

Last Date of showing the evaluated answer booklet of Minor Test- I: 28 January, 2017

Paper Name: Industrial Management

Paper Code: MBA-01

Roll No. 2015041903

B. Tech CE/EC/EE/ME
(SEM – IV) Even Semester
Minor Test -I (2016-2017)

Max. Marks: 15

Max. Time: 01 Hrs.

Attempt all questions.

Q.1.

Write a short note on the parameters that affect the location of a plant in a foreign country. How will you decide the location of a mini steel plant in India? (03)

Q.2.

a) Name the factor least important to consider when selecting a location for a new furniture store. What is an ideal location? (03)

b) Distinguish between line layout and process layout. State its advantages and disadvantages in brief. (03)

Q.3.

a) What is systems approach of management? Discuss the contribution of Systems Approach to the study of management. (03)

b) "To manage is to forecast and plan, to organize, to command, to coordinate and to control". Comment on this statement and briefly discuss the applications of industrial management. (03)

**Madan Mohan Malaviya University of Technology, Gorakhpur
Centre for Management Studies**

Roll No.

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B.Tech (ECE- 4th SEM) Even Semester

Minor Test (1) 2016-17

Subject Code: MBA 03

Subject Name: Public Administration

Time: 1 Hour

Marks: 15

Note: Attempt All Questions. All carry equal marks.

1. Public Administration and Private Administration are the two sides of the same coin." Comment.
- 2(a) What is Administration? Distinguish between management and administration
- 2(b) What are the Powers of President in India. Explain the emergency powers of the president of India.
- 3(a). What is Public Administration? Discuss the evolution of Public Administration in detail.
- 3(b) Discuss the role of Public Administration in Politic Socio-economic development.

B. Tech (ECE)
Semester -IV (Even Semester)
Minor Test-I, 2016-2017

Roll No.

2015041003

Subject: EM Field Theory (BEC 14)

Time: 1 hrs

MM: 15

Note: Attempt all questions.

1. Define the term vector field and scalar field. Calculate the electric field due to an infinite sheet of charge in the x-y plane with uniform charge density ρ_s C/m². 3
2. (a) Discuss Gauss Law of electrostatics. Given that $D = z \rho \cos^2\phi a_z$ C/m², Calculate the charge density at $(1, \pi/4, 3)$ and the total charge enclosed by the cylinder of radius 1m with $-2 \leq z \leq 2$ m. 3
- (b) State clearly the difference between conduction and convection current. Also derive point form of Ohm's law. 3
3. (a) Derive the equation of continuity and relaxation time . 3
- (b) Two extensive homogeneous isotropic dielectric meet on plane $z = 0$. For $z \geq 0$ $\epsilon_{r1} = 4$ and for $z < 0$ $\epsilon_{r2} = 3$. A uniform electric field $\mathbf{E}_1 = 5 a_x - 2 a_y + 3 a_z$ kV/m exists for $z \geq 0$. Find \mathbf{E}_2 for $z \leq 0$. 3

The last date of showing answer sheet is 27.01.2017

B-Tech. II (Semester - 4) roll no.

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Test - 1

Engineering mathematics IV (BAS-23)

Time : 1 hour

Note : Attempt all questions. M.M. 15

Q.1 Find Laplace transform of $t \int_0^t \frac{e^{-t} \sin t}{t} dt$. (3)

Q.2 (a) Find inverse Laplace transform of $\frac{s}{s^4 + 4a^4}$. (3)

(b) Solve $(D^3 - 3D^2 + 3D - 1)x = t^2 e^t$, where $x_0 = 1, x_1 = 0, x_2 = -2$. (3)

Q.3 (a) Find Laplace transform of f(t) using unit-step function. (3)

$$f(t) = 0, 0 < t < 1$$

$$= (t - 1), 1 < t < 2$$

$$= 1, t > 2.$$

(b) Solve the following equations (3)

$$\frac{dx}{dt} - y = e^t ; x(0) = 1$$

$$\frac{dy}{dt} + x = \sin t ; y(0) = 0.$$

Roll No.								
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**B.Tech (Sem-IV) Even Semester
Minor Test-I (ECE) (Session 2016-17)
Subject: Solid State Devices & Circuits
Paper Code: BEC-15**

TIME: - 1 Hours

M.M. 10

NOTE: - Attempt all questions.

