0
1-3	1-j4.0
2-3	0.666-j2.664
2-4	1-j4.0
3-4	2-j8.0

The schedule of active and reactive powers:

Bus code	P	Q	V	Remarks
1	-	-	1.06	Slack
2	0.5	0.2	1+j0.0	PQ
3	0.4	0.3	1+j0.0	PQ
4	0.3	0.1	1+j0.0	PQ

Determine the voltages at the end of first iteration using Gauss-Seidel method. Take $\alpha = 1.6$

b) If bus 2 is taken as generator bus with $|V_2| = 1.04$ and [4M] reactive power constraint is

0.1 $\leq Q_2 \leq 1.0$. Determine the voltage starting with a flat voltage profile and assuming acceleration factor as 1.0. (2ND Bus is PV Bus)

(OR)

4. a) Fig 1 shows the one-line diagram of a simple three-bus [8M] system with generation at bus 1. The magnitude of voltage at bus 1 is adjusted to 1.05 p.u. The scheduled loads at buses 2 and 3 are as marked on the diagram. Line impedances are marked in p.u on a 100MVAbase and the line charging susceptances are neglected.
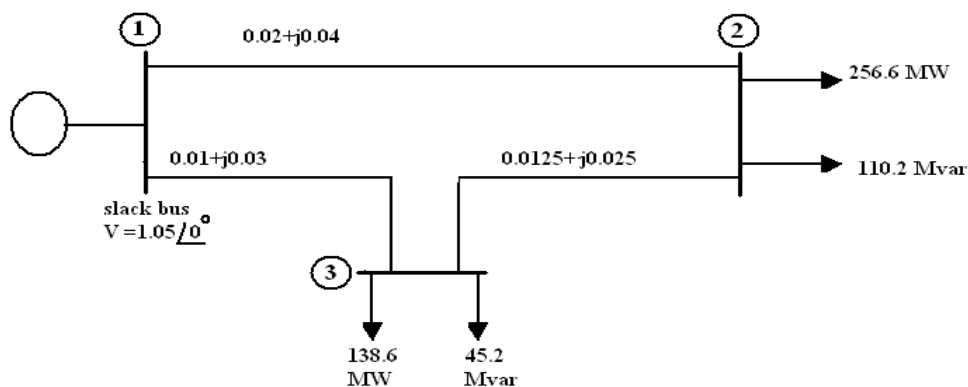
fig 1 one-line diagram (impedances in p.u on 100MVA base)

Using Gauss-Seidel method, determine the phasor values of the voltage at the load buses 2 and 3 (P-Q buses) accurate to four decimal places

b) Find the slack bus real and reactive power.   [4M]

UNIT-III

5.   Determine bus impedance (Z-bus) matrix for the network   [12M]
using type-1, type-2, type-3 and type-4 modifications with diagrams.

(OR)

6.   The section bus-bars A and B are linked by a bus-bar [12M]
reactor rated at 5000KVA with 10%   reactance. On bus-bar A there are two generators each of 10000KVA with 10% reactance and on bus-bar B two generators each of 8000KVA with 12% reactance. Calculate the short circuit MVA fed into a dead short circuit between all phases on bus-bar section B with bus-bar reactor in the circuit.

UNIT-IV

7. a) Determine the symmetrical components of the asymmetrical   [6M]
phasors below:

$$V_{3\Phi}=\begin{bmatrix} 100 \ at \ an \ angle \ 250 \ degrees \\ 50 \ at \ an \ angle - 1550 \ degrees \\ 40 \ at \ an \ angle \ 100 \ degrees \end{bmatrix}$$

b) Show that power is invariant using symmetrical components   [6M]

(OR)

3 of 4

8. a) Obtain an expression for the fault current for a LG fault at [6M] the terminals of an unloaded generator through a fault impedance Z_f

   b) The original set of voltage phases $V_a = 40\angle 0°$, $V_b = 35 \angle -90°$ [6M] and $V_c = 80\angle 143°$. Find the voltage components for the positive, negative and zero sequence systems.

