

ಕರ್ನಾಟಕ ಸರ್ಕಾರ ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ

ಸಂಖ್ಯೆ: ತಾಂತಿನಿ 36 ಸಿಡಿಸಿ(1) 2017-18 36

ನಿರ್ದೇಶಕರ ಕಾರ್ಯಾಲಯ ಅರಮನೆ ರಸ್ತೆ, ಬೆಂಗಳೂರು-560 001.

ದಿನಾಂಕ: 04-04-2018.

:ಸುತ್ತೋಲೆ:

ವಿಷಯ: 2018ರ ಸಾಲಿನಿಂದ ಡಿಪ್ಲೊಮಾ ಅಭ್ಯರ್ಥಿಗಳು ಬಿ.ಇ (ಲ್ಯಾಟರಲ್ ಎಂಟ್ರಿ) ವ್ಯಾಸಂಗಕ್ಕೆ ಪ್ರವೇಶ ಪಡೆಯಲು ಕರ್ನಾಟಕ ಪರೀಕ್ಷಾ ಪ್ರಾಧಿಕಾರ ನಡೆಸುವ DCET ಪರೀಕ್ಷೆಗಳಿಗೆ ಪಠ್ಯಕ್ರಮಗಳನ್ನು ಅಳವಡಿಸಿರುವ ಬಗ್ಗೆ.

ಉಲ್ಲೇಖ: ಸರ್ಕಾರದ ಆದೇಶ ಸಂ. ಇಡಿ 23 ಟಿಪಿಇ 2018, ಬೆಂಗಳೂರು, ದಿನಾಂಕ:03ನೇ ಎಪ್ರಿಲ್ 2018.

ಜುಲೈ 2018 ರಿಂದ ನಡೆಯುವ DCET ಪರೀಕ್ಷೆಗಳಿಗೆ ಹಾಜರಾಗಿ ಬಿ.ಇ (ಲ್ಯಾಟರಲ್ ಎಂಟ್ರಿ) ಪ್ರವೇಶ ಪಡೆಯುವ ಅಭ್ಯರ್ಥಿಗಳು "ಫಲಿತಾಂಶದ ಆಧಾರಿತ ಪಠ್ಯಕ್ರಮ (Outcome Based Education)" ಪದ್ಧತಿಯನುಸಾರ, ಸರ್ಕಾರವು ಪ್ರಕಟಿಸಿರುವ ಪಠ್ಯಕ್ರಮಗಳಂತೆ DCET ಪರೀಕ್ಷೆಗಳನ್ನು ತೆಗೆದುಕೊಳ್ಳುವುದು. ಸದರಿ ಮಾಹಿತಿಯನ್ನು ಸಂಸ್ಥೆಯ ಸೂಚನಾ ಫಲಕದಲ್ಲಿ ಪ್ರಕಟಿಸುವ ಮುಖಾಂತರ ಸಂಬಂಧಪಟ್ಟ ಎಲ್ಲಾ ವಿದ್ಯಾರ್ಥಿಗಳ ಗಮನಕ್ಕೆ ತರಲು ಸೂಚಿಸಲಾಗಿದೆ.

ಗೆ:

ರಾಜ್ಯದ ಎಲ್ಲಾ ಸರ್ಕಾರಿ, ಅನುದಾನಿತ ಮತ್ತು ಖಾಸಗಿ ಪಾಲಿಟೆಕ್ನಿಕ್ ಗಳ ಪ್ರಾಂಶುಪಾಲರುಗಳಿಗೆ – ಸೂಕ್ತ ಕ್ರಮಕ್ಕಾಗಿ.

ಪ್ರತಿ:

- 1. ಕಾರ್ಯನಿರ್ವಾಹಕ ನಿರ್ದೇಶಕರು, ಕರ್ನಾಟಕ ಪರೀಕ್ಷಾ ಪ್ರಾಧಿಕಾರ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು-ಸೂಕ್ತ ಕ್ರಮಕ್ಕಾಗಿ.
- 2. ಕಾರ್ಯದರ್ಶಿ, ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ಪರೀಕ್ಷಾ ಮಂಡಳಿ, ಬೆಂಗಳೂರು-ಸೂಕ್ತ ಕ್ರಮಕ್ಕಾಗಿ.
- 3. ಸಹಾಯಕ ನಿರ್ದೇಶಕರು(ಎ.ಸಿಎಂ), ತಾಂ.ಶಿ.ನಿ, ಬೆಂಗಳೂರು-ಸೂಕ್ತ ಕ್ರಮಕ್ಕಾಗಿ.

🙏 ಇ-ಗೌವರ್ನೆನ್ಸ್ ವಿಭಾಗ- ವೆಬ್ ಸೈಟ್ನಲ್ಲಿ ಪ್ರಕಟಿಸಲು.

