

AR18

CODE: 18CET315

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Regular/Supplementary Examinations, July-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) Write a detailed note on various road network patterns available with neat sketch 7M
- b) Write a note on Nagpur road plan and its salient features 5M

(OR)

2. a) Mention various factors affecting road alignment 6M
- b) Write a note on various engineering surveys performed for proper highway alignment 6M

UNIT-II

3. a) Explain in detail various highway cross sectional elements 7M
- b) Derive an expression for mechanical widening with neat sketch 5M

(OR)

4. a) Derive an expression for overtaking sight distance 6M
- b) Define gradient. Mention various gradients used on a highway for proper vertical alignment of a highway 6M

UNIT-III

5. a) Explain crushing test performed on aggregate with neat sketch 6M
- b) Explain impact test performed on aggregate with neat sketch 6M

(OR)

6. a) Explain test conducted to find out grade of bitumen with neat sketch 6M
- b) State various requirements of a proper design mix 6M

UNIT-IV

7. a) Explain in detail various steps involved in construction of water bound macadam pavements 6M
- b) Briefly distinguish between flexible pavement and rigid pavement with neat sketch. 6M

(OR)

8. a) Write in detail about necessity and importance of providing arboriculture 6M
- b) Explain the construction of tie bars in detail 6M

UNIT-V

9. a) State various advantages and disadvantages of grade separated intersections 6M
- b) Write a short note on the following 6M
 - a) Space mean speed b) Time mean speed c) journey speed

(OR)

10. a) Write a short notes on the following traffic characteristics. 6M
 - i) Speed ii) flow iii) density
- b) Mention various types of at grade intersections along with sketch of various conflict points 6M

AR18

CODE: 18EET315

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Regular/Supplementary Examinations, July-2022

**POWER SYSTEM ANALYSIS
(Electrical and Electronics Engineering)**

Time: 3 Hours

Max Marks: 60

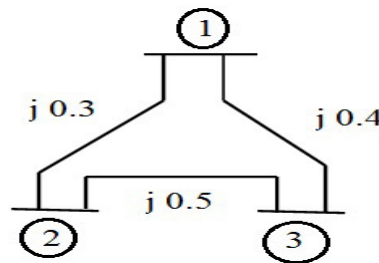
Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

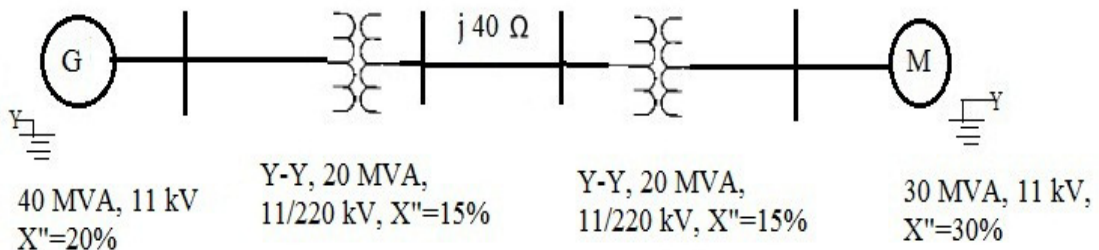
UNIT-I

1. a) Define per unit system and write advantages of per unit system. 6M
- b) Find the admittance matrix for the following network using direct inspection method. 6M



(OR)

2. Develop the p.u reactance diagram for the following network considering 100MVA and 11kV as base values. 12M



UNIT-II

3. a) Explain the Decoupled load flow technique for solving load flows with aneap flow chart. 6M
- b) Derive the constant B matrices used in Fast Decoupled load flow in load flow studies. 6M

(OR)

4. a) Discuss the algorithm of Newton Raphson method briefly. 8M
- b) Compare Newton-Raphson method and Gauss Siedel method load flow algorithms. 4M

UNIT-III

5. Find the Z-bus matrix with type-1, type-2, type-3, type-4 modifications with diagrams. 12M

(OR)

