5th Sem. COMMON 2020(W)

Th1- Entrepreneurship and Management & Smart Technology

Full Marks: 80 Time- 3 Hrs

Answer the questions as per the instruction.
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

   a. Write the full form of NABARD.

   b. Enlist at least four characteristics of an entrepreneur.

   c. Why should an entrepreneur prepare the project himself?

   d. Define financial management.

   e. Distinguish between debit and credit.

   f. Define market.

   g. Why does an organization need advertisement?

   h. Differentiate a manager with a leader.

   i. Define IoT.

   j. Define IPR (Intellectual Property Right).

2. Answer **Any Six** Questions 5 x 6

   a. Differentiate entrepreneur with manager.

   b. What are the factors to be taken into account to select a technology for an enterprise?

   c. Write the objectives of financial management.

   d. Write the different functions of marketing.

   e. Briefly discuss different types advertising media.

   f. Briefly explain the functions of HRM.

   g. Briefly discuss the smart transportation system, the advantages and

disadvantages related to it.

h. Explain the Maslow's theory of motivation.

3 Answer any three questions 10x3

a. Briefly explain different barriers in entrepreneurship.

b. How do you select a business opportunity? Explain different components (at least five) related to business opportunity.

c. What is PPR (Preliminary Project Report)? Briefly explain the structure of PPR.

d. Explain the five functions of management briefly.

e. Briefly explain the general recruitment process in an organization.

f. Briefly explain different types of budgets.

5TH SEM./ ELECTRICAL/2020(W)NEW
TH2-ENERGY CONVERSION II

Full Marks: 80 Time: 3 Hours

Answer any Five Questions including Q No. 1& 2

Figures in the right hand margin indicates marks

1. Answer all the questions 10x2

a) Define slip speed in 3 phase induction motor and state its equation.

b) What is plugging in 3 phase induction motor?

c) Define pitch factor in alternator and state its value.

d) What is the purpose of damper windings in alternators?

e) State two applications of synchronous motor.

f) What are the V-curves in synchronous motor?

g) Define step angle in stepper motor and state its value.

h) How a single phase induction motor is made self starting?

i) What is the function of compensated winding in compensated repulsion motor?

j) How the direction of rotation of split phase induction motor can be reversed?

2. Answer any six questions 6x5

a) Explain the principle of operation of synchronous motor in details.

b) Describe the power flow stages in 3 phase induction motor with a neat diagram.

c) Derive the relation between torque and rotor power factor in 3 phase induction motor.

d) Explain about the determination of voltage regulation of alternator by synchronous impedance method.

e) Describe about types of rotors in alternators in details.

f) Write a short note on capacitor start induction run motors.

g) Explain the 1-phase ON or full step operation in variable reluctance stepper motor briefly.

3. Derive the relationship between rotor input, mechanical power & copper loss in 3-ph induction motor. 10

4. Explain about the double field revolving theory in 1-phase induction motor with torque-slip graph. 10

5. Describe the synchronizing of 3 phase alternator using two bright and one dark lamp method. 10

6. Write a short note on (a)Direct-On-Line starter (b)Parallel operation of alternators. 10

7. Explain the effect of excitation on armature current and power factor in synchronous motor in details. 10

5TH SEM /ELECTRICAL/ 2020(W)NEW
Th3- Digital Electronics & microprocessor

Full Marks: 80 Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

   a. What do you mean by Radix of a number?

   b. What is the difference between combinational and sequential logic circuit?

   c. What is the function of ALE in 8085 microprocessor?

   d. Define modulus of a counter.

   e. What are the various modes of 8255 programmable peripheral interface?

   f. Distinguish between a multiplexer & a demultiplexer.

   g. Write down the hardware interrupts in 8085 microprocessor.

   h. What is Race around condition in JK flip-flop?

   i. Find the 2's complement of $(110101.01)_2$.

   j. What are the various flag registers available in 8085 microprocessor?

