

FACULTY OF ENGINEERING**B.E. 4/4 (Civil) I - Semester (Backlog) Examination, October 2020****Subject: Concrete Technology****Time: 2 hours****Max. Marks: 75****PART – A****Note: Answer any seven questions.****(7x3 = 21 Marks)**

- 1 Define workability of concrete.
- 2 Explain bulking of sand.
- 3 Explain why heat of hydration is different for OPC and PPC cements.
- 4 Differentiate nominal mix and design mix?
- 5 Explain the need for fiber reinforced concrete.
- 6 What is the difference between high strength and high performance concrete?
- 7 What is the most accurate method of batching and why?
- 8 Define the term effective water cement ratio.
- 9 Why is compaction needed? What are the methods of compaction?
- 10 Differentiate between mineral and chemical admixtures.

PART – B**Note: Answer any three questions.****(3x18 = 54 Marks)**

- 11 (a) What are Bogue's compounds? Discuss its influence on properties of cement?
(b) Design a concrete mix as per IS-10262:2009 and IS-456:2000 for a grade of concrete M40. Nominal size of aggregate 20mm, exposure condition severe, degree of supervision good, type of aggregate crushed angular aggregate, workability 75mm slump, belonging to zone 2. Specific gravity of cement-3.15, CA – 2.65, FA – 2.60. Assume any missing data.
- 12 (a) Estimate the strength of M45 grade of concrete at 16 days if it's cured at 12^oc for 10 hrs and 26^oc for 4 hrs a day.
(b) Explain the physical and mechanical properties of aggregates and their influence on properties of concrete.
- 13 (a) Write about high density concrete and light weight concrete.
(b) Explain the concept of ready mix concrete.
- 14 What is fiber reinforced concrete? What is the need and the mechanism involved in it?
- 15 What is SCC? What is the design principle of SCC?
- 16 Write the advantages and disadvantages of fly ash. Also state the durability aspects of fly ash.
- 17 Write a note on:
 - a) Alkali aggregate reaction
 - b) Creep and rheology
 - c) Gap grading

FACULTY OF ENGINEERING

B.E. 4/4 (EEE) I – Semester (Backlog) Examination, October 2020

Subject: Electrical Machine Design

Time: 2 hours

Max. Marks: 75

PART – A

Note: Answer any seven questions.

(7x3 = 21 Marks)

1. Give the general properties of copper.
2. Explain the ideal properties of high conducting materials.
3. What do you understand by leakage flux?
4. Explain the induced ventilation of rotating machines.
5. Define electric and magnetic loadings.
6. What are the factors to be considered for the selection of number of poles in a dc machine?
7. Draw 4 – stepped core of transformer with dimensions take diameter of circumscribing circle as 100.
8. Define the output co-efficient of 3 – phase induction motor.
9. Explain the general procedure for optimization of electrical machines.
10. What are the advantages of hybrid method to design the electrical machines?

PART – B

Note: Answer any three questions.

(3x18 = 54 Marks)

11. (a) Explain the material used for heating devices.
(b) Explain the ideal properties of insulating materials and give the classification with examples.
12. (a) Estimate the effective gap area per pole of a 10 pole, 3 – phase induction motor with following data:
Stator bore = 0.70 m, Core length = 0.30 m, No. of stator slots = 90,
Stator slot opening = 3 mm, Rotor slots = 120, Rotor slot opening = 3 mm, Air gap length = 0.95 mm, Carter's co-efficient for ducts = 0.71,
Carter's co-efficient for slots = 0.50,
No. of ventilating ducts = 3 each on rotor and stator,
Width of each ventilating duct = 10 mm.
(b) Explain in detail about the MMF calculation for tapered Teeth.

