38 : 2nd half.11-AM(e)

Con. 6457-11.   **(OLD COURSE)**   **MP-4687**

(3 Hours)   **[Total Marks : 100**

N.B. : (1) Question No. **1** is **compulsory**.

      (2) Attempt any **four** questions out of remaining **six**.

1. (a) Define Automation. Differentiate between soft and hard automation.   **5**
   (b) List and define Kinematic parameters.   **5**
   (c) Explain in brief various types of work envelopes.   **5**
   (d) Explain fundamental rotation. Develope fundamental rotation matrices.   **5**

2. (a) Define Direct Kinematics. Develope arm equation for 5-axis RHINO XR3 robot   **10**
      with the help of D-H Algorithm.
   (b) Explain PnP operation with sketches.   **10**

3. (a) Obtain Inverse Kinematic Solution for 4 axis SCARA robot.   **10**
   (b) Explain various template matching algorithms and compare them.   **10**

4. (a) Classify robot as per workspace and explain in brief.   **10**
   (b) Explain Bounded Deviation Algorithm (BDA) to obtain straight line motion.   **10**

5. (a) List various workspace fixtures and explain them in brief.   **10**
   (b) State the role of shrink and swell operators in robot vision. Differentiate between   **10**
       these operators with suitable examples.

6. (a) List various specifications of robot and explain at least 6 significant specifications   **10**
      with sketches wherever required.
   (b) Explain configuration space and also the role of G. V. D. in task planning.   **10**

7. Write short notes on the following :—   **20**
   (a) NC VS CNC machines
   (b) Interpolated motion
   (c) Perspective transformations
   (d) Tool Configuration Vector (TCV).

7|12|11

BE (ETRx) VIII (~~ESD~~ (OLD))
Data Communication &
Net working
MP-4747

Con.6203-11.

IInd half-11-S.G 41

(OLD COURSE)

(3 Hours)   [Total Marks : 100

N.B.: (1) Question No. **1** is **compulsory**.
     (2) Attempt any **four** questions out of the remaining **six** questions.
     (3) Assume **suitable** data if **necessary**.

1. Answer any **four** questions :—   20
    (a) What are the transmission impairments ? Explain briefly.
    (b) Compare Go-back N ARQ and selective reject ARQ.
    (c) Compare TCP and UDP.
    (d) Describe IEEE 802·5 token ring protocol operation.
    (e) Distinguish between Packet switching and Circuit switching.

2. (a) Explain the OSI model giving functions of each layer.   10
    (b) Describe in details HDLS protocol with respect to the following :—   10
        (i) Data transfer mode   (ii) Frame structure and type.

3. (a) Draw and explain ATM cell fromat.   10
    (b) Explain Dijkstra's routing algorithm with an example.   10

4. (a) Write short notes on :—   10
        (i) IEEE 802·2   (ii) IEEE 802·3
    (b) Explain Leacky bucket and Token bucket algorithm in details.   10

5. (a) Draw the block diagram of functional architecture of ISDN and explain ISDN   10
      channels and Interface.
    (b) Explain the protocol architecture of frame relay.   10

6. (a) Explain XDSL technologies and its applications. Explain in details ADSL.   10
    (b) Explain SS7 signalling with diagrams.   10

7. Write short notes on any **four** :—   20
    (a) ATM adaptation layer
    (b) Congestion control
    (c) FDDI
    (d) Stop and Wait flow control
    (e) Routers.

Con. 6168-11.   (OLD COURSE)   **MP–4753**

(3 Hours)   **[Total Marks : 100**

N.B. : (1) Question No. **1** is **compulsory**.

(2) Attempt any **four** questions from the remaining.

(3) Assume **suitable** data if **necessary**.

(4) Illustrate answers with sketches whenever **required**.

(5) **Figures** to the **right** indicate **full** marks.

1. Explain in brief (any **four**) :–   **20**

     (a) Explain turn on and turn off characteristics of SCR

     (b) It is possible to obtain inversion mode operation in case of semi-inverter feeding active load. Justify your answer.

     (c) What is the need for cooling of power device

     (d) What is an inverter ? List few applications of different inverters.

     (e) Explain the basic principle of d.c. chopper. Derive an expression for its average d.c. output voltage.

2. (a) Explain the operation of 1-ϕ. Half controlled bridge converter with resistive load and inductive load with associated waveforms. Derive the following expressions –   **10**

         (i) Average load voltage

         (ii) Average load current

         (iii) RMS load voltage.

     (b) Explain the full wave ac control using diac-triac. Draw important waveforms and applications.   **10**

3. (a) Draw and explain basic series inverter circuit. State the limitations of this circuit. Discuss the important waveforms associated.   **10**

     (b) What is the effect of source inductance on the output voltage of FWCR. Obtain an expression for output voltage with the effect of source inductance with R-load.   **10**

4. (a) Explain the operation of complementary commutation circuit with waveforms across SCRs, load and capacitor.   **10**

     (b) Explain the operation of Jones chopper with active inductive load. Draw the waveforms across load, capacitor, SCRs, and I_L.   **10**

5. (a) Explain ramp and pedestal triggering circuit to trigger 4 SCRs operating on 1-ϕ. supply. Comment on how synchronization, isolation and phase control is achieved in it.   **10**

     (b) Explain the importance of $\dfrac{dv}{dt}$ and $\dfrac{di}{dt}$ ratings with proper protection circuits. State their typical values.   **10**

6. (a) Explain Slip-power recovery scheme is ac drives. **10**

   (b) Explain with block schematic the working of microcontroller based motor control circuit. **10**

7. Write short notes on — **20**

   (a) V/F control for induction motor

   (b) Parallel inverter circuit

   (c) Dual converter

   (d) Cooling methods for power semiconducting devices.

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