UNIT-V

9. a) List out the limitations of swing equation [6M]

   b) Explain equal areal criteria with neat diagrams. [6M]

(OR)

10. Determine the critical clearing angle for the system from [12M] fig. shown for a three phase fault at the point P. The
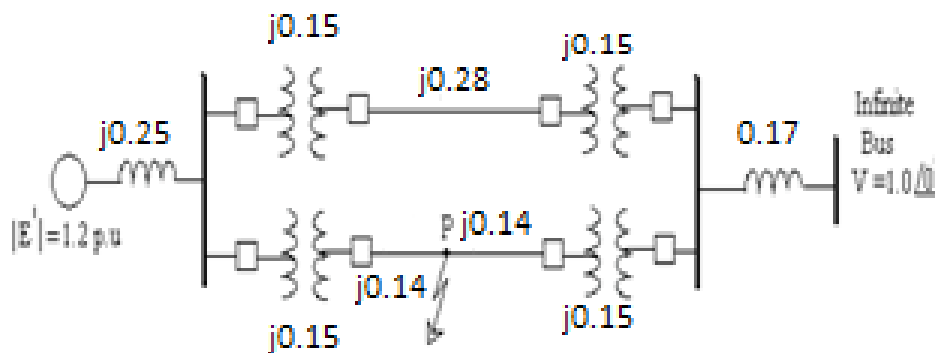
generator is delivering 1.0 pu power under prefault conditions. Comment on stability of the system if CCT is greater than delta Max

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CODE: 18MET314   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, September-2022
DESIGN OF MACHINE MEMBERS - II
(Mechanical Engineering)

Time: 3 Hours   Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) A thick cylinder of 0.5 m external diameter and 0.4 m internal diameter is subjected simultaneously to internal and external pressures. If the internal pressure is 25 MN/rn^2 and the hoop stress at the inside of the cylinder is 45 MN/m^2 (tensile), determine the intensity of the external pressure.   6M

   b) The inner diameter of a cylindrical tank for liquefied gas is 200 mm. The gas pressure is limited to 10 MPa. The tank is made of plain carbon steel 10C$_4$ (σ_{ut}=340 N/mm^2 and μ=0.27) and the factor of safety is 5. Calculate the cylinder wall thickness.   6M

(OR)

2. a) Why is the piston pin located at or above the middle of the skirt length?   3M

   b) Design a cast iron piston for a single acting four stroke diesel engine for the following data: Cylinder bore = 250 mm; Length of the Stroke = 500 mm; speed=250 rpm, Indicated mean effective pressure = 0.85 N/mm^2; Maximum gas pressure = 5 N/mm^2; Mechanical efficiency = 85%; Fuel consumption = 0.30 kg per brake power per hour; Higher calorific value of fuel = 44×10^3 kJ/kg; Speed = 250 r.p.m. Any other data required for the design may be assumed.   9M

UNIT-II

3. Design a connecting rod for four stroke petrol engine with the following data. Piston diameter = 0.10 m , stroke = 0.14 m, length of the connecting rod from centre to centre = 0.315 m, weight of reciprocating parts = 18.2 N, speed = 1500 rpm with possible over speed of 2500 compression ratio = 4:1, probable maximum explosion pressure = 2.45 MPa. Assume suitable data and state the assumption you make.   12M

(OR)

4. Design a centre crank shaft for a single acting four stroke engine for the following data: Bore = 200mm, stroke = 300mm, engine speed = 1000 rpm, length of connecting rod = 600mm, Maximum combustion pressure = 1 N/mm^2 , the crank shaft carrying one fly wheel at one end of each journal. Weight of each flywheel = 2 kN, distance between flywheel and its nearest journal = 150 mm. Maximum torque is experienced in the crank shaft when the crank angle is 300 from inner dead centre position. Permissible stresses for crank shaft material are 70 N/mm^2 in bending, 40 N/mm^2 in shear, limiting bearing pressure is 8 N/mm^2. The length to diameter ratio 1.2 for both crank pin and journal. Assume required data.   12M

5. a) Differentiate between differential screw and compound screw.   4M

   b) The nominal diameter of a triple threaded square screw is 50 mm, while the   8M
   pitch is 8 mm. It is used with a collar having an outer diameter of 100 mm
   and inner diameter as 65 mm. The coefficient of friction at the thread surface
   as well as at the collar surface can be taken as 0.15. The screw is used to
   raise a load of 15 kN. Using the uniform wear theory for collar friction,
   calculate: (i) torque required to raise the load; (ii) torque required to lower
   the load; and (iii) the force required to raise the load, if applied at a radius of
   500 mm.