13. (a) Derive the expressions for quantity of cooling medium (coolant) required to absorb the losses of electrical machines.
- (b) Derive the expression for temperature rise time curves.
14. (a) Find the main dimension and number of poles of a 50 kW, 220V, 1500 rpm, shunt motor so that a square pole face is obtained. The average gap density is 0.6 Wb/m^2 and the ampere conductors/meter are 20000. The ratio of pole arc to pole pitch is 0.7 and the full load efficiency is 89%.
- (b) Explain the armature design of a DC machine.
15. (a) Determine the main dimensions of the core, the number of turns, the cross sectional area of conductors in primary and secondary windings of a 100 kVA, 2200/480 V, 1-phase, core type transformer, to operate at a frequency of 50 Hz, by assuming the following data. Approximate volt per turn = 7.5 volt. Maximum flux density = 1.2 Wb/m^2 , ratio of effective cross – sectional area of core to square of diameter of circumscribing circle is 0.6. Ratio of height to width of window is 2. Window space factor = 0.28. Current density = 2.5 A/mm^2 .
- (b) Derive the output equation of a 3 – phase induction motor.
16. (a) What is Short Circuit Ratio (SCR) explain the effect of SCR on synchronous machine performance.
- (b) A shunt field coil has to develop an mmf of 9000A. The voltage drop in the coil is 40 V, and the resistivity of round wire used is $0.021 \text{ } \Omega/\text{m}$ and mm^2 . The depth of the winding is 35 mm and the length of mean turn is 1.4 m. Design a coil so that the power dissipated is 700 W/m^2 of total coil surface (i.e. outer, inner, top and bottom). Take the diameter of insulated wire 0.2 mm greater than that of bare wire.
17. (a) Explain the synthesis method of computer aided design of electrical machine with help of flowchart.
- (b) Explain the general procedure for optimization of electrical machines.

FACULTY OF ENGINEERING
B.E. 4/4 (ECE) I – Semester (Old) Examination, October 2020

Subject: Mobile Cellular Communication

Time: 2 Hours

Max.Marks: 75

PART – A

Note: Answer any seven questions.

(7x3 = 21 Marks)

- 1 What are the advantages of 'Frequency Reuse' concept?
- 2 Mention the factors which influence the choice of Hand off margin Δ .
- 3 Classify small scale fading.
- 4 Briefly explain the three basic propagation mechanisms.
- 5 Give a brief description of Frequency Hopped Multiple Access (FHMA) system.
- 6 Compare the features of TDMA, FDMA and CDMA.
- 7 List out various GSM services.
- 8 With respect to CDMA, Define Forward Channel and Reverse Channel.
- 9 Write short notes on WLAN.
- 10 Write salient features of 4G technology.

PART – B

Note: Answer any three questions.

(3x18 = 54 Marks)

- 11 a) Define the terms co-channel interference and co-channel interference reduction factor.
 b) Explain in detail, different Channel Assignment Strategies used in cellular systems.
- 12 a) Discuss briefly Durkin's model for outdoor propagation model.
 b) Explain the various factors influence 'Small-Scale fading'.
- 13 a) Explain the difference between pure ALOHA and slotted ALOHA.
 b) Prove that the slotted ALOHA provides maximum channel utilization.
- 14 a) Explain GSM system architecture and its various interfaces.
 b) Draw and explain the frame structure of GSM.
- 15 a) What is CSMA protocol? Explain the different types of CSMA.
 b) Give the advantages of cell splitting and cell sectorization.
16. Draw the architecture block diagram of Universal Mobile Telecommunication System (UMTS) and explain its salient features.
17. Write a short note on:
 - a) Basic Cellular System and its operation
 - b) SSMA
 - c) Features of 4G

FACULTY OF ENGINEERING
BE 4/4 (M/P/AE) I-Semester (Backlog) Examination, October 2020

Subject: Operations Research

Time : 2 Hours

Max. Marks: 75

PART – A

Note: Answer any seven questions.

(7x3 = 21 Marks)

- 1 Discuss the scope and limitations of OR.
- 2 What is degeneracy in simplex method?
- 3 Write dual variables with suitable example.
- 4 Define and differentiate between primal LPP and dual LPP.
- 5 Explain the steps involved in Vogel's Approximation method.
- 6 Write short note on the assignment problem and its application.
- 7 Explain how the theory of replacement is used in replacement of items whose maintenance cost varies with time.
- 8 Define Two Person Zero Sum Game (TPZSG).
- 9 State the assumptions in sequencing problems involving processing of n jobs on two machines.
- 10 Write Kendall's notation for representing queuing models and mention the terms involved in it.

PART – B

Note: Answer any three questions.