ಅಡಕಗಳು: ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ನಡವಳಿಗಳು ಮತ್ತು ಅನುಮೋದಿತ DCET ಪಠ್ಯಕ್ರಮಗಳ ಪ್ರತಿ.

Q 04/4/18.

ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ನಡವಳಗಳು

ವಿಷಯ:- 2018ರ ಸಾಅನಿಂದ ಡಿಮ್ಲೊಮಾ ಅಭ್ಯರ್ಥಿಗಳು ಜಿ.ಇ (ಲ್ಯಾಟರಲ್ ಎಂಟ್ರ) ವ್ಯಾಸಂಗಕ್ಕೆ ಪ್ರವೇಶ ಪಡೆಯಲು ಕರ್ನಾಟಕ ಪರೀಕ್ಷಾ ಪ್ರಾಧಿಕಾರ ನಡೆಸುವ DCET ಪರೀಕ್ಷೆಗಳಗೆ ಹೊಸ ಪಠ್ಯಕ್ರಮಗಳನ್ನು ಅಳವಡಿಸುವ ಬಗ್ಗೆ.

ಓದಲಾಗಿದೆ:--

- 1. ಸರ್ಕಾರದ ಪತ್ರ ಸಂಖ್ಯೆ: ಇಡಿ 281 ಅಪಿಇ 2013, ದಿನಾಂಕ:13-02-2015.
- 2. ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೇ: ಇಡಿ 148 ಟಪಿಇ 2015, ದಿನಾಂಕ:23-06-2016.
- 3. ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಇಡಿ 76 ಏಪಿಇ 2016, ದಿನಾಂಕ:21–06–2016.
- 4. ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಇಡಿ 46 ಏಪಿಇ 2017, ದಿನಾಂಕ:15-05-2017.
- 5. ನಿರ್ದೇಶಕರು, ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ ಇವರ ಪತ್ರ ಸಂಖ್ಯೇ ತಾಂಶಿನಿ 36 ಸಿಡಿಸಿ (1) 2017–18/2910, ದಿನಾಂಕ:30–01–2018.

<u>ಪ್ರಸ್ತಾವನೆ:–</u>

ಮೇಲೆ ಕ್ರಮಸಂಖ್ಯೆ (1) ರಲ್ಲ ಓದಲಾದ ಸರ್ಕಾರದ ಪತ್ರದಲ್ಲ ರಾಜ್ಯದ ಪಾಅಬೆಕ್ನಿಕ್ ಗಳ ಡಿಪ್ಲೋಮೊ ಕೋರ್ಸುಗಳ ಪಠ್ಯಕ್ರಮವನ್ನು ಕೆಲವೊಂದು ಷರತ್ತಿಗೊಳಪಡಿಸಿ ಪರಿಷ್ಠರಿಸಲು ಸರ್ಕಾರದ ಅನುಮೋದನೆ ನೀಡಲಾಗಿರುತ್ತದೆ.

ಮೇಲೆ ಕ್ರಮಸಂಖ್ಯೆ (2). (3) ಮತ್ತು (4)ರಲ್ಲ ಓದಲಾದ ಸರ್ಕಾರದ ಆದೇಶಗಳಲ್ಲ ರಾಜ್ಯದಲ್ಲನ ಎಲ್ಲಾ ಪಾಲಬೆಕ್ನಿಕ್ ಗಳ ಡಿಪ್ಲೋಮೊ ಕೋರ್ಸುಗಳಲ್ಲ ಕ್ರಮವಾಗಿ 1 ಮತ್ತು 2ನೇ ಸೆಮಿಸ್ಟರ್ ಗಳಲ್ಲನ ಪಠ್ಯಕ್ರಮವನ್ನು 2015–16ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲನಿಂದ, 3 ಮತ್ತು 4ನೇ ಸೆಮಿಸ್ಟರ್ ನ ಪಠ್ಯಕ್ರಮವನ್ನು 2016–17ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲನಿಂದ ಹಾಗೂ 5 ಮತ್ತು 6 ನೇ ಸೆಮಿಸ್ಟರ್ ಗಳಲ್ಲನ ಪಠ್ಯಕ್ರಮವನ್ನು 2017–18ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲನಿಂದ ಪರಿಷ್ಕೃತ ಪಠ್ಯಕ್ರಮವನ್ನು ಅಳವಡಿಸಲು ಅನುಮೋದನೆ ನೀಡಲಾಗಿತು.

