

M.Sc.(Physics) (CBCS Pattern) Semester-III
PSCPHYT11-4 - Core Elective-1.4 Paper-II - Applied Electronics-I

P. Pages : 2

Time : Three Hours



GUG/W/24/11301

Max. Marks : 80

Either:

1. a) Explain the block diagram of the operational amplifier. 8
- b) Discuss the operational amplifier as an inverting amplifier. Derive the expression for its output. 8

OR

- e) State Barkhausen criterion for oscillation. Explain the principle and the working of the phase shift oscillator with a suitable diagram. 8
- f) What is multivibrator? Explain monostable and astable multivibrators with their time diagrams. 8

Either:

2. a) Explain the amplitude modulation with waveform. Derive the expression for its modulation index. 8
- b) What is SSB modulation? Describe the generation and detection of SSB Waves. 8

OR

- e) Discuss the losses in free space propagation of microwaves. 8
- f) What is DSBSC modulation? Discuss the generation and coherent detection of DSBSC waves. 8

Either:

3. a) Explain in details the architecture of the 8085 microprocessor. 8
- b) Discuss the demultiplexing of the address data bus with a suitable diagram. 8

OR

- e) Give the differences between multiplexer and demultiplexer. Explain the working of 1:4 demultiplexer. 8
- f) Explain the working of R-2R ladder D/A converter with suitable diagram. 8

Either:

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| 4. | a) | Explain the construction and working of two cavity clystron. | 8 |
| | b) | What is gunn effect? Discuss the operating principle of the gunn diode. | 8 |

OR

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| | e) | Discuss the working of helix travelling wave tubes. | 8 |
| | f) | Write a note on IMPATT and TRAPATT diode. | 8 |
| 5. | Attempt all the followings: | | |
| | a) | Explain CMRR in Op-Amp. | 4 |
| | b) | State the advantages and disadvantages of microwave transmission. | 4 |
| | c) | Differentiate between RAM and ROM in short. | 4 |
| | d) | Explain the concept of 'Velocity modulation'. | 4 |