6. a) Two generating stations having short circuit capacities of 1200 MVA and 1000 MVA respectively and operating at 11kV are linked by an interconnected cable having a resistance of 0.6 ohm per phase, determine the short circuit capacity of each station. 8M
- b) Define short circuit MVA of synchronous machine and derive the formula for short circuit MVA 4M

UNIT-IV

7. a) Briefly discuss about significance of positive negative and zero sequence impedances of an alternator. 6M
- b) Draw the zero sequence network diagrams for Delta/Star transformers. 6M

(OR)

8. a) Derive the fault current from line to ground unloaded generator. 6M
- b) Derive the fault current from line to line unloaded generator. 6M

UNIT-V

9. Explain the concept of equal area criterion for studying the transient stability. 12M

(OR)

10. a) Derive the swing equation in power system stability. 6M
- b) Explain different types stability in power system. 6M

**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) Derive the expression for the wall thickness of the cylinder using Lamé's equation? 8 M
b) A hydraulic press has a maximum capacity of 1000 kN. The piston diameter is 250 mm. Calculate the wall thickness if the cylinder is made of material for which the permissible strength may be taken as 80 MPa. This material may be assumed as a brittle material. 4M

(OR)

2. Design a piston, piston rings and gudgeon pin for a single four stroke engine for the following given data: Cylinder bore = 100mm; Stroke = 125mm; Maximum gas pressure = 5MPa; b.m.e.p = 0.6MPa; Fuel consumption = 0.15kg/brake kW/hr; Speed = 1500 rpm. 12 M

UNIT-II

3. Design a connecting rod for an I.C engine from the following data: 12 M
Piston diameter = 125 mm
Stroke = 150 mm
Length of connecting rod = 300 mm
Maximum gas pressure at 5% of stroke = 5N/mm²
Speed of engine = 1200rpm
Mass of reciprocating parts = 2kg
Factor of safety = 5
Material steel = 35 Ni Cr 60.

(OR)

4. Design a plain carbon steel centre crankshaft for a single acting four stroke, single cylinder engine for the following data: 12 M
Piston diameter = 250 mm;
Stroke = 400 mm;
Maximum combustion pressure = 2.5 N/mm²;
Weight of the flywheel = 16 kN;
Total belt pull = 3 N;
Length of connecting rod = 950 mm.
When the crank has turned through 30° from top dead centre, the pressure on the piston is 1 N/mm² and the torque on the crank is maximum.
Any other data required for the design may be assumed.

UNIT-III

5. a) Explain the overhauling and self- locking screws 4 M
b) Derive the expression for torque required to raise a load of square threaded screw. 8 M

(OR)

6. The lead screw of a lathe has ACME threads of 50 mm outside diameter and 8 mm pitch. The screw must exert an axial pressure of 2500 N in order to drive the tool carriage. The thrust is carried on a collar 110 mm outside diameter and 55 mm inside diameter and the lead screw rotates at 30 r.p.m. Determine (a) the power required to drive the screw; and (b) the efficiency of the lead screw. Assume a coefficient of friction of 0.15 for the screw and 0.12 for the collar. 12 M

UNIT-IV

7. A pair of straight teeth spur gears is to transmit 20 kW when the pinion rotates at 300 r.p.m. The velocity ratio is 3:1. The allowable static stresses for the pinion and gear materials are 120 MPa and 100 MPa respectively. The pinion has 15 teeth and its face width is 14 times the module. Determine: 1. module; 2. face width; and 3. pitch circle diameters of both the pinion and the gear from the standpoint of strength only, taking into consideration the effect of the dynamic loading. The tooth form factor y can be taken as $y = 0.154 - \frac{0.912}{T}$ Where T = Number of teeth 12 M

And the velocity factor C_v as $C_v = \frac{3}{3 + V}$ Where V is expressed in m/sec.