ಮೇಲೆ ಕ್ರಮಸಂಖ್ಯೆ (5)ರಲ್ಲ ಓದಲಾದ ನಿರ್ದೇಶಕರು, ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ ರವರ ಪತ್ರದಲ್ಲ ರಾಜ್ಯದ ಪಾಲವೆಕ್ನಿಕ್ ಡಿಪ್ಲೋಮೊ ಸೆಮಿಸ್ಟರ್ಗಳ ಪಠ್ಯಕ್ರಮಗಳಲ್ಲ " ಫಲತಾಂಶದ ಆಧಾರಿತ ಪಠ್ಯಕ್ರಮ (Outcome Based Education)" ಪದ್ಧತಿಯನುಸಾರ ಹೊಸ ಪಠ್ಯಕ್ರಮಗಳನ್ನು 2015–16ನೇ ಸಾಲನಿಂದ ಅಳವಡಿಸಲಾಗಿದ್ದು, ಹೊಸ ಪಠ್ಯಕ್ರಮಗಳ ಪ್ರಕಾರ ಪ್ರವೇಶ ಪಡೆದ ಡಿಪ್ಲೋಮಾ ವಿದ್ಯಾರ್ಥಿಗಳು 2018ನೇ ಸಾಲನಲ್ಲ ಡಿಪ್ಲೋಮಾ ವ್ಯಾಸಂಗವನ್ನು ಮುಗಿಸಲದ್ದು, ಆಸಕ್ತ ಅರ್ಹ ಡಿಪ್ಲೋಮಾ ಅಭ್ಯರ್ಥಿಗಳು ಇ.ಇ (ಲ್ಯಾಟರಲ್ ಎಂಟ್ರ) ವ್ಯಾಸಂಗ ಮುಂದುವರೆಸಲು, ಕರ್ನಾಟಕ ಪರೀಕ್ಷಾ ಪ್ರಾಧಿಕಾರ ನಡೆಸುವ 2018ರ ಸಾಲನ DCET ಪರೀಕ್ಷೆಗಳನ್ನು ತೆಗೆದುಕೊಳ್ಳಬೇಕಾಗಿರುತ್ತದೆ. ಆದ್ದರಿಂದ 2018ರ ಸಾಲನ ಡಿಸಿಇಟ ಪರೀಕ್ಷೆಗಳಗೆ 2015–16ನೇ ಸಾಲನಿಂದ ಡಿಪ್ಲೋಮೊ ವ್ಯಾಸಂಗದಲ್ಲ ಅಳವತಿಸಿರುವ "ಫಲತಾಂಶದ ಆಧಾರಿತ ಪಠ್ಯಕ್ರಮ (Outcome Based Education)" ಪದ್ಧತಿಯ ಹೊಸ ಪಠ್ಯಕ್ರಮಗಳನ್ನು ಅಳವಡಿಸಬೇಕಾಗಿರುತ್ತದೆ.

CDC-1

ಅದರಂತೆ, ವಿವಿಧ ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ಪರಿಣಿತರ, ವಿವಿಧ ಔದ್ಯೋಗಿಕ ಕ್ಷೇತ್ರಗಳ ತಾಂತ್ರಿಕ ಪರಿಣಿತರು ಹಾಗೂ ರಾಷ್ಟ್ರೀಯ ತಾಂತ್ರಿಕ ಶಿಕ್ಷಕರ ತರಬೇತಿ ಮತ್ತು ಸಂಶೋಧನಾ ಸಂಸ್ಥೆ, ಬೆಂಗಳೂರು ಇವರೊಳಗೊಂಡ ಪಠ್ಯಕ್ರಮ ಪರಿಷ್ಕರಣಾ ಸಮಿತಿಯನ್ನು ರಚಿಸಿದ್ದು, ಸದರಿ ಸಮಿತಿಯು ಹೊಸ ಪಠ್ಯಕ್ರಮಗಳಲ್ಲ ವಿಧ್ಯಾರ್ಥಿಗಳು ಕಲತಿರುವ ತಾಂತ್ರಿಕ/ಜ್ಞಾನವನ್ನು ಪರಿಗಣಿಸಿ. 2018ರ ಸಾಲನಿಂದ ನಡೆಯುವ ಡಿಸಿಇಟ ಪರೀಕ್ಷೆಗಳಲ್ಲ ಅಳವಡಿಸಲು, ಈ ಕೆಳಗಿನಂತೆ ಹೊಸ ಪಠ್ಯಕ್ರಮವನ್ನು ಸಿದ್ದಪಡಿಸಿದ್ದು, ಸದರಿ ಪಠ್ಯಕ್ರಮವನ್ನು 2018ನೇ ಸಾಅನಿಂದ ನಡೆಸುವ ಡಿಸಿಇೞ ಪರೀಕ್ಷೆಗಳಗೆ ಅಳವಡಿಸಲು ಸರ್ಕಾರದ ಅನುಮೋದನೆ ನೀಡುವಂತೆ ಮತ್ತು ಕರ್ನಾಟಕ ಪರೀಕ್ಷಾ ಪ್ರಾಧಿಕಾರಕ್ಕೆ ಸೂಚಿಸುವಂತೆ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಸಲ್ಲಸಿರುತ್ತಾರೆ.

