Q.26 Explain the elements of process control with diagram. (CO-3)
Q.27 Explain that the maximum power is contained in the carrier of amplitude modulated signal. (CO-5)
Q.28 Define modulation. What is the need of modulation? (CO-2)
Q.29 Compare analog and digital modulation. (CO-2)
Q.30 Classify the AM transmitter on the basis of type of service involved. (CO-4)
Q.31 Explain Vestigial Side Band system of modulation. (CO-4)
Q.32 Explain ASK modulator with the help of its waveforms. (CO-5)
Q.33 Draw block diagram of FHSS system and explain it. (CO-6)
Q.34 Explain the frequency discrimination method of SSBSC generation. (CO-5)
Q.35 Define the terms sensitivity and selectivity of receivers. (CO-4)

Section-D

Note: Long answer questions. Attempt any two questions out of three Questions. (2x10=20)

Q.36 Explain the principle of operation and constructional details of solenoid value. (CO-3)
Q.37 Draw and explain the block diagram of FM super heterodyne radio receiver. (CO-5)
Q.38 What are different digital modulation techniques? Also compare them. (CO-6)

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Sem- 5 Mechatronics
Sub : Process Control & Data Communication

Time : 3 Hrs. **M.M. : 100**

SECTION-A

Note: Multiple Choice Questions. All Questions are compulsory. (10x1=10)

Q.1 Control system in which the output has no effect on the control action of the input signal is knows as: (CO-1)
a) Closed loop control system
b) Open loop control system
c) Automatic control system
d) Optimal control system

Q.2 _____ are usually difficult to treat mathematically and there are no general methods available for solving a wide class of these systems: (CO-2)
a) None linear control systems
b) Time invariant control systems
c) Time varying control systems
d) Linear control systems

Q.3 The function of this elements is to manipulate the signal presented to it preserving the original nature of the signal. (CO-1)
a) Data presentation element
b) Variable conversion element
c) Primary sensing element
d) Variable manipulation element

Q.4 Radar tracking systems, missile tracking systems

and machine tool position control are applications of _____. (CO-3)

a) AC Closed loop control system
b) DC closed loop control system
c) A position control system
d) Automatic tank level control system

Q.5 The controller required to handle fasts process load changes is: (CO-4)

a) PD controller b) PI controller
c) PID controller d) None of the above

Q.6 The process of superimposing a single on the carrier wave is called: (CO-1)

a) Transmission b) Communication
c) Modulation d) Demodulation

Q.7 In a modulation system, if modulating frequency is doubled, the modulation index also becomes double, the system is (CO-2)

a) FM b) AM
c) PM d) None of these

Q.8 The useful power in amplitude modulation is carried by_____. (CO-2)

a) Side bands b) Carriers
c) Signals d) Both A & C

Q.9 In _____ shift keying the carrier frequency is shifted in steps corresponding to the feels of the digital modulating signal. (CO-3)

a) Amplitude b) Frequency
c) Phase d) Carrier

Q.10 In _____ spread spectrum the carrier hop's randomly from one frequency to another frequency. (CO-4)

a) Frequency hopping
b) Direct sequence
c) Both A & b
d) None of these

Section-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 Define control system. (CO-1)
Q.12 Define LTI control system. (CO-1)
Q.13 Write the example of open loop control system. (CO-2)
Q.14 Write is an offset in control system? (CO-2)
Q.15 what is a feed-forward control? (CO-4)
Q.16 DSB-SC stands for? (CO-2)
Q.17 Modulation index = ____/_____. (CO-3)
Q.18 Write one advantage of digital modulation. (CO-4)
Q.19 QPSK stands for? (CO-2)
Q.20 Which oscillator is used in transmitter? (CO-5)

Section-C

Note: Short answer type Question. Attempt any Twelve questions out of Fifteen Questions. (12x5=60)

Q.21 Write comparison between time varying and time invariant system. (CO-2)
Q.22 Write short note on continuous and discrete time control systems. (CO-1)
Q.23 Explain proportional controller with suitable diagram. (CO-1)
Q.24 Explain the response of proportional derivative to step test signal. (CO-3)
Q.25 Explain the principle of operation and construction of piston operated valve. (CO-5)