(3x18 = 54 Marks)

- 11 Solve the following problem using the simplex method.

$$\text{Maximize } Z = 3x_1 + 2x_2 + 5x_3$$

Subject to constraints

$$x_1 + 2x_2 + x_3 \leq 430,$$

$$3x_1 + 2x_3 \leq 460,$$

$$x_1 + 4x_2 \leq 420$$

$$x_1, x_2, x_3 \geq 0$$

- 12 Solve the dual of the given problem:

$$\text{Minimize } Z = 12x_1 + 26x_2 + 80x_3$$

Subject to constraints

$$2x_1 + 6x_2 + 5x_3 \geq 4,$$

$$4x_1 + 2x_2 + x_3 \geq 10,$$

$$x_1 + 2x_2 + 2x_3 \geq 6$$

$$x_1, x_2, x_3 \geq 0$$

- 13 National oil company has three refineries R_1, R_2, R_3 and four depots D_1, D_2, D_3, D_4 . The capacity of each refinery, transportation costs in Rs. ton and requirement at each depot are given in the following table. Determine the optimum allocation of output.

	D ₁	D ₂	D ₃	D ₄	Capacity (tons)
R ₁	5	7	13	10	700
R ₂	8	6	14	13	400
R ₃	12	10	9	11	800
Requirement (tons)	300	600	700	400	

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- 14 A computer contains 10,000 resistors. When any resistor fails, it is replaced. The cost of replacing a resistor individually is Rs. 10 only. If all the resistors are replaced at a time, the cost of resistor would be reduced to Rs. 3.50. The percent surviving by the end of month t is shown below.

Month (t)	0	1	2	3	4	5	6
Percent surviving by the end of the month	100	97	90	70	30	15	0

What is the optimum replacement plan?

- 15 Find the sequence for the following eight jobs as shown in the table given below that will minimize the total elapsed time for the completion of all jobs. Each job is processed in the order of C-A-B. Calculate the idle time.

Job Machine	1	2	3	4	5	6	7	8
A	4	6	3	4	5	3	6	2
B	8	10	7	8	11	8	9	13
C	5	6	2	3	4	9	15	11

- 16 A super market has a single cashier during the peak hours customers arrive at rate of 20 customers per hour. The average number of customers that can be processed by the cashier is 24 per hour
Calculate :
- The probability of the, that the cashier is Idle.
 - The average number of customers in the Queuing system.
 - The average time a customer spends in the system.
 - The average number of customers in the Queue.
 - The average time a customer spends in the Queue waiting for the service.
- 17 (a) Distinguish between the transportation model and the assignment model.
(b) Write short notes on Dominance rules in game theory.
(c) Define a queue and explain the various queue disciplines.

FACULTY OF ENGINEERING**B.E. 4/4 (CSE) I-Semester (Backlog) Examination, October 2020****Subject : Principles & Applications of Embedded Systems****Time : 2 hours****Max. Marks : 75****PART – A****Note: Answer any seven questions.****(7x3 = 21 Marks)**

- 1 List the probability mechanisms of ISA?
- 2 What are Traps and Supervisor modes?
- 3 What are the reasons for maintaining 2 separate memory for program & data in Harvard Architecture?
- 4 Contrast the differences between Interrupts driven I/o over Busy-wait – I/o
- 5 What is SoL? What is the key rate of in Embedded computers.
- 6 List the differences between task schedules & resource monitoring.
- 7 What is the use of EDF algorithms in E.S?
- 8 What are the advantages and disadvantages of multiprocessor systems?
- 9 What is usage of ISR?
- 10 Differences between Linker and Locator? List it?

PART – B**Note: Answer any three questions.****(3x18 = 54 Marks)**

- 11 a) Describe the challenges of Embedded Systems?
b) What are the details for requirements, specifications and design process of GPS?
- 12 a) Explain an I/o interfacing for copying characters from Input to output with interrupts and buffers.
b) Explain how concurrency is achieved during DMA controller process.
- 13 Consider tasks 'Bali-A' and 'Bali-B' are an interrupt service routine (ISR) which shares the variable X. Assume the frequent problems occurs while data sharing and give the solutions.
- 14 a) Illustrate the various categories of Multiprocessor Architecture with neat figure.
b) Explain the working of priority based scheduling with a suitable example.
- 15 a) Explain the rules to be followed by an Interrupt in RTOS environment with a suitable example?
b) Explain about ROM emulator with neat diagram?
- 16 a) Illustrate the memory organization of ARM & SHARC processors.
b) Explain the architecture of shared memory multiprocessor with an example?
- 17 Write a short notes on any two
 - a) Addressing modes at ARM processors.
 - b) Usage of data structures queue, stacks in Embedded system
 - c) Software only Monitors.

