DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

INDUSTRIAL MANAGEMENT AND SAFETY

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I   Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. What is meant by Sleeping Partner ?

2. Write full form of ISO and name the first ISO.

3. What is Dummy Activity ?

4. Define Accident.

5. List any two Quantitative Techniques in Management.   (5×2 = 10)

PART — B

(Maximum marks : 30)

II   Answer any *five* of the following questions. Each question carries 6 marks.

1. Write similarities in the contributions of Fayols and F.W.Taylor.

2. Explain the functions of store keeping.

3. State following game has a saddle point.

$$\begin{bmatrix} 5 & 0 \\ -3 & 4 \end{bmatrix}$$

4. Describe Procedure for Registration of Small Scale Industry (SSI).

5. List six objectives of Technology Business Incubator (T B I).

6. Describe Functional organizational structure.

7. Describe basic steps involved in purchase procedure.   (5×6 = 30)

[118]

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III (a) Describe Joint stock companies.   8

(b) Briefly explain different types of training.   7

OR

IV (a) Explain Henry Fayols principles of management.   8

(b) Calculate the earnings of the worker under Rowan Plan and Halsey Plan (50-50). The standard time for a particular job is 10 hours and the time taken by the worker to complete the job is 8 hours. The hourly rate is Rs. 6.   7

UNIT — II

V (a) Draw and explain quality system documentation triangle.   8

(b) Describe Tender and Quotation.   7

OR

VI (a) Describe Store Layout.   8

(b) Describe the different type audits in the ISO implementation.   7

UNIT — III

VII (a) A project consists of 6 activities P, Q, R, S, T & U with a duration 4, 5, 6, 4, 3 and 6 days respectively. Draw the network diagram and mark the critical path. The dependency of activities as shown below : use A O A method.

Activity	Dependency	Duration in Days
A	.....	4
B	A	5
C	B	6
D	A	4
E	D	3
F	C & E	6

8

(b) For the following pay off matrix of firm A, determine the optimum strategies for the firms and the value of the game (using maximini - minimax principle)

Player A

$$\text{Player B} \begin{bmatrix} 3 & 4 & 2 \\ 5 & 7 & 3 \\ 7 & 5 & 4 \end{bmatrix}$$

7

OR

VIII (a) Solve the following Cost matrix Transportation problem by Vogel's Method.

Plants	W	X	Y	Capacity
P1	3	1	4	7
P2	4	5	1	6
P3	5	2	3	10
Requirement	6	9	8	

8

(b) Compare between CPM and PERT. 7

UNIT — IV

IX (a) Explain 4 E's of Accident Prevention Technique. 8

(b) What are the Functions of an Entrepreneur ? 7

OR

X (a) Explain various Accident factors. 8

(b) Describe constituents of feasibility study. 7

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(REVISION — 2015)

Reg. No...

Signature ....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

EMBEDDED SYSTEMS

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I   Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. List any 2 members of ATmega family.

2. List any two assembler directives.

3. Specify is the size in bits of 'unsigned char' type data.

4. Define an embedded system.

5. Give the function of SWAP instruction.

(5×2 = 10)

PART — B

(Maximum marks : 30)

II   Answer any *five* of the following questions. Each question carries 6 marks.

1. List the features of AVR microcontroller.

2. Explain different data formats used in AVR with example.

3. Draw and explain the connection of RS232 to ATmega32.

4. Explain different types of embedded OS.

5. Compare Subroutines with Macros.

6. List some applications of embedded systems.

7. Explain different data types in AVR C-programming.

(5×6 = 30)

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[P.T.O.

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III   Draw and explain architecture of ATmega32.   15

OR

IV   (a) Draw the bit pattern and explain each bit of Status Register.   8

   (b) Explain data memory of ATmega32.   7

UNIT — II

V   (a) Write an Assembly Language Program to add 45A7H and 3C9AH and store
      the result in SRAM location 0x 60 and 0x 61.   6

   (b) Explain the need for initializing stack with a simple example.   5

   (c) Differentiate between LDI and LDS instructions with example.   4

OR

VI   (a) Write an assembly language program to convert the BCD number 89H into ASCII
      and store the result in R20 and R21.   7