(OR)

6. a) What are the advantages and disadvantages of V-belt drive over flat belt   4M
   drive?

   b) A rope drive is required to transmit 750 kW from a pulley of 1 m diameter   8M
   running at 450 r.p.m. The safe pull in each rope is 2250 N and the mass of
   the rope is 1 kg / m length. The angle of lap and the groove angle are 150°
   and 45° respectively. Find the number of ropes required for the drive if the
   coefficient of friction between the rope and the pulley is 0.3.

UNIT-IV

7. a) Define the following terms: i) Module   ii) Face   3M
   width.

   b) Design a pair of spur gears with 200 full-depth involute teeth consisting of a   9M
   20 teeth pinion meshing with a 50 teeth gear. The pinion shaft is connected
   to a 22.5 kW, 1450 rpm electric motor. The starting torque of the motor can
   be taken as 150% of the rated torque. The material for the pinion is plain
   carbon steel Fe410 (S_{ut} = 410 N/mm^2), while the gear is made of grey cast
   iron FG200 (S_{ut} = 200 N/mm2). The factor of safety is 1.5. Design the gears
   based on the Lewis equation and using velocity factor to account for the
   dynamic load.

(OR)

8   A parallel helical gear 300 mm in diameter has 200 involute full depth teeth   12M
   and helix angle is 300. It transmits a torque of 4500 N-m. Find the
   tangential, radial and axial loads acting on the teeth.

UNIT-V

9. a) Enumerate advantages and disadvantages of roller-contact bearings over   4M
   sliding contact bearings.

   b) Following data is given for a 3600 hydrodynamic bearing. Journal   8M
   diameter=100mm, bearing length=100mm, radial load=50kN, journal
   speed=1440 rpm, radial clearance=0.12 mm, viscosity of lubricant =16 Cp.
   Calculate: i) Minimum oil film thickness, ii) Coefficient of friction and iii)
   Power lost in friction.

(OR)

10. a) What are the objectives of lubrication?   3M

    b) A full journal bearing of 50 mm diameter and 100 mm long has a bearing   9M
    pressure of   1.4 N/mm^2. The speed of the journal is 900 RPM and the ratio
    of the journal diameter to the diameter clearance is 1000. The bearing
    lubricated with oil whose absolute viscosity at the operating temperature of
    75^{0}C may be taken as 0.011 N-S/m^2. The room temperature is 35^{0}C.
    Determine the amount of artificial cooling required.

AR18

CODE: 18ECT315   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, September-2022
MICROPROCESSORS AND MICROCONTROLLERS
(Electronics and Communication Engineering)

Time: 3 Hours   Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Discuss the physical memory organization of 8086.	6M
	b)	Sketch and explain minimum mode read cycle timing diagram of 8086.	6M

(OR)

2.	a)	Draw the flag register structure of 8086 and explain the function of each flag.	6M
	b)	Illustrate the following addressing modes of 8086 with examples.	6M
		i) Immediate ii) Register iii) Direct iv) Register Indirect	

UNIT-II

3.	a)	Compare Macro and Procedure.	6M
	b)	Write the description of following assembler directives with examples.	6M
		i) SEGMENT ii) PROC iii) DW iv) GLOBAL	

(OR)

4.	a)	Develop an assembly language program in 8086 to arrange given array of numbers in ascending order.	6M
	b)	Write the description of following instructions of 8086 with examples.	6M
		i) PUSH ii) CALL iii) MUL iv) TEST	

UNIT-III

5.	a)	Draw and explain the architecture of 8255.	8M
	b)	Discuss the significance of DMA data transfer.	4M

(OR)

6.	a)	Draw and explain the architecture of PIC 8259.	8M
	b)	List the features of USART.	4M

