M.Sc.(Physics) (CBCS Pattern) Sem III

PSCPHYT11-4 - Applied Electronics-I

P. Pages : 2 **GUG/S/18/10289**

Time : Three Hours * 2 8 4 7 * Max. Marks : 80

Either:

1. a) Why does operational amplifier require dual power supply? Explain the use of operational amplifier as summing amplifier. **8**

b) Explain the terms: **8**

i) CMRR ii) Frequency response

iii) Input offset voltage iv) Output offset voltage

OR

e) State Barkhausen criterion for oscillations. Draw a circuit diagram for phase shift oscillator, explain its working and obtain the frequency of the oscillator. **8**

f) What is multivibrator? Explain monostable and astable multivibrators with their time diagrams. **8**

Either:

2. a) Explain the advantages and disadvantages of microwave transmission. Discuss the atmospheric effect on the propagation of microwaves. **8**

b) What are the advantages of Gunn diodes over Klystron used to emit microwaves? Discuss the losses of microwave transmission in free space. **8**

OR

e) What are modulation and demodulation. Discuss amplitude modulation and generation of amplitude modulated waves. **8**

f) What is SSB modulation? Describe the generation and detection of SSB waves. **8**

Either:

3. a) Explain the need of DAC and ADC. Draw the block diagram of successive approximation A/D converter and explain its working. **8**

b) Give the difference between multiplexer and demultiplexer. Explain the working of 1:4 demultiplexer with suitable diagram. **8**

OR

e) Draw the pin diagram of IC8085 microprocessor and label all pins clearly. **8**

f) What are read only memory and random access memory? Explain their applications. (any three of each). **8**

Either:

4. a) What are magnetrons? Explain the principle of operation of magnetrons. **8**

b) Explain the term 'Klystron' used as microwave device. Discuss the basic principle of two cavity Klystrons and reflex Klystrons. **8**

OR

e) What are wave modes? Explain the working of Helix travelling wave tubes for microwave generation. **8**

f) What is gunn effect? Explain the principle of operation of gunn diode generally used for emission of microwaves. Give the difference between IMPATT and TRAPATT diodes. **8**

5. All questions are compulsory.

a) Explain phase shift oscillator with diagram. **4**

b) Discuss fading sources. **4**

c) Explain assembly language programmes. **4**

d) Discuss velocity modulation used in microwave generation. **4**

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