- 1. Differentiate between element and compound semiconductors. Also draw the energy band diagrams for p-type and n-type semiconductors. (2)
- 2. (a) A sample of Si at a given temperature T in intrinsic condition has a resistivity of $25 \times 10^4 \Omega\text{-cm}$. The sample is now doped to the extent of 4×10^{10} donor atoms/cm³ and 10^{10} acceptor atom/cm³. Find the total conduction current density if an electric field of 4V/cm is applied across the given sample. Given that $\mu_n = 1250 \text{ cm}^3/\text{V-sec}$, $\mu_p = 475 \text{ cm}^3/\text{V-sec}$ at the given temperature. (2)
 - (b) Determine the expression for potential variation in a graded semiconductor. (2)
- 3. (a) Explain the variation of capacitance of a Varactor Diode with Reverse Bias Voltage using characteristic curve. List out the applications of Varactor Diode. (2)
 - (b) Write a short note on Schottky barrier Diode. (2)

Last Date of showing the evaluated answer booklet of Minor Test- II: 1 March, 2017

Paper Name: Industrial Management

Paper Code: MBA-01

Roll No. 2015041643

**B. Tech CE/EC/EE/ME
(SEM – IV) Even Semester
Minor Test -II (2016-2017)**

Max. Marks: 15

Max. Time: 01 Hrs.

Attempt all questions.

Q.1.

What do you understand by time and motion study? Show how their application can increase productivity of labour? (03)

Q.2.

a) How motivation affects behavior? Critically examine Herzberg's theory of motivation.

(03)

b) Examine the role of incentive in an industrial organisation. How does incentives affect people's choices and behavior? (03)

Q.3.

a) Discuss in detail the straight-line method and written down value method of depreciation. Distinguish between the two and give situations where they are useful. (03)

b) Outline the main stages of a Social Cost-Benefit Analysis (SCBA) with reference to a project appraisal with which you are familiar. (03)

B. Tech (ECE)
Semester -IV (Even Semester)
Minor Test-II, 2016-2017

Roll No. 2018041003

Subject: EM Field Theory (BEC 14)

Time: 1 hrs

MM: 15

Note: Attempt all questions.

1. State and Explain Bio Savart Law. Find the magnetic field intensity due to an infinite line current. 3
2. (a) Discuss Ampere's Law. Determine the magnetic field of an infinite sheet of current using Ampere's Law. 3
(b) Given the magnetic vector potential $A = -\rho^2/4 \mathbf{a}_z$ Wb/m, calculate the total magnetic flux crossing the surface $\phi = \pi/2$, $1 \leq \rho \leq 2$ m and $0 \leq z \leq 5$ m. 3
3. (a) Explain Magnetic boundary conditions on the interface between two media. 3
(b) Find the normal component of magnetic field which traversed from medium 1($z \leq 0$) to medium 2 ($z \geq 0$) having $\mu_{r1} = 2.5$ $\mu_{r2} = 4$. Given that $\mathbf{H}_1 = -30 \mathbf{a}_x + 50 \mathbf{a}_y + 70 \mathbf{a}_z$ A/m. 3

Roll No.	2018041003		
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B. Tech 2nd Year
 (Sem. IV) Even Semester
 Minor Test -III(2016-2017)

Subject Code:BEC-13	Subject Name: Signals & Systems
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Time: 1 Hour

Note- Attempt all questions

Maximum Marks: 15

Q.1 Obtain the discrete time Fourier transform of following: $x[n]=a^n u[n]+a^{-n} u[-n-1]$ (3)

Q.2 (a) ~~x(t)~~ has the Fourier Transform as $X(\omega)=\frac{1}{1+\omega^2}$. Write down the Fourier Transform for $x(\frac{3t}{2}-1)$. (3)

(b) (i) Find the Fourier Transform of $x(t)=e^{-at|t|}$

(ii) Evaluate the following integral $\int_{-\infty}^{\infty} \frac{\sin t}{t} dt$ (3)

Q.3 (a) Discuss the conditions for the existence of Fourier Transform. Also write down the properties of the same. (3)

(b) Prove Parseval's theorem for continuous time system. (3)

Madan Mohan Malaviya University of Technology, Gorakhpur
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Roll No.

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B.Tech (ECE- 4th SEM) Even Semester

Minor Test (3) 2016-17

Subject Code: MBA 03

Subject Name: Public Administration

Time: 1 Hour

Marks: 15

Note: Attempt All Questions. All carry equal marks.

1. Define training and describe its objectives in context of improving the effectiveness of public services through training the civil servants.
- 2(a) What do you understand by Financial Administration? Discuss the parliamentary control over financial management.
- 2(b) Describe the organisation and functions of the Union Public Service Commission
- 3(a). Describe the problems and obstacles in the path of recruitment.
- 3(b). What is Personnel Administration? Discuss the objective of Personnel Administration.

The last date of showing answer sheet is 30.03.2017

B-Tech. II (Semester - 4)

roll no.

201504100

Test - 3

Engineering mathematics IV (BAS-23)

Time : 1 hour

M. M. 15

Note : Attempt all questions.

Q.1 Find the z-transform of n^2 and n^2a^n .

Q.2 (a) Find the z-transform of $\cos k \alpha$.