UNIT-IV

7.	a)	Illustrate the registers of ARM processor.	4M
	b)	Discuss protected virtual address mode of 80386 processor.	8M

(OR)

8.	a)	List and explain the different exceptions of ARM.	6M
	b)	Explain the physical memory organization of 80386.	6M

UNIT-V

9.	a)	Discuss the registers of 8051.	8M
	b)	List the features of 8051.	4M

(OR)

10.	a)	Write an assembly language program in 8051 to perform 8-bit division and multiplication.	6M
	b)	Explain the following addressing modes of 8051 with examples.	6M
		i) Register Indirect ii) Indexed iii) Direct	

AR18

CODE: 18CST313   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, September-2022

COMPILER DESIGN
(Common to CSE & IT)

Time: 3 Hours   Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. Describe the phases of the compiler? And how the following statement will be translated into every phase. Position: = initial + rate * 60. (12M)

(OR)

2. a) Differences between compiler and Interpreter (6M)
   b) Briefly explain about bootstrapping. (6M)

UNIT-II

3. a) Explain the role of a parser. (6M)
   b) Describe the context free grammar with examples. (6M)

(OR)

4. Consider the following grammar (12M)
   S → CC
   C → cC / d
   Construct CLR Parsing Table for the above grammar and parse the string
   w="ccdd" ?

UNIT-III

5. a) What is three-address code? Give Three-Address Code and it's representation for the assignment: a = b * - c + b * - c (6M)
   b) Describe in detail the syntax directed translation of case statements. (6M)

(OR)

6. Compare and contrast of static, stack and Heap allocation. (12M)

UNIT-IV

7. a) What is a DAG? Explain its applications. (6M)
   b) constructs a DAG and write the sequence of instructions for the expression a + a * (b-c) + (b-c) * d. (6M)

(OR)

8. a) What is a Flow Graph? Explain how a given program can be converted into a Flow graph? (6M)
   b) Explain the concept of global optimization. (6M)

UNIT-V

9. a) What are the various machine dependent code optimization techniques? (6M)
   b) Explain the concept of object code forms (6M)

(OR)

10. a) Explain about register allocation and assignment. (6M)
    b) Explain the concept of DAG for register allocation. (6M)

AR16

CODE: 16CE3017   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, September,2022
WATER RESOURCE ENGINEERING
(Civil Engineering)

Time: 3 Hours   **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered in one place

UNIT-I

1. a) Describe with a neat sketch the principle of working of weighing bucket type recording rain gauge with a neat sketch. **7M**

   b) In a 140 minutes storm, the following rates of rainfall were observed in successive 20 minutes intervals: 3.0, 3.0, 9.0, 6.6, 1.2, 1.2, and 6.0 mm/hr. Assuming the φ index value as 3.0 mm/hr and an initial loss of 0.8mm, determine the total rainfall, and w-index for the storm. **7M**

(OR)

2. a) Define Hydrology and list out the applications of hydrology in engineering. **7M**

   b) Two storms each of 6-h duration and having rainfall excess values of 3.0 and 2.0 cm, respectively. The 2-cm (Effective Rainfall) rain follows the 3-cm rain. Given below are the ordinates of a 6 h unit hydrograph for a catchment, calculate the resulting Direct Runoff Hydrograph (DRH). **7M**

Time (h)	0	3	6	9	12	15	18	21	24	27	30
Ordinates of 6-h UH (m^3/s)	0	25	50	85	100	60	36	25	16	8	0

UNIT-II

3. a) What are the properties of an aquifer? Explain in detail. **7M**

   b) In an artesian aquifer of 8 m thick, a 10 cm diameter well is pumped at a constant rate of 100 lit/minute. The steady-state drawdown observed in two wells located at 10 m and 50 m distances from the centre of the well is 3 m and 0.05 m respectively, compute the transmissivity and the hydraulic conductivity of the aquifer. **7M**

(OR)

4. a) Illustrate the occurrence of groundwater with the help of neat sketches. **7M**

   b) During a recuperation test, the water in the open well was depressed by pumping by 2 m and it recuperated 1.5 m in 1 hour. Estimate the yield from a well of 2 m diameter under a depression head of 2 m situated in the same area. **7M**