   (b) Explain any four arithmetic instructions with example.   8

UNIT — III

VII   (a) Explain Timer 0 operation with a diagram.   9

   (b) Write an AVR C - program to toggle all pins of Port B with some delay.   6

OR

VIII   (a) Explain different steps in executing an interrupt in ATmega32.   6

   (b) Explain the logical operators used in AVR C with examples.   9

UNIT — IV

IX   (a) Explain specialities of Embedded systems.   7

   (b) Write short notes on: (i) Task Scheduling (ii) Mutual exclusion.   8

OR

X   (a) Explain different activities of an Embedded OS.   9

   (b) State role of Kernel in Embedded OS.   6

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

INDUSTRIAL ELECTRONICS AND PLC

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I   Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define holding current of SCR.

2. List the merits of DC choppers.

3. Draw the ladder diagram of NAND gate.

4. List any two merits of dielectric heating.

5. List out any four turn-on methods of SCR.   (5×2 = 10)

PART — B

(Maximum marks : 30)

II   Answer any *five* of the following questions. Each question carries 6 marks.

1. Explain the working principle of a Power MOSFET.

2. Explain the VI characteristics of SCR with neat diagram.

3. Briefly explain the working of a sequence timer used in resistance welding.

4. Explain the working of a series inverter.

5. Explain single phase Dual converter circuit.

6. Explain the speed control of DC series motor.

7. Briefly explain the T - ON and T - OFF instruction used in PLC programming.   (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III (a) Explain the working of UJT triggering circuit for SCR with neat diagram.   8

     (b) Explain the construction and VI characteristic of a DIAC.   7

OR

IV (a) Explain the two transistor analogy of SCR with neat diagram.   8

     (b) Explain the Auxiliary commutation of SCR with the circuit diagram.   7

UNIT — II

V (a) Describe the working of AC power control using TRIAC.   8

   (b) Draw the circuit diagram and explain the working of single phase bridge converter.   7

OR

VI (a) Explain the working of a single phase full wave midpoint Cycloconvertor with neat sketch.   8

    (b) Describe the working of a step down chopper with circuit diagram.   7

UNIT — III

VII (a) Explain the working of Online UPS with block diagram.   8

    (b) Explain the Applications of Induction heating.   7

OR

VIII (a) Name the types of Resistance welding schemes. Briefly explain any three types with figures.   8

    (b) Describe the speed control of an Induction motor by rotor ON-OFF control.   7

UNIT — IV

IX (a) Explain any four math instructions used in PLC.   8

    (b) Construct a ladder diagram for a square wave generator.   7

OR

X (a) Briefly explain the ladder logic and ladder diagram.   8

   (b) Implement a half Substractor using ladder diagram.   7

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

OPTICAL FIBER COMMUNICATION

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I   Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. State the principle of Total internal reflection.

2. Name two types of LED structures.

3. List different types of optical amplifiers.

4. List major elements of optical fiber communication system.

5. List the applications of optical isolators.   (5×2 = 10)

PART — B

(Maximum marks : 30)

II   Answer any *five* of the following questions. Each question carries 6 marks.

1. Explain meridional and skew rays.

2. List the advantages of optical fiber communication system.

3. Explain the principle of photodetection.

4. Explain modulation process in LED.

5. Draw the block diagram of optical receiver.

6. Explain star couplers.

7. List the requirements of a good connector.   (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

Unit — I

III (a) Explain step index and graded index fibers.   10

  (b) Explain the elements of physical optics.   5

Or

IV (a) Explain different modes and configurations of fiber optic transmission.   8

  (b) Describe different types of fiber materials.   7

Unit — II

V (a) Explain the working principle of Surface emitting LED.   8

  (b) Explain the principle of Avalanche photodiode.   7

Or

VI (a) Explain the construction and working of LASER diode.   8

  (b) Describe PIN photodiode.   7

Unit — III

VII (a) Explain the block diagram of optical transmitter.   8

  (b) Explain the working principle of Semiconductor optical amplifier.   7

Or

VIII (a) Explain the block diagram of optical fiber communication system.   9

  (b) Explain the principle of wavelength division multiplexing.   6

Unit — IV

IX (a) Explain different methods of measuring attenuation losses in optical fiber.   9

  (b) Explain the working principle of optical modulators.   6

Or

X (a) Explain different splicing techniques used in OFC system.   8

  (b) Describe optical circulators.   7

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