FACULTY OF ENGINEERING**B.E. 4/4 (ECE) I-Semester (Backlog) Examination, October 2020****Subject: Embedded Systems (Elective-II)****Time: 2 Hours****Max. Marks: 75****PART – A****Note: Answer any seven questions.****(7x3 = 21 Marks)**

- 1 Give the classification of embedded systems.
- 2 Differentiate between a soft and hard real time constraint.
- 3 Write any three differences between ARM7-core and ARM9-core.
- 4 What is a pipeline hazard?
- 5 Mention any two important advantages of I2C protocol.
- 6 Explain the advantages of wireless devices.
- 7 What is the need for cross-compiler and cross-assembler in the design of embedded systems?
- 8 What is the acronym of JTAG? How this port is used in embedded design?
- 9 Mention the techniques available to port the embedded application into actual target hardware.
- 10 Describe the performance accelerating methods in the embedded system design.

PART – B**Note: Answer any three questions.****(3x18 = 54 Marks)**

- 11 a) Define design metrics in embedded systems. What are the constraints and challenges of embedded system design.
b) With a neat block diagram, explain the architecture of an embedded processor (SoC).
- 12 a) Explain operating modes of ARM processor and the usage of registers in each mode.
b) What is Thumb mode? Mention any four important advantages of it.
- 13 a) What is CAN protocol? Mention its frame, advantages and applications.
b) Describe the various Internet enabled system network protocols.
- 14 With the help of a flow chart and reference case study, explain in detail about the Hardware Software Co-design of Embedded System product.
- 15 a) What is an Instruction set simulator? What are its advantages and shortcomings?
b) Describe any case study of embedded system design for communication.
- 16 a) What is the purpose of Linker/Locators for embedded software? Explain.
b) Explain about Design Cycle in the development phase for an Embedded System.
- 17 Write any Two of the following
 - (a) ARM 3-Stage pipeline architecture
 - (b) Hardware components of Embedded systems.
 - (c) Laboratory tools for debugging techniques

FACULTY OF ENGINEERING**B.E. 4/4 (ECE) I – Semester (Backlog) Examination, October 2020****Subject: System Automation & Control (Elective – II)****Time: 2 Hours****Max.Marks: 75****PART – A****Note: Answer any seven questions.****(7x3 = 21 Marks)**

- 1 Explain hysteresis error
- 2 Explain transient response of a system
- 3 State the sampling theorem
- 4 Give the block diagram of a sensor system
- 5 Why are mathematical models used?
- 6 Give the describing equation and energy stores / dissipated in the spring and dashpot of the mechanical system building blocks
- 7 Differentiate between natural and forced response
- 8 $G_1(s) = 1/s$, $G_2(s) = 4/s(s+1)$ and $H(s) = K$. Find the overall transfer function for a negative feedback system.
- 9 Draw the ladder diagram for NAND and XOR
- 10 What do you mean by work-cell control interlock?

PART – B**Note: Answer any three questions.****(3x18 = 54 Marks)**

- 11 Explain in detail the role of automation in industry.
- 12 a) Explain data acquisition and signal conditioning using appropriate diagrams
b) Explain the operation of an ADC. Elaborate using Flash ADC.
- 13 Explain in detail the fluid system model and their building blocks.
- 14 Using suitable block diagrams explain in detail the architecture and pin configuration of a microcontroller.
- 15 a) Explain in detail the components of a motion control system.
b) Explain the motion I/O in a motion control system.
- 16 What are the various methods for the measurement of pressure?
- 17 Explain any two of the following:
 - a) I/O processing, programming and selection of PLC
 - b) Measurement of force and torque
 - c) Translational-rotational system.