UNIT-III

5. a) Explain about different zones of storage available in a reservoir with a neat sketch. 7M
   b) Discuss various methods of reducing evaporation losses from the Reservoir. 7M

(OR)

6. a) How would you fix the capacity of a dam reservoir at a particular river site, provided the inflow pattern and demand pattern are known? Explain the mass curve method which is used for this purpose. 7M
   b) Explain about different types of yields in a reservoir. 7M

UNIT-IV

7. a) What is meant by "Duty of water"? Explain the influence of several factors which affect duty. What are the different ways in which duty can be expressed? 7M
   b) Find the field capacity of soil for the following data. 7M

   (i) Root zone depth = 2 m
   (ii) Existing water content = 5 %
   (iii) Dry density of soil = 15 kN/m^3
   (iv) Water applied to the soil = 500 m^3
   (v) Water loss due to evaporation and deep percolation = 10 %
   Area of plot = 1000 sq.metres.

(OR)

8. a) Describe in detail the Drip irrigation method of irrigation. Indicate the advantages of this method. 7M
   b) What is consumptive use and discuss various methods to measure consumptive use? 7M

UNIT-V

9. a) Explain the procedure for designing an irrigation channel using Kennedy's theory (for given bed slope). 7M
   b) Design a concrete-lined channel to carry a discharge of 250 cumecs at a slope of 1 in 6000. The side slopes of the channel are 1.5: 1. The value of Manning's N may be taken as 0.015. (Trapezoidal section with circular bottom). 7M

(OR)

10. a) Describe the method of designing a canal-based on Lacey's theory. 7M
    b) Calculate balancing depth of canal has a bed width of 6 m, full supply depth 2 m, bank width 3 m, cutting slope 1:1, filling slope 1.5: 1 and freeboard 0.5 m. 7M

AR16

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, September-2022
DESIGN OF MACHINE MEMBERS – II
(Mechanical Engineering)

Time: 3 Hours   Max Marks: 70

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Derive a formula for the thickness of a thin spherical shell subjected to an internal fluid pressure   6 M

   b) A cast iron cylinder of internal diameter 200 mm and thickness 50 mm is subjected to a pressure of 5 N/mm^2. Calculate the tangential and radial stresses at the inner, middle (radius = 125 mm) and outer surfaces.   8 M

(OR)

2. A four stroke diesel engine has the following specifications Brake power = 5 kW, Speed = 1200 rpm, indicated mean effective pressure = 0.35 N/mm^2, Mechanical efficiency = 80%. Determine,   14 M
   i) Bore and length of the cylinder,
   ii) Thickness of the liner,
   iii) Thickness of the cylinder head and
   iv) Size, number and pitch of studs.

UNIT-II

3. A connecting rod is required to be designed for a high speed four stroke IC engine. The following data is available.   14 M

   Diameter of the piston   = 88 mm
   Mass of reciprocating parts   = 1.6 kg
   Length of connecting rod   = 300 mm
   Stroke length   = 125 mm
   Speed   = 1200 rpm
   Power developed   = 50 kW
   Compression ratio   = 6.8 : 1
   Maximum explosion pressure = 3.5 N/mm^2

(OR)

4. Design a plain carbon steel centre crankshaft for a single acting four stroke single cylinder engine for the following data: Bore = 400 mm ; Stroke = 600 mm ; Engine speed = 200 r.p.m. ; Mean effective pressure = 0.5 N/ mm^2; Maximum combustion pressure = 2.5 N/mm^2; Weight of flywheel used as a pulley = 50 kN; Total belt pull = 6.5 kN. When the crank has turned through 35° from the top dead centre, the pressure on the piston is 1N/ mm^2 and the torque on the crank is maximum. The ratio of the connecting rod length to the crank radius is 5. Assume any other data required for the design.   14 M

5. a) Mention four important factors to be considered in the selection of a belt drive.   4 M

    b) It is required to select a flat belt drive for a compressor running at 720 rpm, which is driven by a 25 kW, 1440 rpm motor. Space available for a centre distance of 3 m. The belt is open type.   10 M