2. Answer **Any Six** Questions 6 x 5

   a. Explain the working of JK flip-flop with the truth table.

   b. What is half adder? Design a full adder circuit using half-adder and OR gate.

   c. State and prove De-morgan's theorem.

   d. Discuss the various types of addressing modes of 8085 microprocessor with suitable examples.

   e. Explain the function of 1:4 Demux circuit with a neat diagram and write its truth table.

   f. Draw the timing diagram for MVI B, 05_H.

   g Write an assembly language program to add two 8-bit decimal numbers, sum may be of 16 bits.

3 Design a 2-Bit magnitude comparator circuit and explain its operation. 10

4 Draw the functional block diagram of Intel 8085 microprocessor and explain the function of each block. 10

5 Simplify and minimise the four variable logic expression using K map: 10

	f(A,B,C,D)=∑ m(0,1,2,3,5,7,8,9,10,12,13) & implement the real minimal expression in universal logic.	
6	With a neat block diagram design a traffic light controller & write an assembly language program using 8255 Programmable peripheral interface.	10
7	Design a 4-bit Asynchronous counter & draw its timing diagram.	10

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5th SEM / ELECTRICAL /2020(W) NEW

TH4-UTILIZATION OF ELECTRICAL ENERGYAND TRACTION

Full Marks: 80 Time : 3 Hours

Answer any Five Questions including Q No. 1& 2

Figures in the right hand margin indicates marks

1. **Answer all the questions** 10x2

a) Define(i) Current efficiency (ii)MHSCP

b) What do you mean by invert squares law in illumination?

c) State the groups of systems of electric Traction.

d) State the applications of three phase synchronous motor.

e) What is group drive? Give an example.

f) What is dielectric heating?

g) State Faraday's First Law of Electrolysis.

h) What is resistance welding? Give an example.

i) Name any two types of arc furnaces.

j) What are polar curves and state their uses.

2. **Answer any six questions** 6x5

a) Describe about the magnetic braking in electric traction briefly.

b) Describe the extraction of aluminium in fused electrolyte process briefly.

c) Describe about the working principle of fluorescent tube with a neat diagram.

d) Explain the DC system of track electrification in electric traction briefly.

e) Explain the operating principle of Indirect Arc Furnace with a neat sketch.

f) Write a short note on metal arc welding.

g) Differentiate between DC and AC arc welding.

3. Describe the factors affecting the electro-deposition in electrolytic cell in details. 10

4. Explain the factors on which the design of simple lighting schemes depends. 10

5. Describe the three modes of Heat Transfer in substances briefly. 10

6. Explain about the dielectric heating in charge between parallel metal plates. Also write their advantages and applications in details. 10

7. Write a short note on i) Seam welding ii) speed control of DC Traction motors by series-parallel control method. 10

5TH SEM./ELECT./E&M/EEE/EE(I&C)/EEE/E&C/E&TC/ 2020(W) NEW

Full Marks: 80

Th5 Power Electronics & PLC

Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

a. Differentiate between DIAC and TRIAC.
b. Define Phase Angle and Extinction angle of controlled rectifier.
c. Define latching current and holding current of SCR.
d. Draw the Snubber circuit to protect SCR.
e. What is freewheeling diode and why it is needed?
f. What is SMPS? Why it is preferred in comparison to linear regulator?
g. What is natural commutation? Where it is used?
h. Define reliability of SCR and Mean Time Between Failure (MTBF).
i. What are different modules in PLC?
j. What is the purpose of latch coil?

2. Answer **Any Six** Questions 6 x 5

a. Explain briefly different TURN ON methods of SCR.
b. Explain briefly R-firing triggering circuit of SCR.
c. Explain principle of operation of step-up chopper with resistive load with proper circuit diagram and waveform.
d. Draw the schematic diagram of single phase full bridge inverter (without commutation circuit) and explain its operation.
e. With neat diagram explain the Class B commutation of SCR.
f. Draw the ladder diagram for full adder circuit.
g Explain different types of timers in PLC.

3 Explain operation of single phase full wave converter with RL load & freewheeling diode. 10

4 Describe the different chopper configurations (Class A, Class B, Class C, Class D only) 10

5 Explain operation of online and offline UPS with neat circuit diagram. 10

6 Explain with a neat circuit diagram, Step-up and Step-down midpoint cyclo-converter. 10

7 Draw the block diagram of PLC system and explain each block in detail. 10