FACULTY OF ENGINEERING

BE 4/4 (ECE) I-Semester (Backlog) Examination, October 2020

Subject: Internet of Things (Elective-II)

Time : 2 Hours

Max Marks:-75

PART – A

Note: Answer any seven questions.

(7x3 = 21 Marks)

- 1 What are the important components in IOT?
- 2 What is Cloud computing?
- 3 What are the differences between TCP and UDP
- 4 Define Big data
- 5 Write the difference between Open source and closed source?
- 6 Discuss Arduino and Raspberry pi?
- 7 What are the different hazards with respect to battery life in IOT?
- 8 Give two examples of Functions in Python
- 9 What are the advantages of cloud storage.
- 10 What is Skynet IOT messaging platform?

PART – B

Note: Answer any three questions.

(3x18 = 54 Marks)

- 11 a) Write a short note on Smart energy system.
b) What are the properties of Autonomic IOT systems
- 12 a) Draw the TCP/IP Protocol suite structure and explain the function of different layers.
b) What is the role of Big Data with respect to Machine Learning?
- 13 a) Write briefly about the Energy harvesting system.
b) What are the different types of Sensors and Actuators in IOT?
- 14 a) What is an API? What are the characteristics of good API?
b) What are the techniques of writing the embedded code?
- 15 a) What are the different ethical issues in IOT?
b) Write a short note on data analytics and its role in IOT.
- 16 Give the Complete case study on IoT System for weather monitoring.
- 17 Write a short note:
 - a) Smart city
 - b) Business model for IoT Product manufacturing
 - c) 3D printing

FACULTY OF ENGINEERING

B. E. 4/4 (IT) I – Semester (Backlog) Examination, October 2020

Subject: Wireless and Mobile Communications (Elective – II)

Time: 2 hours

Max. Marks: 75

PART – A

Note: Answer any seven questions.

(7x3 = 21 Marks)

1. Name the two channel assignment strategies and explain briefly.
2. What is meant by trunking & Grade of Service?
3. Define the following: Reflection, Diffraction & Scatter.
4. Calculate the Brewster angle for a wave impinging on ground having a permittivity of $\epsilon_r = 6$.
5. Differentiate DSSS & FHSS.
6. Distinguish power efficiency & Spectral efficiency.
7. Draw the frame structure of GSM.
8. What is meant by Tunneling & Encapsulation?
9. State the features of FDMA.
10. Compare snooping TCP & Traditional TCP.

PART – B

Note: Answer any three questions.

(3x18 = 54 Marks)

11. Explain the three techniques to improve the coverage and capacity in cellular networks.
12. Derive the Free space propagation model.
13. (a) Define FHSS and explain FHSS TX & RX in detail with the help of block diagrams.
(b) What are the advantages of digital modulation?
14. Draw & explain the architecture of GSM.
15. (a) Explain IP packet delivery.
(b) Discuss about DHCP.
16. (a) Compare TDMA & CDMA.
(b) Distinguish fixed channel assignment & dynamic channel assignment strategies.
17. Write notes on
 - (a) Signal penetration into buildings.
 - (b) Selective retransmission & Transaction oriented TCP.

FACULTY OF ENGINEERING**B. E. (Civil) VII – Semester (CBCS) (Supplementary) Examination, October 2020****Subject: Foundation Engineering****Time: 2 hours****Max. Marks: 70****PART – A****Note: Answer any five questions.****(5x2 = 10 Marks)**

1. Explain the basic principles involved in development of Newmark's Chart.
2. Explain Displacement and Non displacement Piles.
3. When and where do you prefer a Pneumatic Caisson?
4. Differentiate between Safe bearing capacity and allowable bearing pressure.
5. Classify Piles on Mode of transfer of loads?
6. What is the use of Cyclic Pile Load Test?
7. State the reasons for development of negative skin friction.
8. What is resonance and explain its significance in Machine foundations.
9. Explain clearly the effect of Ground water table on Safe Bearing capacity.
10. Explain what is proportioning of Footings.