(OR)

6. a) What are the advantages and disadvantages of Chain Drive over Belt or Rope Drive.   4 M

    b) Design a chain drive to actuate a compressor from 15 kW electric motor running at 1000 r.p.m. The compressor speed being 350 r.p.m. The minimum centre distance is 500 mm. The compressor operates 16 hours per day. The chain tension may be adjusted by shifting the motor on slides.   10 M

UNIT-IV

7. a) Classify Gears.   4 M

    b) Design a spur gear drive to transmit 22 kW at 900 rpm, speed reduction is 2.5, Materials for pinion and wheel are C15 steel and CI grade 30 respectively. Take pressure angle as 20^0 and working life of gears as 10000 hrs.   10 M

(OR)

8. a) Define the following terms in helical gears   4 M
        1. Helix angle.   and   2. Normal pitch and

    b) A pair of helical gear has 20^0 stub teeth in the diametral plane. Helix angle is 45^0. The pinion rotates at 8000 rpm and transmits 12 kW. Gear ratio is 4:1. Safe static stress for the material of both pinion and gear is 100 MPa. The BHN for the pinion is 300 and for the gear is 200. Find the module and Face Width, if the center distance is 200 mm. And check the design for dynamic load wear strength.   10 M

UNIT-V

9. Select a suitable deep groove ball bearing for supporting a radial load of 10 kN and an axial load of 3 kN for a life of 4000 hrs at 800 rpm. Select from series 63. Calculate expected life of selected bearing.   14 M

(OR)

10. Design a journal bearing for a centrifugal pump from the following data: Load on the journal = 20 000 N; Speed of the journal = 900 r.p.m.; Type of oil is SAE 10, for which the absolute viscosity at 55°C = 0.017 kg / m-s; Ambient temperature of oil = 15.5°C ; Maximum bearing pressure for the pump = 1.5 N / mm^2. Calculate also mass of the lubricating oil required for artificial cooling, if rise of temperature of oil be limited to 10°C. Heat dissipation coefficient = 1232 W/m^2/°C.   14 M

AR16

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, September, 2022
COMPILER DESIGN
(Common to CSE & IT)

Time: 3 Hours   **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) What is the need of a language translator? Write the differences between compiler and interpreter? Explain.   10M
   b) Explain briefly about the Compiler construction tools?   4M

(OR)

2. a) What are the problems of Recognition of Tokens? Explain.   6M
   b) i) Explain a)Basis b) Induction for a regular expression.   [4+4]M
   ii)Write regular definitions for the following languages:
   a) All strings of lowercase letters that contain the five vowels in order.
   b) All strings of lowercase letters in which the letters are in ascending lexicographic order.

UNIT-II

3. a) Define Ambiguous Grammar? Check whether the following grammar   7M
   S → aAB, A→bC/cd, C→cd, B→c/d, is Ambiguous or not?
   b) Explain about LALR Parsing Technique   7M

(OR)

4. Construct SLR parsing Table for the following grammar   14M
   E → E+T | T
   T→ T*F | F
   F → (E) | id

UNIT-III

5. a) What is an Activation Record? Explain the elements of activation record.   8M
   b) Write in detail about Calling Sequences.   6M

(OR)

6. a) Define 3-address statement and list the types of 3-address statement.   6M
   b) Define the terms quadruples, triples and indirect triples. Give their representation for the assignment statement A = B * (C + D) by generating an appropriate 3-address code.   8M

UNIT-IV

7. a) Explain redundant sub expression elimination with an example.   8M
   b) What is meant by local optimization and loop optimization? Explain.   6M

(OR)

8. a) Write the algorithm to generate basic blocks and flow graph for quick sort algorithm.   10M
   b) Explain about live variable analysis.   4M

UNIT-V

9. Write the code generation algorithm. Using this algorithm generate code sequence for the expression   14M
   x = (a – b) + (a + c).

(OR)

10. a) Explain in detail about Peephole optimization.   8M
    b) What is the use of the **getreg** function? Explain.   6M