(OR)

8. A helical cast steel gear with 30° helix angle has to transmit 35 kW at 1500 r.p.m. If the gear has 24 teeth, determine the necessary module, pitch diameter and face width for 20° full depth teeth. The static stress for cast steel may be taken as 56 MPa. The width of face may be taken as 3 times the normal pitch. What would be the end thrust on the gear? The tooth factor for 20° full depth involute gear may be taken as $0.154 - 0.912/T_E$, where T_E represents the equivalent number of teeth. 12 M

UNIT-V

9. a) A 80 mm long journal bearing supports a load of 2800 N on a 50 mm diameter shaft. The bearing has a radial clearance of 0.05 mm and the viscosity of the oil is 0.021 kg/m-s at the operating temperature. If the bearing is capable of dissipating 80 J/s, determine the maximum safe speed. 10 M
b) Enumerate any two advantages and disadvantages of rolling-contact bearings over sliding-contact bearings 2 M

(OR)

10. A ball bearing operates on the following work cycle : 12 M

<i>Element No.</i>	<i>Radial load (N)</i>	<i>Speed (R.P.M.)</i>	<i>Element time (%)</i>
1	3000	720	30
2.	7000	1440	40
3.	5000	900	30

The dynamic load capacity of the bearing is 16 600 N. Calculate 1. The average speed of rotation; 2. The equivalent radial load; and 3. The bearing life.

AR18

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SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Regular/Supplementary Examinations, July,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) Sketch the block diagram of 8086, and explain the functions of BIU and EU. 6M
b) Discuss the interrupt structure of 8086. 6M
- (OR)**
2. a) Sketch and explain minimum mode pin diagram. 6M
b) Explain the interrupt vector table of 8086 with a neat sketch. 6M

UNIT-II

3. a) Develop an assembly language program in 8086 to find the sum of N numbers. 6M
b) Write the description of following assembler directives with examples. 6M
i) DT ii) ENDP iii) DW iv) PUBLIC
- (OR)**
4. a) Discuss the logical instructions of 8086 with examples. 6M
b) Develop an assembly language program in 8086 to find average of N numbers. 6M

UNIT-III

5. a) Explain the modes of operation of 8255. 8M
b) Discuss the need of DMA data transfer. 4M
- (OR)**
6. Draw and explain the architecture of 8251 (USART) 12M

UNIT-IV

7. Sketch and explain the architecture of ARM processor. 12M
- (OR)**
8. a) Discuss the segmentation and paging in 80386. 8M
b) Write the register organization of 80386 micro processor. 4M

UNIT-V

9. a) Distinguish between microprocessor and microcontroller. 4M
b) Draw and explain the pin diagram of 8051. 8M
- (OR)**
10. a) What is an addressing mode? And explain the addressing modes supported by 8051 with examples. 8M
b) Discuss the interrupts of 8051. 4M

AR18

CODE: 18CST313

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Regular/Supplementary Examinations, July-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. a) Discuss about Lexical Analysis and Role of Lexical Analysis (6M)
b) Give and explain the diagrammatic representation of a language processing system (6M)
(OR)
2. Explain the phases in detail. Write down the output of each phase for the expression $a: = b + c * 50$. (12M)

UNIT-II

3. Consider the following Grammar (12M)
 $E \rightarrow TE' \quad E' \rightarrow +TE' \mid \epsilon \quad T \rightarrow FT'$
 $T' \rightarrow * FT' \mid \epsilon \quad F \rightarrow (E) \mid id$
Evaluate FIRST and FOLLOW functions and construct Predictive Parsing table?
(OR)
4. Consider the following grammar (12M)
 $S \rightarrow CC$
 $C \rightarrow aC$
 $C \rightarrow d$ Construct set of LR(1) items and construct the LALR parse table for the grammar.

UNIT-III

5. a) Prepare the three address code sequences for the assignment statement. (6M)
 $d := (a - b) + (a - c) + (a - c).$
b) Discuss in detail about the polish notation with examples. (6M)
(OR)
6. a) Explain about Block structure and Non-Block structure storage allocation. (6M)
b) Define Symbol table. Explain about the data structures for the Symbol table. (6M)

UNIT-IV

7. a) What is the use of DAG in code optimization? Explain with an example (6M)
b) Explain in detail about loop optimization techniques. (6M)
(OR)
8. a) Explain reducible and non reducible flow graphs with examples. (6M)
b) Explain the following (6M)
i) Redundant sub-expression elimination ii) Copy propagation