(b) Find the z-transform of $e^{-an} \cos n\theta$.

Q.3 (a) Find the inverse z-transform of $\frac{2z^2 + 3z}{(z+2)(z-3)}$.

(b) Using the z-transform, solve

$$u_{n+2} + 4u_{n+1} + 3u_n = 3^n, \quad u_0 = 0, u_1 = 1.$$

B. Tech (ECE)
Semester -IV (Even Semester)
Minor Test-III, 2016-2017

Roll No.

201541003

Subject: EM Field Theory (BEC 14)

Time: 1 hrs

MM: 15

Note: Attempt all questions.

1. (a) Write down the Maxwell's equations in differential and integral form and also give the physical significance. 3
2. (a) Derive the equations for time varying potentials and hence define the retarded potentials. 3
- (b) Derive the expression for electromagnetic wave propagation in lossless dielectric medium. 3
3. (a) Define Skin depth. Calculate intrinsic impedance, propagation constant and wave velocity for a conducting medium in which $\sigma = 58 \text{ MS/m}$, $\mu_r = 1$, $\epsilon_r = 1$ at a frequency of 100 MHz. 3
- (b) Discuss Poynting theorem and derive the formula for net flow of power from a given volume. 3

Paper Name: Industrial Management

Paper Code: MBA-01

Roll No. 2015041003

**B. Tech CE/EC/EE/ME
(SEM – IV) Even Semester
Minor Test -III (2016-2017)**

Max. Marks: 15

Max. Time: 01 Hrs.

Attempt all questions.

Q.1.

You have been appointed as an Asst. Production Manager in a company. You have asked to design an appropriate production planning and control system for the company. You are required to list the steps involved in designing the production planning and control system.

(03)

Q.2.

a) What do you understand by acceptance sampling? When is it used? Give its advantages and disadvantages. **(03)**

b) Discuss the need, construction and applications of control charts for variables. **(03)**

Q.3.

a) What are the barriers to TQM implementation? How are they overcome? **(03)**

b) What is the position of P.P.C. in a works organisation? Show it with the help of a chart. **(03)**

**Madan Mohan Malaviya University of Technology, Gorakhpur
Centre for Management Studies**

Roll No. **2015041003**

B.Tech (ECE- 4th SEM) Even Semester

Minor Test (2) 2016-17

Subject Code: MBA 03

Subject Name: Public Administration

Time: 1 Hour

Marks: 15

Note: Attempt All Questions. All carry equal marks.

1. What is Communication Network? Discuss the and importance of communication in administration
- 2(a) Explain the importance of hierarchy as a principle of organization
- 2(b) Explain the concept of centralization. In what way does it differ from decentralization?
- 3(a) Define Public Corporation and describe its features.
- 3(b) Critically examine the concept of Organisation and Method (O and M).

The last date of showing answer sheet is 28.02.2017

B-Tech. II (Semester - 4)

ROLL NO.

2018041003

Test - 2

Engineering mathematics IV (BAS-23)

MM 15

Time : 1 hour

Note : Attempt all questions.

Q.1 Find the Fourier cosine transform of e^{-x^2} .

Q.2 (a) Using Fourier integral, prove that

$$\int_0^\infty \frac{w \sin wx}{1+w^2} dw = \frac{\pi}{2} e^{-x}.$$

(b) State and prove convolution theorem for Fourier transform.

Q.3 (a) Find Fourier cosine transform of $\frac{1}{1+x^2}$.

(b) Find the Fourier transform of

$$f(x) = 1 - x^2 \text{ for } |x| \leq 1 \text{ and } f(x) = 0 \text{ for } |x| > 1.$$

Roll No.	2018041003						
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**B.Tech (Sem-IV) Even Semester
Minor Test-II (ECE) (Session 2016-17)
Subject: Solid State Devices & Circuits
Paper Code: BEC-15**

TIME: - 1 Hours

M.M. 10

NOTE: - Attempt all questions.

1. Explain the operation of a Depletion Type-MOSFET with the help of suitable diagrams. Also sketch out its transfer characteristics. (2)
2. (a) Explain biasing with a drain to gate feedback resistor in MOSFET amplifiers. (2)
(b) Discuss various junction capacitances of MOSFET. (2)
3. (a) Determine the expression for unity gain frequency for MOSFET. (2)
(b) Write a short note on high frequency model of MOSFET. (2)

B. Tech

Even Semester

Minor Test 2017-2018

Electromagnetic Field Theory**Time: 02.00 hrs****Max. Marks: 30****Note: Attempt all questions. All questions carry equal marks.**1. Attempt any **three** of the following. Part (a) is compulsory.

(a) Clearly state the difference between convection and conduction current. Also Derive point form of ohm's law.