> ಪರೀಕ್ಷಾ ವಿಧಾನ : ಬಹು ಆಯ್ಕೆ ಪ್ರಶ್ನೆಗಳು. ಪರೀಕ್ಷೆ ಸಮಯ: 3 ಗಂಟೆಗಳು (180 ನಿಮಿಷಗಳು) ಗರಿಷ್ಠ ಅಂಕಗಳು: 180

ಅಂಕಗಳ ವಿಂಗಡನೆ:

ಎ) ಸಂಬಂದಿಸಿದ ಇಂಜಿನಿಯರಿಂಗ್ ವಿಷಯಗಳು: 100 ಅಂಕಗಳು.

ಚಿ) ಗಣಿತ ಮತ್ತು ವಿಜ್ಞಾನ ವಿಷಯಗಳು : 8೦ ಅಂಕಗಳು

(ಗಣಿತದಲ್ಲ 40 ಅಂಕಗಳು ಹಾಗೂ ವಿಜ್ಞಾನದಲ್ಲ 40 ಅಂಕಗಳು)

ಸದರಿ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಕೂಲಂಕಷವಾಗಿ ಪರಿಶೀಅಸಿ, ಈ ಕೆಳಕಂಡಂತೆ ಆದೇಶಿಸಿದೆ.

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೇ: ಇಡಿ 23 ಏಪಿಇ 2018. ಬೆಂಗಳೂರು, ದಿನಾಂಕ: ೦3ನೇ ಏಪ್ರಿಲ್ 2018.

ಪ್ರಸ್ತಾವನೆಯಲ್ಲ ವಿವರಿಸಿರುವ ಅಂಶಗಳ ಹಿನ್ನೆಲೆಯಲ್ಲ. ಸರ್ಕಾರವು, 2018ನೇ ಸಾಅನಿಂದ ಡಿಮ್ಲೊಮಾ ಅಭ್ಯರ್ಥಿಗಳು ಜ.ಇ (ಲ್ಯಾಟರಲ್ ಎಂಟ್ರ) ವ್ಯಾಸಂಗಕ್ಕೆ ಪ್ರವೇಶ ಪಡೆಯಲು ಕರ್ನಾಟಕ ಪರೀಕ್ಷಾ ಪ್ರಾಧಿಕಾರ ನಡೆಸುವ DCET ಪ್ರವೇಶ ಪರೀಕ್ಷೆಯಲ್ಲ ಫಅತಾಂಶದ ಆಧಾರಿತ ಪಠ್ಯಕ್ರಮ (Outcome Based Education)" ಪದ್ಧತಿಯನುಸಾರ ಅನುಬಂಧ– 1 ರಿಂದ 11 ರಲ್ಲರುವಂತೆ ಹೊಸ ಅಳವಡಿಸಿಕೊಂಡು Diploma CET ಪ್ರವೇಶ ಪರೀಕ್ಷೆಗಳನ್ನು ನಡೆಸಲು ಪಠ್ಯಕ್ರಮಗಳನ್ನು ಅನುಮೋದನೆ ನೀಡಿ ಆದೇಶಿಸಲಾಗಿದೆ.

> ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲ,

> > (ಎಸ್.ವೆಂಕಟೇಶ್)

A Vanleatech

ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ,

<u>ಶಿಕ್ಷ</u>ಣ ಇಲಾಖೆ (ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ).

<u>ಪತಿ:-</u>

1. ಪ್ರಧಾನ ಮಹಾಲೇಖಪಾಲರು(ಜಿ&ಎಸ್ಎಸ್ಎ) & (ಇ&ಆರ್ಎಸ್ಎ)ರವರ ಕಾರ್ಯದರ್ಶಿ. ಕರ್ನಾಟಕ, ಹೊಸ ಕಟ್ಟಡ. ಆಡಿಟ್ ಭವನ, ಅಂಚೆ ಪೆಟ್ಟಗೆ ಸಂಖ್ಯೆ 5398.ಬೆಂಗಳೂರು– 560 001.

- 2. ಪ್ರಧಾನ ಮಹಾಲೇಖಪಾಲರು (ಎ&ಇ) ರವರ ಕಾರ್ಯದರ್ಶಿ, ಕರ್ನಾಟಕ, ಪಾರ್ಕ್ ಹೌಸ್ ರಸ್ತೆ, ಅಂಚೆ ಪೆಟ್ಟಗೆ ಸಂಖ್ಯೆ 5329, ಬೆಂಗಳೂರು 560 001.
- 3. ಕ್ರಾರ್ಯನಿರ್ವಾಕ ನಿರ್ದೇಶಕರು, ಕರ್ನಾಟಕ ಪರೀಕ್ಷಾ ಪ್ರಾಧಿಕಾರ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು.
- ನಿರ್ದೇಶಕರು, ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ, ಬೆಂಗಳೂರು
 - 5. ಕಾರ್ಯದರ್ಶಿ, ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ಪರೀಕ್ಷಾ ಮಂಡಳ, ಬೆಂಗಳೂರು.
 - 6. ಸರ್ಕಾರಿ, ಅನುದಾನಿತ ಮತ್ತು ಖಾಸಗಿ ಪಾಆಟೆಕ್ನಿಕ್ ಗಳ ಪ್ರಾಂಶುಪಾಲರಿಗೆ (ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ನಿರ್ದೇಶಕರ ಮುಖಾಂತರ)
 - 7. ಶಾಖಾ ರಕ್ಷಾ ಕಡತ / ಹೆಚ್ಚಿನ ಪ್ರತಿ / ಒಡಿಜಿಸಿ