UNIT-V

9. a) Explain the concept of DAG for register allocation. (6M)
b) Write short notes on code generation. (6M)
(OR)
10. a) Discuss about register allocation and assignment in target code generation. (6M)
b) Explain the concept of object code forms (6M)

**WATER RESOURCES 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) Discuss the factors affecting evaporation. 7M
b) The shape of a catchment approximately resembles a square of side 8 km. With reference to an x-y coordinate frame whose origin is coinciding with one of the corners of the catchment the locations of the four corners of the catchment are (0,0), (8,0), (8,8) and (0,8). These are four rain gauges A, B, C and D within this catchment whose positions with reference to the same coordinate frame are (2,2), (6,2), (6,6) and (2,6) respectively. The rainfall recorded by the rain gauges A, B, C and D during a storm is 8, 6, 9 and 11 cm respectively. Determine the average depths of rainfall over the catchment by Arithmetic mean and Thiessen methods. 7M
- (OR)
2. a) Illustrate the three methods of separating the base flow from the total runoff. 7M
b) The following are the ordinates of 4-h unit hydrograph. Derive the ordinate of a 12-hour unit hydrograph and plot the same by the method of superposition. 7M

Time (h)	0	4	8	12	16	20	24	28	32	36	40
Ordinates of 4-h UH (m^3/s)	0	15	40	80	100	80	45	25	15	5	0

UNIT-II

3. a) Derive an expression for the steady-state discharge of a well fully penetrating a confined aquifer. 7M
b) In a water table aquifer of 30 m thickness, a 20 cm diameter well is pumped at a uniform rate of $0.035 \text{ m}^3/\text{s}$. If the steady-state drawdown measured in the observation wells located at 10 m and 100 m distances from the well is 7.5 m and 0.5 m respectively. (i) Determine the hydraulic conductivity of the aquifer. (ii) Determine the radius of influence. 7M

(OR)

4. a) Illustrate the occurrence of groundwater with the help of neat sketches. 7M
- b) During a recuperation test conducted on an open well in a region, the water level in the well was depressed by 3 m and it was observed to rise by 1.75 m in 75 minutes. 7M
 - (a) Determine the specific yield of open wells in that region.
 - (b) Determine the yield from a well of 5 m diameter under a depression head of 2.5 m.
 - (c) Determine the diameter of the well to give a yield of 12 lit/s under a depression head of 2.0 m.

UNIT-III

5. a) Explain the factors governing the selection of the site of a reservoir 7M
 - b) Discuss various methods of reservoir sediment control. 7M
- (OR)**
6. a) Write a detailed procedure to determine the reservoir capacity required for a specific yield or demand using a mass curve. 7M
 - b) Explain various zones of storage in a reservoir with a neat sketch. 7M

UNIT-IV

7. a) List out the benefits of irrigation. 7M
 - b) The left branch canal carrying a discharge of 20 cumecs has a culturable commanded area of 20000 hectares. The intensity of the Rabi crop is 80 per cent, and the base period is 120 days. The right branch canal carrying a discharge of 8 cumecs has a culturable commanded area of 12000 hectares, intensity of irrigation of Rabi crop is 50 percent and the base period is 120 days. Determine the duty and delta for the two canal systems. 7M
- (OR)**
8. a) Illustrate in detail the free flooding method and the border strip method of irrigation. 7M
 - b) Discuss briefly the factors affecting duty. 7M

UNIT-V

9. a) List out the advantages and disadvantages of canal lining. 7M
 - b) Design a regime channel to carry a discharge of $15 \text{ m}^3/\text{s}$ in soil having a silt factor of 1.0, using Lacey's theory. Assume side slopes of 0.5 horizontal to 1.0 vertical. (Assume other data if necessary) 7M
- (OR)**
10. a) Describe the method of designing a canal-based on Lacey's theory. 7M
 - b) Calculate the economical depth of cutting for the canal has a bed width of 5 m, top width of the bank is 2 m, cutting slope 1:1, filling slope 1.5: 1, the height of banks from bed is 2.92 m throughout. 7M