If $J = \frac{1}{r^3} (2\cos\theta a_r + \sin\theta a_\theta) A/m^2$. Calculate the current passing through a hemispherical shell of radius 20 cm, $0 < \theta < \pi/2$, $0 < \phi < 2\pi$.

4

(b) Two extensive homogeneous isotropic dielectric meet on plane $z = 0$. For $z > 0$ $\epsilon_{r1} = 4$ and for $z < 0$ $\epsilon_{r2} = 3$. A uniform Electric field $E_1 = 5 a_x - 2 a_y + 3 a_z kV/m$ exists for $z \geq 0$. Find E_2 for $z \leq 0$ and the angles E_1 and E_2 make with interfaces.

3

(c) Clearly state the difference between magnetic scalar and magnetic vector potentials with the help of necessary derivations.

3

(d) Classify different magnetic materials with the help of suitable examples

3.

2. Attempt any **three** of the following Part (a) is compulsory.

(a) Write short notes on

4

(i) Method of Images

- (ii) Electrostatic uniqueness theorem

(b) Derive the energy stored in the electrostatic field in terms of D and E .

3

(c) State Coulomb's law of Force between two point charges. A circular flat ring of inner radius 1m and outer radius 2 m has $\rho_s = (100/r) C/m^2$. Determine E on axis of the ring 10 m away from the centre.

3

(d) Find electric field due to uniformly charged sphere of radius a and volume charge density $\rho_0 \text{ C/m}^3$ using Gauss Law. 3

3. Attempt any **three** of the following .Part (a) is compulsory

(a) Discuss Ampere's Law.

Find the magnetic field intensity everywhere due to an infinite current sheet which has a uniform current density $K = k_y \mathbf{a}_y \text{ A/m}$. 4

(b) State and Explain Bio Savart Law. Find the magnetic field intensity due to an infinite line current using Bio Savart Law. 3

(c) Discuss magnetic torque and moment also derive the relationship between them. 3

(d) Find the normal component of magnetic field which traversed from medium 1 to medium 2 having $\mu_{r1} = 2.5$ $\mu_{r2} = 4$. Given that $\mathbf{H}_1 = -30 \mathbf{a}_x + 50 \mathbf{a}_y + 70 \mathbf{a}_z \text{ A/m}$. 3

B. Tech
Year 2nd, Semester : IV
Major Examination : 2016-17
Solid State Devices & Circuits

Time: 3 Hrs

Max. Marks: 40

Note: Attempt ALL questions.

1. Attempt any three parts of the following but part (a) is compulsory.

(a) Derive the expression for potential variation within a graded semiconductor. 4

(b) Under what bias condition a varactor diode is operated? Explain the effect of change in reverse voltage on varactor diode capacitance with the help of a graph. 3

(c) Draw and explain the V-I characteristics of Tunneling diode. 3

(d) Compare Schottky diode and conventional PN junction diode. 3

2. Attempt any three parts of the following but part (a) is compulsory.

(e) Explain the mechanism of 'Pinch-off' condition in Depletion type MOSFET in detail and also draw its transfer and drain characteristics. 4

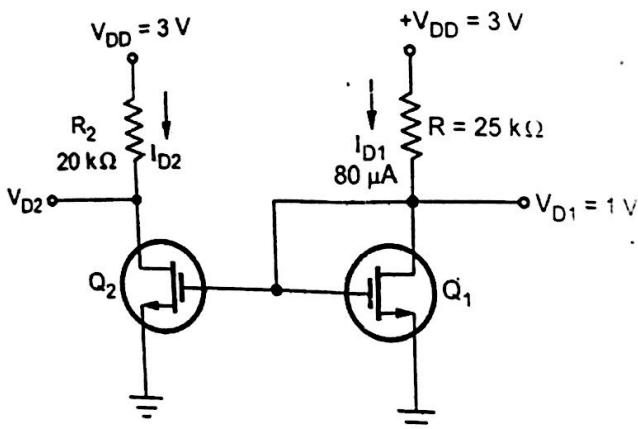
(f) Consider the circuit shown in Fig. 1. Assume MOSFET Q₂ is identical to Q₁ and for each MOSFET: $V_{th} = 0.6V$, $\mu_n C_{ox} = 200\mu A/V^2$, channel length L = 0.8 μm and channel width W = 4 μm . Determine the value of V_{D2} . 3

Fig. 1

- (c) Determine the expression for voltage gain of a common gate MOSFET amplifier at low frequencies. 3
- (d) Derive an expression for short circuit current gain of a common

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source MOSFET amplifier at high frequencies.

