

**DECVI/DELVI/DCSVI/ACECVI/ACELVI/
ACSVI**

Term-End Examination

December, 2013

BIEL-027 : APPLIED ELECTRONICS

Time : 3 Hours

Maximum Marks : 70

Note : (i) *First question is compulsory and attempt any four out of remaining seven questions.*

(ii) *Use of scientific calculator is allowed.*

1. (a) A common drain FET amplifier provides _____ Voltage gain and _____ input impedance. **2x7=14**
- (b) The amplification factor (μ) of FET is
- (i) $\mu = g_{mrd}$ (ii) $\mu = g_m / r_d$
 (iii) $\mu = 1$ (iv) $\mu = 2$
- (c) By negative feedback , the gain of a circuit _____.
- (d) With negative feedback for LPF , the upper 3-dB cut off frequency
- (i) increases to $f_{HF} = (1 + T) f_H$
 (ii) decreases to $f_{HF} = f_H / (1 + T)$
 (iii) Remain same
 (iv) Can change to any value
- (e) The minimum value of h_{fe} for a transistor in BJT phase shift oscillator is _____ for sustained oscillation.

- (f) In practical oscillators :
- (i) $A\beta = 1$ (ii) $A\beta > 1$
 (iii) $A\beta < 1$ (iv) $A\beta = 0$
- (g) A class AB amplifier stage is biased at _____ currents so the _____ is virtually eliminated.
2. (a) Why current gain is not computed in FET amplifiers ? 6
- (b) If two FET's which are not identical and are connected in parallel, show that 8
- $$\frac{1}{rd} = \frac{1}{rd_1} + \frac{1}{rd_2} \text{ and } \mu = \frac{\mu_1 rd_2 + \mu_2 rd_1}{rd_1 + rd_2}$$
3. (a) How does negative feedback affect the sensitivity of amplifier if amplifier parameters change ? 6
- (b) A negative feedback is used to reduce the noise from the amplifier by 80% 8
- (i) What must be the percentage of negative feedback to accomplished this, if the input voltage gain is 100 ?
- (ii) Also find the value of voltage gain with feedback.
4. (a) What is a tuned amplifier ? State its use. 6
- (b) Explain working principle of RC- phase shift oscillator and derive the formula for output frequency. 8

- | | | |
|----|---|-----------------|
| 5. | (a) Distinguish between class - A , class - B , class - C amplifiers. | 6 |
| | (b) Explain working principle of class - B push pull amplifier with the help of circuit diagram, input and output wave forms. | 8 |
| 6. | (a) Explain working principle of schmitt trigger with help of Hysteresis loop. | 7 |
| | (b) Explain working of Astable multivibrator with the help of circuit diagram and wave forms. | 7 |
| 7. | (a) Explain the important steps for trouble shooting and testing of transistorised sweep generator. | 8 |
| | (b) What is meant by linear and non - linear wave shaping ? | 6 |
| 8. | Attempt any four of the followings : | 3.5x4=14 |
| | (a) Visual testing | |
| | (b) Active testing | |
| | (c) Hartley oscillator | |
| | (d) Clamper oscillator | |
| | (e) Combinational clipper circuit | |
| | (f) Frequency stability in oscillators | |
-