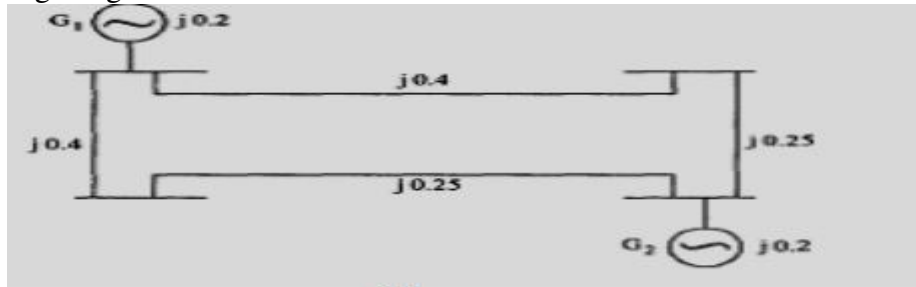
Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

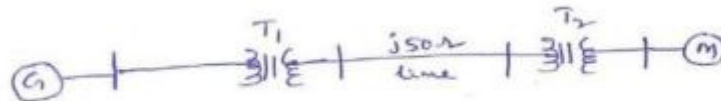
1. a) Form the Y BUS by using singular transformation for the network shown below. including the generator buses 7M



- b) Derive the expressions for obtaining the pu values of impedance, voltage, current and power from the fundamentals. 7M

(OR)

2. a) Draw the reactance diagram for the power system shown in below figure. The ratings as follows: 10M
 Generator: 40MVA, 25 kV, $X''=20\%$
 Synchronous motors : 50MVA, 11 kV, $X'=30\%$
 Transformer, T1: 40MVA, 33/220 kV, $X=15\%$
 Transformer, T2: 30MVA, 11/220 kV, $X=15\%$



- b) What are the advantages of per-unit quantities? 4M

UNIT-II

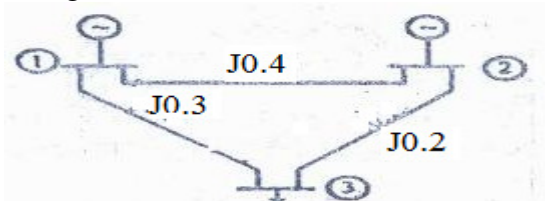
3. a) Discuss the algorithm of Newton Raphson method briefly. 7M
 b) Compare the G-S and N-R methods of load flow studies 7M

(OR)

4. In a three bus power system. 14M

Bus 1: Slack bus, $V=1.05/0^\circ$ p.u. Bus 2: PV bus, $V=1.0$ p.u. $P_g=3$ p.uBus 3: PQ bus, $P_l=4$ p.u., $Q_l=2$ p.u.

Carry out one iteration of load flow solution by Gauss Seidel method. Neglect limits on reactive power generation

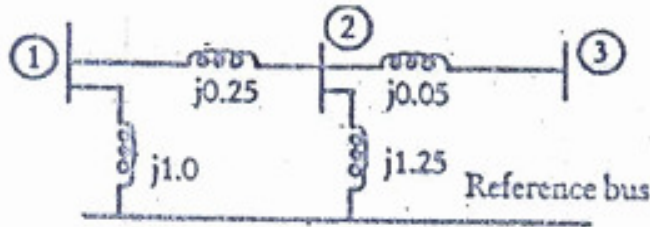


UNIT-III

5. The section bus-bars A and B are linked by a bus-bar 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 14M

(OR)

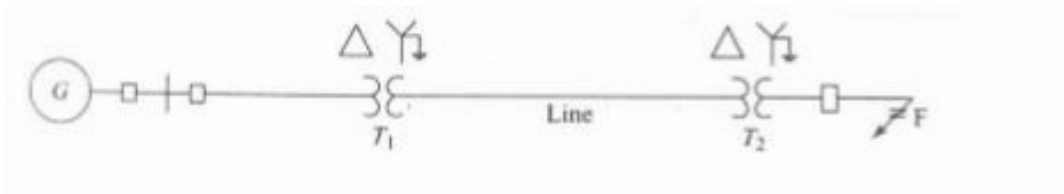
6. Find the bus impedance matrix for the system whose reactance diagram is shown in fig. All the impedances are in p.u. 14M