3. Attempt any three parts of the following but part (a) is compulsory. 4
- (a) Draw the output characteristics of a BJT in CE configuration and also obtain the expression of collector current for a CE BJT. 3
 - (b) Discuss the voltage divider biasing in CE configuration of BJT and also determine its stability factor. 3
 - (c) Draw a hybrid-pi model of a BJT in CE configuration and obtain its resistances in terms of h-parameters of low frequency model of BJT. 3
 - (d) Write a short note on Cascode amplifier. 3
4. Attempt any three parts of the following but part (a) is compulsory. 4
- (a) Explain how the performance of an amplifier improves with negative feedback. Sketch out all the four feedback configurations of negative feedback amplifiers. 3
 - (b) Derive the expressions for voltage gain, input and output impedances in case of voltage series feedback amplifier. 3
 - (c) State the Barkhausen criteria required for sinusoidal oscillations to be sustained. In a Hartley oscillator, the two inductances are 2 mH and $20\mu\text{H}$ while the frequency is to be changed from 950 KHz to 2050 KHz. Find the range over which the capacitor is to be varied. 3
 - (d) Derive the expression for resonant frequency of RC phase shift oscillator. 3

EVEN Semester
Major Examination (2016-17)
Subject-Public Administration
Paper Code: MBA03
B.Tech -II nd Year (ECE-4th SEM)

Time-3hrs

Maximum Marks: 40

Q.1 Attempt any three of the followings from Unit-1, Q1 (a) is compulsory

- a) What is eligibility for the President of India? Explain the Emergency Powers of the President of India in detail.(4)
- b) What is Public Administration? Discuss the evolution of Public Administration as discipline.(3)
- c) What is the Administrative Relation between central and state governments? Discuss (3)
- d) Define the term "Administration". How does the Public Administration help in Politic Socio-economic development of India.(3)

Q.2 Attempt any three of the followings from Unit-2, Q2 (a) is compulsory

- a) Define Communication. Discuss the elements & process of communication in an organization .(4)
- b) What is Centralization? Differentiate between Centralization and Decentralization.(3)
- c) Write Short Notes on :(i) Public Corporation & (ii) Organisation and Method (3)
- d) What is Communication Network? Discuss the importance of communication in public administration(3)
- e) What is Organization? How it is different from Organizational Structure.(3)

Q.3 Attempt any three of the followings from Unit-3, Q3 (a) is compulsory

- a) Define the Concept of Administrative Tribunals. Discuss the types of Administrative Tribunals. (4)
- b) Define the term 'Training' and 'Development'. Discuss how the training is helpful in improving the effectiveness of public services through civil servants. (3)
- c) What do you understand by Financial Administration? Discuss the parliamentary control over financial management. (3)
- d) Describe the organisation and functions of the Union Public Service Commission. (3)

Q.4 Attempt any three of the followings from Unit-4, Q4 (a) is compulsory

- a) What is Accountability? Discuss the purpose of Accountability.(4)
- b) Define the Executive Control. Discuss the different types of Executive Control.(3)
- c) Discuss the objective and functions of National Development Council.(3)
- d) What is Judicial Control? Discuss the scope of Judicial Control. (3)

Last Date of showing the evaluated answer booklet of Minor Test- I: 28 January, 2017

Paper Name: Industrial Management

Paper Code: MBA-01

Roll No.

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**B. Tech CE/EC/EE/ME
(SEM – IV) Even Semester
Minor Test -I (2016-2017)**

Max. Time: 01 Hrs.

Max. Marks: 15

Attempt all questions.

Q.1.

Write a short note on the parameters that affect the location of a plant in a foreign country. How will you decide the location of a mini steel plant in India? **(03)**

Q.2.

a) Name the factor least important to consider when selecting a location for a new furniture store. What is an ideal location? **(03)**

b) Distinguish between line layout and process layout. State its advantages and disadvantages in brief. **(03)**

Q.3.

a) What is systems approach of management? Discuss the contribution of Systems Approach to the study of management. **(03)**

b) "To manage is to forecast and plan, to organize, to command, to coordinate and to control". Comment on this statement and briefly discuss the applications of industrial management. **(03)**

B.Tech.

Year: 2nd, Semester: 4th
 Major Examination: 2016-17
Engineering Mathematics-IV

Max. Time: 3Hrs

Max Marks: 40

Note: Attempt all questions. Each question carries equal marks.

1. Attempt any three parts of the following. Q.1(a) is Compulsory.

(a) Find Laplace transform of $t \cdot e^{2t} \cdot \cos 2t \cdot \sin 3t$ and evaluate $\int_0^\infty e^{-4t} \cdot t \cdot \sin 2t dt$.