GOVERNMENT OF KARNATAKA (Department of Technical Education)

INDEX

LIST OF DCET CURRICULUM- PROGRAMME WISE

Sl.No	Programme Name	Group Code	Total Marks
1	Textile Technology	TX	100
2	Mechanical Engineering & Allied	ME	100
3	Environmental, PHE and WT&HS	EN	100
4	Electronics and Communications Engg.	EC	100
5	Electrical and Electronics Engg.	EE	100
6	Computer Science and Engineering	CS	100
7	Civil Engineering and Allied	CE	100
8	Chemical Engineering & Polymer Engineering	СН	100
9	Aeronautical Engineering	AE	100
10	Mining Engineering	MN	100
11	Engineering Mathematics(40Marks) and Applied Science (40Marks) [Common to All Programmes]		80

DCET Total Marks: 180

Test Duration: 3Hours

Maximum Marks: 180

Subjects	Marks	Remarks
Engineering Mathematics	40	Common to all Branches
Applied Science	40	Common to all Branches
Textile Technology/ Mechanical Engineering & Allied/ Environmental, PHE and WT&HS/ Electronics and Communications Engg./ Electrical and Electronics Engg./ Computer Science and Engineering/ Civil Engineering and Allied/ Chemical Engineering/ Aeronautical Engineering/ Polymer Engineering/ Mining Engineering	100	Separate Question Paper for all the Engineering Subjects as per the group to which they belong.
Number of Question	ns: 180 (M	(ultiple Choice)

(S. Venkatesh)

Under Secretary to Government

Higher Education (Technical Section)

ANNEXURE-IV

ELECTRONICS & COMMUNICATION ENGINEERING

Total Marks: 100

- Electrical and Electronics Engineering (08 marks): Basics of electricity. Ohm's law.
 Kirchhoff's Current and Voltage law, Combination of resistances, Power, Energy. Laws of
 electrostatics, capacitors- dielectric, permittivity, charging and discharging of capacitors,
 combination of capacitors, Electromagnetic induction-Faraday's law and Lenz's law, self
 and mutual inductance, combination of inductors, energy stored in inductor and capacitor.
 AC circuits-Resistive, Inductive and Capacitive circuits, R-L, R-C and R-L-C circuits.
 Transformers-types, EMF equation, losses, regulation, efficiency. Principle of alternators,
 AC motors, DC motors and generators. Specifications, applications and features of
 different types of resistors, inductors, capacitors, relays, cells and batteries
- 2. Semiconductor Devices (06 marks): Semiconductors, insulators and conductors. Types and properties of semiconductors. PN junction. Characteristics, principle and applications of Diode and Zener diode. Characteristics, principle, configurations (modes) and applications of BJT. Characteristics, principle and applications of FET, JFET, MOSFET and CMOS. Characteristics, principle and applications of UJT, SCR, DIAC, TRIAC, Varactor diode, tunnel diode, GUNN Diode PIN diode and schottky diode. ICs-classification. Fabrication of monolithic ICs. Opto-electronic devices, Laser and Maser
- 3. Analog Electronics (08 marks): Power supplies -Rectifiers, regulators and filters, SMPS, UPS- BJT Amplifiers -biasing, multistage amplifiers, types of coupling, feed back in amplifiers. Differential amplifier, Op-amp characteristics and its applications-Voltage follower, inverting & non-inverting amplifier, summer & difference amplifier, differentiator & integrator, Schmitt trigger, comparator, Active filters, PLL. Clippers and Clampers. Oscillators-Hartley, Colpitts, RC phase-shift, Wein-bridge and Crystal oscillator.
- 4. Measurement and Instrumentation (07 marks): Measurements- methods, electronic measurement system. Dynamic characteristics of an instrument. Errors-types, statistical analysis of error. Standards. Bridges-DC and AC. PMMC meter, multi range voltmeters and ammeters. Electrodynamometer -voltmeter, ammeter, wattmeter. CRO, Signal generators & Wave analyzers. Electrical transducers- Strain gauge, Capacitive transducers, Hall-effect ,piezoelectric type transducers ,LVDT, Thermistors, Thermocouple, Piezoelectric and Proximity sensors. DVM, Electronic counters, Digital frequency meter, digital LCR meter and digital multimeter.
- 5. Industrial Automation (07 marks): SCR as switch, Triggering, Commutation methods. Half wave and Full-wave controlled rectifiers. Choppers- principle, classification and Applications. Inverters -principle, Half and Full-Bridge Inverters, series invertor, Variable DC Link Inverter, Voltage Source and Current Source Inverters, PWM techniques used in inverters, Applications. Cycloconverters Single phase to single phase midpoint cycloconverter, Applications of thyristors in speed control of motors, burglar alarm and light dimmers. Relay logic panel, Scanning considerations, Sensors and Actuators. Programming PLC-Relation to Digital Logic Gates relation to Boolean algebra, PLC Register Basics-General characteristics Holding Registers, Input & Output Registers. PLC Timer functions, PLCCounter functions, Basic Number Comparison Functions
- 6. Digital Electronics (08 marks): Number Systems, Importance of binary system. Analog and Digital signals. Logic gates Concept of logic, types, basic gates, universal gates, Boolean algebra, Demorgan's theorems, Boolean/logic expressions, simplification of expressions, K-maps. Combinational logic circuits-Adders, subtractors, encoder, decoder, MUX and DEMUX. Sequential logic circuits-Flip-Flops, Counters and Shift registers. Logic families. D/A converters. A/D converters. Memories-Terminology, classification and features. Programmable logic devices PLA, PAL. Logic families.