UNIT-IV

7. In the following figure the Fault occurs at point F, determine the fault current for L – G Fault by drawing sequence networks. 14M

Ratings G : 2 MVA, 6.6 kV, $X_1 = 10\%$ $X_2 = 7\%$ $X_0 = 3\%$
 T1, T2 : 6.6/11 kV, 2 MVA, $X = 5\%$
 $X_{1\text{Line}} = X_{2\text{Line}} = j0.5 \Omega$, $X_{0\text{Line}} = 1.5 \Omega$



(OR)

8. a) Derive fault current from line to ground unloaded generator. 7M
- b) What are symmetrical components? Explain the symmetrical component transformation 7M

UNIT-V

9. a) Derive the Expression for the Critical Clearing Angle for the case of single machine connected to infinite bus 7M
- b) Derive the Expression for Swing Equation 7M

(OR)

10. Describe the equal area criterion for transient stability analysis of a system 14M

AR16

CODE: 16ME3018

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Supplementary Examinations, July-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 the expression for the wall thickness of the cylinder using Lamé's equation? 8M
- b) A hydraulic press has a maximum capacity of 1000 kN The piston diameter is 250 mm. Calculate the wall thickness if the cylinder is made of material for which the permissible strength may be taken as 80 MPa. This material may be assumed as a brittle material. 6M

(OR)

2. Design a cast iron piston for a single acting four-stroke diesel engine with the following data: Cylinder bore = 300 mm Length of stroke = 450 mm Speed = 300 rpm Indicated mean effective pressure = 0.85 MPa Maximum gas pressure = 5 MPa Fuel consumption = 0.30 kg per BP per hr Higher calorific value of fuel = 44 000 kJ/kg Assume suitable data 14M

UNIT-II

3. Design a connecting rod for a high-speed IC engine using the following data: Cylinder bore = 125 mm Length of connecting rod = 300 mm Maximum gas pressure = 3.5 MPa Length of stroke = 125 mm Mass of reciprocating parts = 1.6 kg Engine speed = 2200 rpm Assume suitable data 14M

(OR)

4. Design an overhung crankshaft for a 300 × 350 mm single cylinder vertical engine using the following data: Maximum gas pressure = 2.5 MPa (L/r) ratio = 4.5 Weight of flywheel cum belt pulley = 10 kN Total belt pull = 5 kN Width of hub for flywheel cum belt pulley = 150 mm The torque on the crankshaft is maximum when the crank turns through 35° from the top dead centre and at this position the gas pressure inside the cylinder is 1 MPa. The belts are in the horizontal direction. 14M

UNIT-III

5. A flat belt is required to transmit 30 kW from a pulley of 1.5 meters effective diameter running at 300 r.p.m. The angle of contact is spread over 11/24 of the circumference. The coefficient of friction between the belt and pulley surface is 0.3. Determine the width of the belt required taking centrifugal tension into account. It is given that the belt thickness is 9.5 mm, density of its material is 1100 kg / m³ and the related permissible working stress is 2.5 MPa. 14M

(OR)

6. a) Illustrate polygonal effect in roller chains? 4M
- b) A rope drive transmits 600 kW from a pulley of effective diameter 4 m, which runs at a speed of 90 r.p.m. The angle of lap is 160°; the angle of groove 45°; the coefficient of friction 0.28; the mass of rope 1.5 kg / m and the allowable tension in each rope 2400 N. Find the number of ropes required. 10M

UNIT-IV

7. A pair of straight teeth spur gears is to transmit 20 kW when the pinion rotates at 300 r.p.m. The velocity ratio is 3:1. The allowable static stresses for the pinion and gear materials are 120 Mpa and 100 Mpa respectively. The pinion has 15 teeth and its face width is 14 times the module. Determine: 1. module; 2. face width; and 3. pitch circle diameters of both the pinion and the gear from the standpoint of strength only, taking into consideration the effect of the dynamic loading. The tooth form factor y can be taken as 14M

$$y = 0.154 - \frac{0.912}{\text{No. of teeth}}$$

And the velocity factor C_v as

$$C_v = \frac{3}{3 + v}, \text{ where } v \text{ is expressed in m / s.}$$

(OR)