(b) Express following function in terms of unit step function and hence find Laplace transform:

$$f(t) = \begin{cases} \cos(\omega t + \varphi), & 0 < t < T \\ 0, & t > T. \end{cases}$$

(c) State and prove Convolution theorem regarding Inverse Laplace transform and apply this theorem to find the inverse Laplace transform of

$$\frac{s^2}{(s^2 + a^2)(s^2 + b^2)}.$$

(d) Use Laplace transform to solve the differential equation:

$$(D^2 + 4D + 3)x = e^{-t}; \text{ given } x_0 = 1 \text{ and } x_1 = 1.$$

2. Attempt any three parts of the following. Q.2(a) is Compulsory.

(a) Find the Fourier transform of

$$f(x) = \begin{cases} x, & |x| < a \\ 0, & |x| > a \end{cases} \text{ and prove that}$$

$$\int_0^\infty \frac{\lambda \sin \lambda x}{k^2 + \lambda^2} d\lambda = \frac{\pi}{2} e^{-kx} \quad (x > 0, \quad k > 0).$$

(b) If $F(s)$ and $G(s)$ are the Complex Fourier transform of $f(x)$ and $g(x)$ respectively, then show that

$$\int_{-\infty}^{\infty} F(s) \cdot G(s) \cdot e^{-ixs} ds = \int_{-\infty}^{\infty} g(t) \cdot f(x-t) dt.$$

(c) Solve the integral equation:

$$\int_0^{\infty} f(x) \cos \lambda x dx = e^{-\lambda}$$

(d) Using Z – transform solve the difference equation: $y_{n+2} - 6y_{n+1} + 9y_n = 3^n$, given $y_0 = 1$ and $y_1 = 6$.

3. Attempt any three parts of the following. Q.3(a) is Compulsory.

~~(a)~~ Using Charpit's method, find the complete integral of $z^2 = pqxy$.

(b) Solve the following differential equations:

$$(i) p = (z + qy)^3$$

$$(ii) (x^2 - y^2 - yz)p + (x^2 - y^2 - zx)q = z(x - y).$$

~~(c)~~ Solve: $r - 3s + 2t = e^{2x+3y} + \sin(x - 2y)$.

(d) Solve the p.d.e.

$$(D^2 - D'^2 - 3D + 3D')z = xy + e^{x+2y}$$

4. Attempt any three parts of the following. Q.4(a) is Compulsory.

(a) Classify the following partial differential equations:

$$(i) \frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2};$$

$$(ii) x^2 \frac{\partial^2 u}{\partial t^2} + 3 \frac{\partial^2 u}{\partial x \partial t} + x \frac{\partial^2 u}{\partial x^2} + 17 \frac{\partial u}{\partial t} = 100u;$$

$$(iii) 2 \frac{\partial^2 u}{\partial t^2} + 4 \frac{\partial^2 u}{\partial x \partial t} + 3 \frac{\partial^2 u}{\partial x^2} = 0;$$

$$(iv) 4 \frac{\partial^2 u}{\partial x^2} - 4 \frac{\partial^2 u}{\partial x \partial t} + \frac{\partial^2 u}{\partial t^2} = 0.$$

(b) A tightly stretched flexible string has its ends fixed at $x = 0$ and $x = l$. At time $t=0$, the string is given a shape defined by $F(x) = \mu x(l - x)$ and then released. Find the displacement $y(x, t)$ of any point x of the string at any time t .

(c) The temperature distribution in a bar of length π which is perfectly insulated at ends $x = 0$ and $x = \pi$ is governed by $\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2}$.

Assuming the initial temperature distribution as $u(x, 0) = f(x) = \cos 2x$, find the temperature distribution at any time.

(d) A rectangular plate with insulated surfaces is 8 cm wide and very much long. If the temperature along one short edge $y=0$ is given by

$$u(x, 0) = 100 \sin \frac{\pi x}{8}, \quad 0 < x < 8.$$

If two long edges and one short edge are kept at 0°C , then find the steady state temperature at any point of the plate.

EVEN Semester
Major Examination (2016-17)
Subject-Public Administration
Paper Code: MBA03
B.Tech -II nd Year (ECE-4th SEM)

Time-3hrs

Maximum Marks: 40

Q.1 Attempt any three of the followings from Unit-1, Q1 (a) is compulsory

- a) What is eligibility for the President of India? Explain the Emergency Powers of the President of India in detail.(4)
- b) What is Public Administration? Discuss the evolution of Public Administration as discipline.(3)
- c) What is the Administrative Relation between central and state governments? Discuss (3)
- d) Define the term "Administration". How does the Public Administration help in Politic Socio-economic development of India.(3)

Q.2 Attempt any three of the followings from Unit-2, Q2 (a) is compulsory

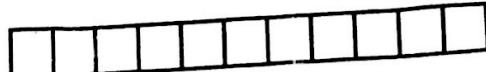
- a) Define Communication. Discuss the elements & process of communication in an organization .(4)
- b) What is Centralization? Differentiate between Centralization and Decentralization.(3)
- c) Write Short Notes on :(i) Public Corporation & (ii) Organisation and Method (3)
- d) What is Communication Network? Discuss the importance of communication in public administration(3)
- e) What is Organization? How it is different from Organizational Structure.(3)