PART – B**Note: Answer any four questions.****(4x15 = 60 Marks)**

11. (a) Critically discuss the concept of pressure bulb and its uses in soil engineering.
(b) A Rectangular Area of 3.0m x 5.0m carries a UDL of 100 kN/m² on the surface. Estimate the vertical stress at a depth of 5m vertically below the Corner of the loaded area.
12. (a) Derive Terzaghi's bearing capacity equation duly stating the assumptions.
(b) Determine the ultimate bearing capacity of a strip footing, 1.5m wide with its base at a depth of 1.0m from GL. Resting on sand stratum and if the ground water table is at a depth of 0.50m below the base of the footing. Take $\gamma_d = 17 \text{ kN/m}^3$, $\phi' = 38^\circ$, $c' = 0$, $\gamma_{\text{sat}} = 20 \text{ kN/m}^3$, $N_q = 60$ and $N_\gamma = 75$ (Use Terzaghi's Theory).
13. (a) Explain the various Types and classifications of Piles.
(b) A group 9 Piles, 12m long and 250mm dia is to be arranged in a square pattern in a clay deposit which is having an unconfined compressive strength of 60 kN/m². Find out the centre to centre spacing of piles for a group efficiency of 1.0. Neglect the End bearing at the tip of piles.
14. (a) Draw the various components of Well foundations with a neat sketch and discuss their functions in detail.
(b) Explain the process of underpinning and discuss the Methods of underpinning.
15. (a) Explain the types of Machine Foundations with neat Sketches.
(b) Discuss the Classification, Functions and application of Geo-synthetics in Civil Engineering.
16. (a) Write a note on Collection, Transportation and storage of soil samples.
(b) Sketch the typical section of a Braced cut and note the components. Also draw different types of apparent pressure diagrams used in Design of Braced Cuts in various soils?
17. Write Short Notes on the Following
 - (a) Electro Osmosis.
 - (b) Bore – Log.

FACULTY OF ENGINEERING
B.E (ECE) VII-Semester (CBCS) (Suppl.) Examination, October 2020

Subject : Mobile and Cellular Communication (Elective-II)

Time: 2 Hours

Max. Marks:70

PART – A

Note: Answer any five questions.

(5x2 = 10 Marks)

1. What are the functions of MSC in a GSM system.
2. Explain hard handoff and soft handoff
3. Define Doppler spread and coherent time?
4. Explain partition losses (same floor) for indoor propagation model.
5. How is self Jamming effect generated in CDMA?
6. If a normal GSM time slot consists of 6 trailing bits 8.25 guard bits, 26 training bits, and 2 bursts of 58 bits of data find the frame efficiency.
7. What is Vulnerable period V_p in packet radio protocols.
8. List the features of CDMA 2000.
9. Compare 1G, 2G and 2.5G.
10. Write on Future Public Land Mobile Telephone System.

PART – B

Note: Answer any four questions.

(4x15 = 60 Marks)

11. a) Discuss how the “hand-off” strategies employed in the design of a mobile communication system.
 b) Express the signal-to-interference ratio in terms of co-channel re-use ratio for a cellular system.
12. a) Derive an expression for power received at a distance ‘d’ from transmitter using free space propagation model. Modify it considering reflection earth surface.
 b) Explain how Okumara path loss model is used for mobile application.
13. a) Explain different types of Spread Spectrum multiple access techniques.
 b) Compare SDMA and FHMA methods.
14. a) Explain forward channel architecture of CDMA mobile with a neat sketch.
 b) Discuss type of control and traffic Channels in GSM system.
15. a) How does slotted ALOHA improve throughput as compared with pure ALOHA?
 b) Enumerate features of 5G mobile systems.
16. a) Discuss the factors for improving the coverage of cellular system.
 b) For a 50 W transmitter power, express the transmit power in dBm. What is Power received at a distance of 100 meters in dBm for a frequency of 900 Mhz and unity gain of antenna.
17. Write Short notes on any two of the following
 - a. Reservation protocols.
 - b. CSMA in packet protocols.
 - c. WLAN standards and application.

FACULTY OF ENGINEERING
B.E. (ECE) VII-Semester (CBCS)(Suppl.) Examination, October 2020

Subject : Speech Signal Processing (Elective – II)

Time : 2 Hours

Max. Marks: 70

PART – A

Note: Answer any five questions.