8. A pair of helical gears are to transmit 15 kW. The teeth are 20° stub in diametral plane and have a helix angle of 45°. The pinion runs at 10 000 r.p.m. and has 80 mm pitch diameter. The gear has 320 mm pitch diameter. If the gears are made of cast steel having allowable static strength of 100 MPa; determine a suitable module and face width from static strength considerations and check the gears for wear, given $\sigma_{es} = 618$ MPa. 14M

UNIT-V

9. a) Enumerate advantages and disadvantages of rolling-contact bearings over sliding-contact bearings 4M
- b) A full journal bearing of 50mm diameter and 100mm long has a bearing pressure of 1.4N/mm². The speed of the journal is 900rpm and the ratio of journal diameter to the diametric clearance is 1000. The bearing is lubricated with oil, whose absolute viscosity at the operating temperature of 75°C may be taken as 0.011 kg/m-s. The room temperature is 350C. Find, (1) The amount of artificial cooling required. (2) The mass of lubricating oil required, if the difference between the outlet and inlet temperature of the oil is 10°C. Take specific heat of oil as 1850J/Kg/0C 10M

(OR)

10. a) Explain the following terms with reference to journal bearings: (i) Bearing Characteristic curve (ii) Bearing modulus 4M
- b) Select a single row deep groove ball bearing for a radial load of 4000 N and an axial load of 5000 N, operating at a speed of 1600 r.p.m. for an average life of 5 years at 10 hours per day. Assume uniform and steady load. 10M

AR16

CODE: 16EC3020

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Supplementary Examinations, July-2022

**MICROPROCESSORS AND MICROCONTROLLERS
(Electronics and Communication 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) | Explain the pins of 8086 with its pin configuration diagram. | 7M |
| b) | Explain in detail about the interrupts and interrupt service routines of 8086 | 7M |
| (OR) | | |
| 2. a) | Write the features of 8086 microprocessors | 4M |
| b) | Explain the architecture of 8086 micro processor. | 10M |

UNIT-II

- | | | |
|-------------|-----------------------------------------------------------------------------------------------------------------|----|
| 3. a) | Write an assembly language program to multiply two 16 bit numbers to give 32 bit result. | 7M |
| b) | Differentiate between procedures and macros | 7M |
| (OR) | | |
| 4. a) | Explain the function of unsigned multiplication and Division instructions in 8086 with suitable examples. | 7M |
| b) | What are assembler directives? Explain following assembler directives with an example i) PUBLIC ii) ORG iii) DW | 7M |

UNIT-III

- | | | |
|-------------|----------------------------------------------------------------------------------|----|
| 5. a) | Explain the general registers of 80386 advanced microprocessor. | 7M |
| b) | Explain protected virtual addressing mode (PVAM). | 7M |
| (OR) | | |
| 6. a) | With suitable diagram describe the real addressing mode of microprocessor 80386. | 7M |
| b) | Explain the architecture of microprocessor 80386. | 7M |

UNIT-IV

- | | | |
|-------------|------------------------------------------------------------------------------------------------|----|
| 7. a) | Explain the BSR code word structure of the 8255 PPI and mention its importance in interfacing. | 7M |
| b) | Draw and explain the block diagram of Programmable interrupt controller 8259. | 7M |
| (OR) | | |
| 8. a) | Write a programme to interface a stepper motor rotates clockwise direction using 8255 PPI. | 7M |
| b) | With the help of neat diagram explain how 8251 is interfaced with 8086 | 7M |

UNIT-V

- | | | |
|-------------|-------------------------------------------------------------------------------------------------------------------------|----|
| 9. a) | With the necessary diagram of control word format, explain the various operating modes of timer in 8051 microcontroller | 7M |
| b) | List the various Instructions available in 8051 microcontroller and explain one instruction from each classification. | 7M |
| (OR) | | |
| 10. a) | With neat sketch explain the functional block diagram of 8051 microcontroller. | 7M |
| b) | Explain in detail about the special function register of 8051 in detail. | 7M |