Q.3 Attempt any three of the followings from Unit-3, Q3 (a) is compulsory

- a) Define the Concept of Administrative Tribunals. Discuss the types of Administrative Tribunals. (4)
- b) Define the term 'Training' and 'Development'. Discuss how the training is helpful in improving the effectiveness of public services through civil servants. (3)
- c) What do you understand by Financial Administration? Discuss the parliamentary control over financial management. (3)
- d) Describe the organisation and functions of the Union Public Service Commission. (3)

Q.4 Attempt any three of the followings from Unit-4, Q4 (a) is compulsory

- a) What is Accountability? Discuss the purpose of Accountability.(4)
- b) Define the Executive Control. Discuss the different types of Executive Control.(3)
- c) Discuss the objective and functions of National Development Council.(3)
- d) What is Judicial Control? Discuss the scope of Judicial Control. (3)



**B. Tech. 2nd Year
EVEN SEMESTER
MINOR TEST 2017 - 2018**

Signals & Systems

Max. Marks: 30

Time: 2 Hrs.

Note: Answer all questions.

Q.1 Attempt any Three parts of the following. Q. 1(a) is compulsory.

(a) ✓ Compute the output $y(t)$ for a continuous-time LTI system whose impulse response $h(t)$ and input $x(t)$ are given by: $h(t)=e^{-at}u(t)$ & $x(t)=e^{at}u(-t)$.

(b) ✓ Determine whether each of the following signals is periodic? If a signal is periodic, determine the fundamental time-period.

(i) $e^{j[(\pi/2)t-1]}$ (ii) $\cos^2(\pi/8)n$

(c) ✓ What do you understand by the ROC of Z-Transform. Enlist all the properties of Z-T.

(d) ✓ Find the Laplace transform of $\frac{d}{dt}te^{-3t}u(t) \otimes e^{-2t}u(t)$.

Q.2 Attempt any Three parts of the following. Q. 2(a) is compulsory.

(a) ✓ Discuss the classification of signals with neat diagram.

(b). Determine whether the system is (i)dynamic (ii) causal (iii) linear (iv) time-invariant or (v) stable

$$y(t)=\frac{1}{C} \int_{-\infty}^t x(\tau) d\tau$$

(c). ✓ Determine whether the following signal is energy, power or neither energy nor power signal. Also find its energy/power, if possible.

(i) $x[n]=(-0.5)^n u[n]$ (ii) $x(t)=tu(t)$

(d) ✓ A discrete time signal is defined as $x[n]=\{3,1,2,-1,2\}$. Perform the following operations.

(i) $x[n-3]$ (ii) $x[n+2]$ (iii) $x[n]=x[n/2]$ (iv) $x[2n]$ (v) $x[-n+1]$

Q.3 Attempt any Three parts of the following. Q. 3(a) is compulsory.

(a). ✓ Find the inverse Laplace Transform of

$$X(s)=\frac{2+2se^{-2s}}{s^2+4s+3} \quad \text{Re}\{s\}<-3$$

(b). The output of a linear system for a step input is t^2e^{-t} , then find the transfer function.

(c). Using unilateral z-transform, solve the following difference equations with given initial conditions.

$$y[n]-5y[n-1]+6y[n-2]=x[n], \text{ with } x[n]=u[n], y[-1]=3, y[-2]=2$$

(d) ✓ Find the unilateral Z-transform of $x[n]=[a^n \cos \omega_0 n]u[n]$

B. Tech.
EVEN SEMESTER (IV)
Minor Examination: 2017-18
Industrial Management

Max. Marks: 30

Time: 2 Hrs.

Note: Answer all questions.

Q. 1 Attempt any **Three** parts of the following. Q. 1 (a) is compulsory.

- (a) "Management is regarded as an art by some, a science and an inexact science by others. The truth seems to be somewhere in between." In the light of this statement, explain the nature of Management. (04)
- (b) What do you understand by industrial management? Explain in brief the scope of Industrial management. (03)
- (c) Discuss the meaning and significance of work measurement in an industrial enterprise. Explain the stop watch method of work measurement. (03)
- (d) Differentiate between time Study and Motion Study. Discuss the benefits and limitations of Time Study. (03)

Q. 2 Attempt any **Three** parts of the following. Q. 2 (a) is compulsory.

- (a) What are the objectives of plant layout? Differentiate the product layout and process layout. (04)
- (b) What do you understand by the term 'Level of Management'. Briefly describe the different levels of management. (03)
- (c) Explain the various functions of management. How are the functions of planning and control interdependent? (03)
- (d) "Each of the managerial functions is an exercise in coordination". Comment on this statement. (03)

Q. 3 Attempt any **Three** parts of the following. Q. 3 (a) is compulsory.

- (a) Outline the different sources of finance available to management, both internal and external. What are the factors governing the choice between different sources of funds? (04)
- (b) What is depreciation? Briefly outline any three methods of depreciation? Why is it necessary to provide for depreciation of assets while preparing the balance sheet? (03)
- (c) What are the three principle elements of costs of an industrial enterprise. Show the development of selling price of a product. (03)
- (d) Draw the Break-Even Charts with its limitations and specific uses. State the managerial uses of Break-Even Analysis. (03)

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Paper Code: MBA- 03

B.Tech (ECE- 2nd Year)
EVEN SEMESTER
Minor Examination 2017-18

SUBJECT: PUBLIC ADMINISTRATION

Max. Marks: 30

Time: 2 Hrs.