(5x2 = 10 Marks)

- 1 What are speech articulators?
- 2 How nasal sounds are produced? Explain .
- 3 What is a spectrogram?
- 4 Specify the difficulties in end point detection of speech signal ?
- 5 Give the block diagram of a channel vocoder analyzer/synthesizer.
- 6 Mention few applications of ASR systems.
- 7 What is speech synthesis by rule?
- 8 What are terminal analog synthesizers?
- 9 What is the advantage of transforming the signal in speech coding?
- 10 List the applications of speech processing.

PART – B

Note: Answer any four questions.

(4x15 = 60 Marks)

- 11 a. With a schematic diagram of Vocal apparatus, explain the mechanism of speech production.
 b. What are the types of phonemes in American English? Specify with at least one example in each.
- 12 a. With related equations explain the terms i) Short time Energy ii) Short time average magnitude iii) Short time zero crossing.
 b. Explain zero crossing rate method used to classify the speech signals into voiced and unvoiced signals.
- 13 a. Explain pitch period extraction using auto-correlation method.
 b. Explain in detail about vector quantization.
14. a. With neat block diagrams explain ADPCM .
 b. Define cepstrum .Explain cepstral analysis in detail.
15. a. With relavant diagrams explain Flanagan's vocal cord model.
 b. Draw the block diagram of a parallel formant synthesizer and explain.
16. Write down the DTW algorithm and use it to compute the difference between the one-dimensional patterns $P_1(n) = \{ 1, 6, 9, 6, 5 \}$ and $P_2(m) = \{ 2, 6, 8, 9, 8, 3 \}$. Determine also the time-alignment paths?
17. Write short notes on
 - a. Linear predictive decoder.
 - b. Elements of HMM.

FACULTY OF ENGINEERING

B.E. VII-Semester (CBCS) (M/P/AE) (Suppl.) Examination, October 2020

Subject : Managerial Economics and Accountancy

Time : 2 hours

Max. Marks : 70

PART – A

Note: Answer any five questions.

(5x2 = 10 Marks)

1. Explain scarcity definition of economics
2. Briefly explain the law of demand.
3. Define production function.
4. State the law of diminishing marginal utility.
5. What is petty cash book?
6. What is journal and ledger?
7. Explain the concept of discounting principle.
8. What is fixed capital and working capital?
9. What is profitability index?
10. Explain briefly about Money measurement concept.

PART – B

Note: Answer any four questions.

(4x15 = 60 Marks)

- 11 Define managerial economics and its relation to other science
- 12 Explain the price-output determination under perfect competition.
- 13 Explain the internal and external economies of scale.
- 14 Write about accounting concepts and conventions.
- 15 Calculate
 - a) Profit volume ratio
 - b) Break-even point (in Rs.)
 - c) Profit if sales were Rs.2,50,000.
 - d) Sales required to get a profit of Rs.70,000.
Sales Rs.2,00,000, variable cost Rs.1,50,000 and fixed cost Rs15,000.
- 16 The management of a company is considering for purchase of two new machines X and Y, each costing Rs.5,00,000 and having a life of 5 years, Cash flows after tax are expected to be as follows

Year	1	2	3	4	5
Cash flow-X	150000	200000	250000	150000	100000
Cash flow-Y	50000	150000	200000	300000	200000

A discount rate of 10% is to be used. You are asked to advice as to which machine would be more profitable under the **a)** Payback period and **b)** Net Present Value.

17 The following is the trial balance of Vivek traders as on 31-12-2010.

Debit balances	Rs.	Credit balances	Rs.
Cash	2500	Capital	105000
Stock(1-1-2010)	15000	Creditors	11000
Bills receivable	6000	Bills payable	7000
Purchases	56800	Bank overdraft	2500
Furniture	8000	Reserve for bad and doubtful debts	1000
Wages	6800	Sales	90500
Salaries	26800	Discount received	2000
Rent	3500		
Discount allowed	2000		
Debtors	26000		
Drawings	10000		
Machinery	45000		
Telephone charges	3600		
Carriage inwards	7000		
Total	219000		219000

Other Information:

- (i) Closing stock Rs.20,000.
- (ii) Rent Outstanding Rs.1,000.
- (iii) Provide 10% depreciation on furniture and machinery.

You are required to prepare final accounts.
