POST GRADUATE COMMON ENTRANCE TEST-2016

DATE and TIME	COURSE	SUBJECT
03-07-2016 2.30 p.m. to 4.30 p.m.	ME/M.Tech/M.Arch/ courses offered by VTU/UVCE/UBDTCE	ELECTRICAL SCIENCES (E&E/E&C/TC/BME&ME/IT)

MAXIMUM MARKS	TOTAL DURATION	MAXIMUM TIME FOR ANSWERING
100	150 Minutes	120 Minutes

MENTION YOUR PGCET NO.					QUESTION BOOKLET DETAILS	
					VERSION CODE	SERIAL NUMBER
					D - 1	211000

DOs :

1. Check whether the PGCET No. has been entered and shaded in the respective circles on the OMR answer sheet.
2. Ensure whether the circles corresponding to course and the specific branch have been shaded on the OMR answer sheet.
3. This Question Booklet is issued to you by the invigilator after the **2nd Bell i.e., after 2.25 p.m.**
4. The Serial Number of this question booklet should be entered and the respective circles should also be shaded completely on the OMR answer sheet.
5. The Version Code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely on the OMR answer sheet.
6. Compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

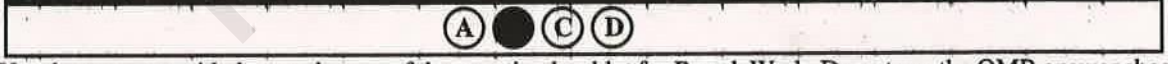
DON'Ts :

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. **The 3rd Bell rings at 2.30 p.m., till then;**
   - Do not remove the paper seal / polythene bag of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. This question booklet contains 75 (items) questions and each question will have one statement and four answers. (Four different options / responses.)
2. After the **3rd Bell is rung at 2.30 p.m.,** remove the paper seal / polythene bag of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
3. During the subsequent 120 minutes:
   - Read each question (item) carefully.
   - Choose one correct answer from out of the four available responses (options / choices) given under each question / item. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **only one response** for each item.
   - **Completely darken / shade the relevant circle with a BLUE OR BLACK INK BALL POINT PEN against the question number on the OMR answer sheet.**

Correct Method of shading the circle on the OMR answer sheet is as shown below :



4. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
5. After the **last Bell is rung at 4.30 pm,** stop marking on the OMR answer sheet and affix your **left hand thumb impression** on the OMR answer sheet as per the instructions.
6. Handover the **OMR ANSWER SHEET** to the room invigilator as it is.
7. After separating the top sheet (KEA copy), the invigilator will return the bottom sheet replica (Candidate's copy) to you to carry home for self-evaluation.
8. Preserve the replica of the OMR answer sheet for a minimum period of **ONE year.**
9. Only **Non-programmable** calculators are allowed.

Marks Distribution

PART-A : (Section 1) 30 Questions : 30 X 1 = 30 (Section 2) 15 Questions : 15 X 2 = 30
PART-B : (Section 1) 20 Questions : 20 X 1 = 20 (Section 2) 10 Questions : 10 X 2 = 20

EE-D1

(Common to E & E / E & C / TC / BME & ME / IT)

PART – A

(SECTION – I)

Each question carries one mark. **(30 × 1 = 30)**

1. An 8 bit DAC produces an output voltage of 2V for input code of 0110, 0100 the resolution of the DAC is
   (A) 0.1% (B) 0.3%
   (C) 0.2% (D) 0.4%

2. If stability error for step input and speed of response be the criteria for design, the suitable controller will be
   (A) P controller
   (B) PI controller
   (C) PD controller
   (D) PID controller

3. A 4 bit modulo – 6 ripple counter uses JK flip – flop if the propagation delay of each FF is 50 ns, the maximum clock frequency that can be used is equal to
   (A) 5 MHz (B) 10 MHz
   (C) 4 MHz (D) 20 MHz

4. An 8085 µp based system drives a multi placed 5 digits 7 segment display. The digits are referred at a rate of 500 Hz, the ON time for each digit is
   (A) 4 ms (B) 0.4 ms
   (C) 10 ms (D) 25 ms