Note: Answer all questions

Q.1 Attempt any Three parts of the following. Q1 (a) is Compulsory

- a) What are the Powers of President in India? Explain the emergency powers of president of India. (4)
- b) What is Public Administration? Discuss the evolution of Public Administration in detail. (3)
- c) What is Communication Network? Discuss the and importance of communication in administration (3)
- d) Explain the concept of centralization. In what way does it differ from decentralization.(3)

Q.2 Attempt any Three parts of the following. Q2 (a) is Compulsory

- a) Discuss the role of Public Administration in Politic Socio-economic development.. (4)
- b) "Public Administration and Private Administration are the two sides of the same coin." Comment. (3)
- c) What is Administration? Distinguish between management and administration. (3)
- d) "The main executive Powers of the government are vested in the Prime Minister While the President is the nominal head of the State" Comment (3)

Q.3 Attempt any Three parts of the following. Q3 (a) is Compulsory

- a) What is Organization? Explain the nature and importance of organization (4)
- b) Differentiate between Wheel Network & Star Nework types of communication network. (3)
- c) Define Communication .Explain the process of Communication. (3)
- d) What are the major forms of Organization based on relationship? Discuss? (3)

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Minor Test – B.Tech (4th Semester)
Engineering Mathematics IV (BAS-23)

Max. Marks = 30

Time = 2 Hrs.

Note: Attempt all questions. Attempt any THREE parts including part (a) which is compulsory in each question.

1. (a) Find Laplace transform of: $\int_0^t t \cdot e^{-2t} \cos 3t dt.$ (4)

(b) Find Laplace Inverse transform of: $\frac{s}{s^4+s^2+1}.$ (3)

- (c) Find the Fourier transform of:

$$f(x) = 1 - x^2, |x| \leq 1; \\ = 0, |x| > 1.$$

(d) Find Fourier Cosine transform of: $\frac{1}{1+x^2}.$ (3)

2. (a) Evaluate the following integrals:

(i) $\int_0^\infty t \cdot e^{-2t} \cos t dt.$

(ii) $\int_0^\infty t \cdot e^{-t} \sin^4 t dt.$

(b) Find the Inverse Laplace transform of: $\frac{s}{(s^2+4)^2}.$ (3)

- (c) Solve the following equation by applying Laplace transform: (3)

$$y'' + 4y' + 3y = e^{-t}, \text{ given } y_0 = 1, y_1 = 1.$$

- (d) Solve the following simultaneous equations: (3)

$$\frac{dx}{dt} + 5x - 2y = t;$$

$$\frac{dy}{dt} + 2x + y = 0; \text{ given } x_0 = 0; y_0 = 0.$$

3. (a) Prove that $\int_0^\infty \frac{\omega \sin x\omega}{1+\omega^2} d\omega = \int_0^\infty \frac{\cos \omega x}{1+\omega^2} d\omega.$ (4)

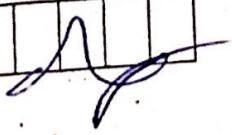
- (b) Find the Fourier transform of $e^{-x^2/2}, x \in (-\infty, \infty).$ (3)

(c) Prove that $\int_0^\infty \left(\frac{\sin x}{x}\right)^2 dx = \frac{\pi}{2}.$ (3)

- (d) Solve the following integral equation: (3)

$$\int_0^\infty \varphi(x) \cdot \cos kx dx = e^{-k}.$$

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D.Tech (Sem-IV) Even Semester
 Minor Test-II (ECE) (Session 2016-17)
 Subject: Solid State Devices & Circuits
 Paper Code: BEC-15

M.M. 10

TIME: - 1 Hour

NOTE: - Attempt all questions.

1. Explain the operation of a Depletion Type-MOSFET with the help of suitable diagrams. Also sketch out its transfer characteristics. (2)
2. (a) Explain biasing with a drain to gate feedback resistor in MOSFET amplifiers. (2)
 (b) Discuss various junction capacitances of MOSFET. (2)
3. (a) Determine the expression for unity gain frequency for MOSFET. (2)
 (b) Write a short note on high frequency model of MOSFET. (2)