- 7. Applications of Electronics (04 marks):Role and functions of electronics principles and devices used in:consumer electronic gadgets-calculator, washing machine, refrigerator, microwave oven, air conditioners, office-automation equipments; Automobiles-Electronic ignition, Electronically controlled suspension and Instrument panel displays; Audio systems- Microphone and Headphones, Loudspeakers; Video systems-Colour TV system and TV displays; Entertainment-Electronic music synthesizers; andRobotics-Components, Classification and Robotic Control system.
- 8. Analog Communication (07 marks): Superposition theorem, Thevenin's theorem, Norton's theorem and Maximum Power Transfer theorem. Resonance series and parallel, PassiveFilters and Attenuators. Antennas- terminologies, types and applications, antenna arrays. Electromagnetic spectrum and different types of wave propagation. Transmission lines- primary and secondary constants, reflection, standing waves and impedance matching. AM and FM-Modulation and demodulation.
- 9. Digital Communication (07 marks): Comparison of analog and digital communications. Base-band and pass-band transmission. Sampling theorem, Nyquist criterion and aliasing effect, and Quantization. Definition of information capacity, entropy, bit-rate, baud rate and bandwidth of digital data. Encoding- PCM, DPCM, DM and ADM. Line codes. Digital modulation techniques-ASK, FSK and PSK. Multiplexing techniques-FDM and TDM. Multiple access techniques-TDMA, FDMA and CDMA. Transmission mediatwisted pair, co-axial and optical fibers.
- 10. Advanced Communication (07 marks):Microwave signal, Waveguides- types, TE and TM modes. Microwave devices- IMPATT, TRAPATT diodes, klystron, reflex klystron, magnetron and TWT. Radar range equation, Pulsed radar, modulators, duplexers and displays. Antenna scanning methods, MTI Radar, CW Doppler radar, FM-CW Radar. Satellite-basic terminology. Uplink and Downlink, Geostationaryand polar satellite. LEO, MEO & GEO satellites, Satellite communication system, transponders, frequency allocation, communication satellites, satellite subsystems, earth station. GPS, DTH, VSAT and remote sensing. Features of 1G, 2G, 2.5G, 3G, 4G cellular networks, Cellular concept, Frequency reuse, features of GSM, CDMA,LTE. Wifi, Bluetooth and Zigbee.
- 11. Data Communication and Networking (05 marks):-Categories of computer network, switching techniques, layers of OSI model, LAN -Ethernet, virtual LAN, GSMA/CD access methods, token passing, FDDI, wireless LAN.TCP/IP-IP addresses, address mapping, ARP. Ports and sockets- DNS, Email, IMAP, FTP frame relay and ATM. Different methods of accessing internet, Modems, Routers, Bridges, Switches and Gateways, network security.
- 12. C-Programming (03 marks): Definition, need, and types of programming languages. Character set, Variables, Identifiers and Key-words. Data-types: Built-in, derived and user-defined. Constants and Literals. Operators and their Precedence. I/O statements. Control structure- loops and branching statements. Arrays, structures, unions, strings and pointers. User defined and library functions
- 13. MATLAB (03 marks): Features and applications of MATLAB, Character set, Variables, Identifiers and Key-words. Data-types: Built-in, derived and user-defined. Constants and Literals. Operators and its Precedence. I/O statements. Control structure- loops and branching statements.