5. Both RAM and ROM are examples of _____ access memories.
   (A) Read (B) Write
   (C) Random (D) None of these

6. The eigen values of the matrix $\begin{bmatrix}\cos\theta & -\sin\theta \\ \sin\theta & \cos\theta\end{bmatrix}$ $0 < \theta < \pi/2$ are
   (A) Real
   (B) Imaginary
   (C) Purely imaginary
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7. If $A = \begin{bmatrix}0.5 & 0 & 0 \\ 0 & -4 & 0 \\ 0 & 0 & 1\end{bmatrix}$ then the eigen values of A^{-1} are
   (A) 0.5, −4, 1 (B) 2, −0.25, 1
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8. $\lim_{x \to 0} \left(\frac{a^x + b^x}{2}\right)^{\frac{1}{x}}$ is equal to
   (A) $-\sqrt{ab}$ (B) $a\sqrt{b}$
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9. For a vector function $\vec{F}$, $div\ \vec{F} = 0$ then $\vec{F}$ is called
   (A) Irrotational (B) Conservative
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10. Transitor's α and β are related by
    (A) $\beta = \frac{\alpha}{1-\alpha}$ (B) $\alpha = \frac{\beta}{1-\beta}$
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Space For Rough Work

51. The blood pressure measurement usually performed by a doctor using the cuff and stethoscope is
(A) Ultrasound
(B) Oscillometric
(C) Auscultatory
(D) Pulse transit time

52. The type of pacemaker that generates electrical impulses when the patients heart rate falls below a predetermined rate is called
(A) A demand pacemaker
(B) Asynchronous pacemaker
(C) Repolarization pacemaker
(D) A non-demand pacemaker

53. Which of the following are the stages of respiration in the correct order ?
(A) Gaseous transport, breathing, tissue respiration and cellular respiration
(B) Breathing, gaseous transport, tissue respiration and cellular respiration
(C) Breathing, gaseous transport, cellular respiration and tissue respiration
(D) Breathing, tissue respiration, cellular respiration and gaseous transport

54. Volume of air that can be taken in and expelled out by maximum inspiration is
(A) lung capacity
(B) vital capacity
(C) tidal volume
(D) respiratory volume

55. The X-ray intensity is generally lesser towards the direction
(A) anode
(B) cathode
(C) the source
(D) None of these

56. Static mode and dynamic mode are available with
(A) A-scan
(B) B-scan
(C) C-scan
(D) M-scan

57. Speckles are seen in ultrasound images due to the following phenomena of the echoes :
(A) reflection
(B) refraction
(C) diffraction
(D) interference

Space For Rough Work

58. Brownian motion refers to _____ motion of the molecules.

(A) external

(B) angular

(C) internal

(D) planar

59. Sinusoidal signal $x(t) = 4 \cos (200t + \pi/6)$ is passed through a square law device defined by the input-output relation $y(t) = x^2(t)$. The DC component in the signal is

(A) 3.46

(B) 4

(C) 2.83

(D) 8

60. Energy of the signal $A\,\delta[n]$ is

(A) A^2

(B) $A^2/2$

(C) $A^2/4$

(D) 0

61. X-rays and Gamma rays are a form of

(A) Light

(B) Particle radiation

(C) Electromagnetic radiation

(D) Cosmic radiation

62. Periodic function of half wave symmetry is necessarily

(A) an even function

(B) an odd function

(C) neither odd nor even

(D) both odd and even

63. Averaging 64 responses will improve the signal to noise ratio by what factor ?

(A) 64

(B) 32

(C) 16

(D) 8

64. If the output sequence of a digital filter is {1,0,0,2,0,1} in response to a unit impulse, then the transfer function of this filter $H(z)=Y(z)/X(z)$ is

(A) $1 + z^{-3} + z^{-5}$

(B) $1 + 2z^{-3} + z^{-5}$

(C) $1 + z^{-3} + 2z^{-5}$

(D) $2z^{-3} + z^{-5}$

65. Turning point algorithm is one of _____ algorithm.

(A) lossless

(B) lossy

(C) neither lossless nor lossy

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