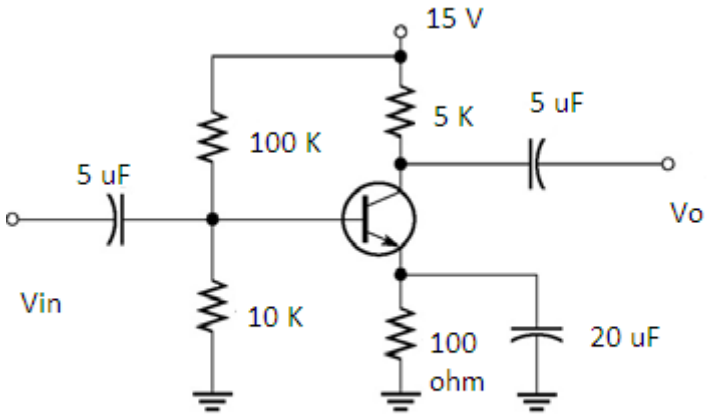
Time: 3 Hours Max. Marks: 80

N.B. (1) Question No. 1 is compulsory.
(2) Answer any three from remaining five questions.
(3) Figures to the right indicate full marks
(4) Assume the data if it is necessary.

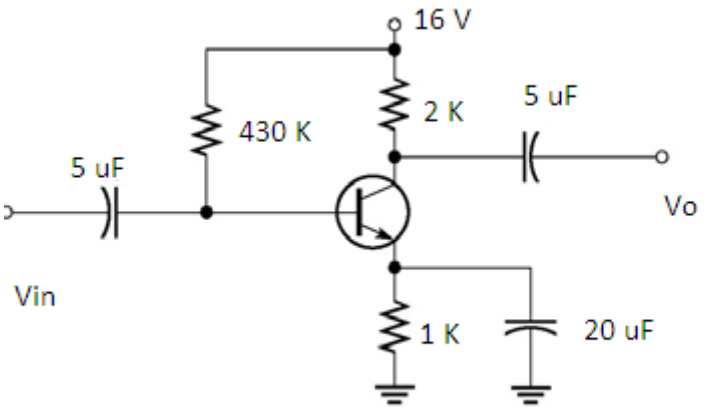
Que-1	Solve **any four**	Marks
a	Explain the working of Photodiode.	5
b	How BJT amplifies weak signal, explain.	5
c	Compare depletion and enhancement type nMOSFET	5
d	Explain the different types of coupling.	5
e	Compare Differential amplifier with normal CE amplifier.	5
f	State the condition of sustained oscillations in oscillator circuit.	5
Que-2a	What is the need of Filters in power supply, explain LC filter with neat diagram, waveform and ripple factor equation.	10
Que-2b	Determine Av, Ai, Ri and Ro for given BJT amplifier circuit using hybrid model	10



Given : hie = 1 k ohm, hfe = 50, Neglect hre and hoe

Que-3a	Draw Voltage divider bias circuit for JFET and derive equation of I_{Dq} and V_{DSq}	10
Que-3b	State the advantages of Negative feedback in amplifier, Prove that Input resistance increases in voltage series negative feedback amplifier.	10
Que-4a	Derive equation of A_{dm}, A_{cm} and CMRR for Dual input Balanced output Differential amplifier	10
Que-4b	Explain working of Wien Bridge oscillator with the help of diagram.	10

Que-5a For the given circuit find I_{Bq}, I_{Cq}, V_{CEq}, V_C and V_E, given $\beta = 75$ 10



Que-5b Explain in brief different amplifier coupling techniques. 10

Que-6 Write short notes

a	Frequency response of BJT amplifier	5
b	Small signal model of CS (JFET) Amplifier	5
c	Thermal Runaway	5
d	UJT Relaxation oscillator	5