- 14. Microcontrollers (07marks): Features of RISC, CISC, Harvard and Von-Neumann architectures. Microprocessors and microcontrollers variants of MCS-51. Architecture of 8051, Memory organization, 8051 Addressing modes, Instruction set ,I/O ports, Embedded C, Interrupts of 8051, timers and counters of 8051, serial I/O. Interfacing of displays, ADC, DAC, Stepper motor and DC motor
- 15. ARM Controller (05 marks): Embedded system hardware- AMBA bus protocol, ARM core data flow model, Processor modes, Pipelining, ARM and thumb, Instruction Set, Assembler directives, Exception and Interrupt handling in ARM, LPC2148 CPU, Features and Applications of pin connect block, GPIO, PLL and Timers.
- 16. Embedded Systems (05 marks): Embedded systems and General Computing system, Characteristics and quality attributes of Embedded System, Hardware and Software architecture of Embedded Systems, architecture of MSP430 ,Exceptions, Addressing Modes and Instruction Set of MSP430. MSP430 GPIO, Timerand On-chip Peripherals, MSP430 mixed Signal Systems
- 17. Verilog (03 marks): Concept of HDL, Program Structure of Verilog- Lexical Tokens, Data types, Operators, Operands, Modules, procedures Behavioral Modeling, Structural Modeling, Gate-Level Modeling, Dataflow Modeling, Switch-Level Modeling.
 Available Action

(S.Venkatesh)

Under Secretary to Government
 Higher Education (Technical Section)

ANNEXURE-XI

ENGINEERING MATHEMATICS AND APPLIED SCIENCE

(COMMON TO ALL BRANCHES)

ENGINEERING MATHEMATICS

Max Marks: 40

Marks

LINEAR ALGEBRA

Unit-1: MATRICES & DETERMINANTS:

06 Mark

Basic concepts of Matrices(Addition, Subtraction and Multiplication), Determinants: Problems on finding unknown quantity in a 2nd and 3rd order determinants using expansion. Solving simultaneous linear equations using determinant method (Cramer's rule up to 3rd order).

Matrices: Minors, Cofactors, Adjoint and Inverse of matrices of 2nd order. Characteristic equation and roots of a square matrix.

ALGEBRA

Unit-2: VECTORS:

03 Marks

Magnitude of a vector. Position vector. Expression of vector in terms of position vectors. Vector in plane and in space in terms of unit vectors i, j and k respectively. Product of vectors. Scalar and vector product. Applications of dot and cross products i.e., Projection of vector on another vector, Area of parallelogram and area of triangle. Work done by a force and moment of force.

Unit-3: PROBABILITY:

01 Marks

Random Experiments, Sample Space, Events, Types of Events, Algebra of Events, Complementary event, the events A or B, A and B, A but not B, Mutually Exclusive Events, Exhaustive events, Simple problems.

TRIGONOMETRY

Unit-4: ALLIED ANGLES AND COMPOUND ANGLES:

06 Marks

Signs of Trigonometric ratios, Trigonometric ratios of Allied Angles in terms of θ . Formulae for Sin(A±B), Cos(A±B) & tan(A±B) and problems on them. Multiple and sub multiple angle formulae for 2A & 3A and simple problems. Transformation formulae on sum or difference into products & products into sum or difference and problems on them.

Unit-5: Complex numbers:

01 Mark

Definition of complex number in the form of a + ib. Conjugate of complex number. Algebra of complex numbers, modulus and principal value of argument of complex number. Polar form $Z = r(Cos\theta + iSin\theta)$.

INTRODUCTION TO CALCULUS

Unit-6: Limits:

03 Marks

Evaluation of limit of functions by factorization, rationalization, limits when $n \to \infty$. Problems on algebraic limits based on formula $\lim_{x\to a} \frac{x^n-a^n}{x-a} = n$. a^{n-1} . Problems on trigonometric limits based on formula $\lim_{\theta\to 0} \frac{\sin\theta}{\theta} = 1$

CO-ORDINATE GEOMETRY

Unit-7: Straight Lines:-

02 Marks

Problems on different forms of equations of straight lines such as:

$$y = mx + c$$
, $(y-y_1) = m(x-x_1)$, $(y-y_1) = \frac{y2-y1}{x2-x1}$. $(x-x1)$

Problems on equation of lines through a point and parallel or perpendicular to a given line. Finding Slope ,X-intercept and Y- intercept of general equation ax + by + c = 0.

DIFFERENTIATION

Unit-8:

06 Marks

Problems on rules of differentiation: (Sum rule, product rule and quotient rule). Problems on function of a function and inverse trigonometric functions. Derivative of implicit functions, and parametric functions and problems. Successive differentiation up to second order and problems on them. Differentiation of Logarithmic functions of types u^{ν} , Where u and v are functions of x, Simple problems.

APPLICATIONS OF DIFFERENTIATION

Unit-9:

02 Mark

Equations of tangent and normal to the curve y = f(x) at a given point and problems. Derivative as a rate measure i.e.to find the rate of change of displacement, velocity, radius, area, volume using differentiation and problems on them.

INTEGRAL CALCULUS

Unit-10:

05 Marks

Rules of integration and problems. Problems on integration by the method of substitution and by parts.

DEFINITE INTEGRALS

Unit-11:

02 Mark

Simple problems on definite integrals. Problems on applications of definite integrals such as area and volume.

DIFFERENTIAL EQUATIONS

Unit-12:

03 Mark

Order and Degree of Differential Equations, Formation of differential equation by eliminating arbitrary constants up to second order. Problems on solution of linear differential equations of first order by variable separable method and integrating factor method.

APPLIED SCIENCE

Max. Marks: 40 Marks

UNIT-I MECHANICS:

07 Marks

Units: Unit, types of units, SI unit- Basic and Supplementary units, advantages

Measuring instruments: Vernier calipers-principle and least count. Screw gauge-principle,
ZE, ZC, pitch and least count- simple problems on vernier calipers and screw gauge.

Scalars and vectors: scalar and vector with example, resultant, equilibrium, equilibrant. Laws of vectors-parallelogram law of vectors, triangle law of vectors, Lami's theorem. Expression for magnitude and direction of resultant of two vectors acting at a point. Rectangular component of resolution of a vector-simple problems on laws of vectors.

Parallel forces: Types of parallel forces, moment of force, couple, moment of couple ,simple problems on moment of force.

UNIT-II PROPERTIES OF SOLIDS AND LIQUIDS:

07Marks

Properties of solids: Deforming force, elasticity and plasticity with examples, stress and its types with example, strain and its types with example, Hooke's Law, Modullie of elasticity and its types- simple problems on stress and strain.

Properties of Liquids: Thrust and pressure , expression for pressure at a point inside the liquid at rest-simple problems.

Surface tension: Cohesive and Adhesive forces with examples, surface tension, factors affecting surface tension, application of surface tension. Capillarity and its applications. Viscosity: viscosity, expression for co-efficient of viscosity, effect of temperature on viscosity of liquid and gas, applications of viscosity- simple problems on co-efficient of viscosity.

UNIT-III HEAT AND PROPERTIES OF GASES:

05 Mark

Concept of Heat and Temperature: Heat and Temperature, Specific Heat of substance,

Transmission of Heat: conduction ,convection and radiation with example, Applications of conduction and convection and radiation.

Gas laws: Boyle's law, Charle's law and Gay- Lussac's law (statement with expression), expression PV=nRT, C_p and C_v and its relation-simple problems on gas laws.

UNIT-IV WAVE MOTION:

08Marks

Simple Harmonic Motion: Periodic motion with example, SHM, expression for displacement of a particle executing SHM.

Wave: Wave motion, wave period , wave frequency, wave amplitude, wave length and wave velocity, , relation between wave frequency , wave length and wave velocity-problems on $V=n\lambda$. Mechanical waves and Non-Mechanical waves with examples, Longitudinal and Transverse waves with example.

Propagation of sound waves in air: Newton – Laplace's formula for velocity of sound in air and various factors affecting velocity of sound in air.

Vibrations: Free vibration ,forced vibration and resonance with example. Laws of transverse vibration of stretched string, expression for fundamental frequency of vibration of stretched string –simple problems on fundamental frequency.

Stationary waves: Stationary waves and its characteristics, beat, beat frequency, application of beats.

UNIT- V MODERN PHYSICS:

05 Mark

Electromagnetic waves: Electromagnetic waves and its properties, electromagnetic spectrum and its applications.

Laser: Laser, properties of laser and its applications.

Nano-technology: Nanotechnology, advantages and dis-advantages of nanotechnology.

Communication system: Basic elements of communication system, advantages and disadvantages of satellite communication system,

Optical fibre: Optical fibre-principle and its applications.

UNIT-VI INDUSTRIAL CHEMISTRY

08 Marks

Electrolysis: Electrolyte, types of electrolyte with example, electrolysis, Postulates of Arrhenius theory of electrolytic dissociation, Faraday's First and Second law of electrolysis-simple problems on Faraday's laws.

Corrosion: Corrosion, conditions for corrosion, preventive methods of corrosion. Batteries: Battery, classification and its application.

Fuel cells: Fuel cell, types and advantages of fuel cells.

Metallurgy: Definition of mineral, ore, flux, slag and alloys. Purpose of making alloys and its applications.

Polymers: polymers and its types, application of polymers.

Composite materials: Composite material and its types, advantages and dis-advantages of composite material.

pH Value: pH value of a solution, pH scale, application of pH in different fields.

(S. Venkatesh)

. I. Verketech

Under Secretary to Government Higher Education (Technical Section)