ಕರ್ನಾಟಕ ಸರ್ಕಾರ
ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ

ಸಂಖ್ಯೆ: ತಾಂಶಿನಿ 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.

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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.

ನಿರ್ದೇಶಕರು
4/4/18

ಗೆ:

ರಾಜ್ಯದ ಎಲ್ಲಾ ಸರ್ಕಾರಿ, ಅನುದಾನಿತ ಮತ್ತು ಖಾಸಗಿ ಪಾಲಿಟೆಕ್ನಿಕ್‌ಗಳ 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.
4. ಇ–ಗೌವರ್ನೆನ್ಸ್ ವಿಭಾಗ– ವೆಬ್ ಸೈಟ್‌ನಲ್ಲಿ ಪ್ರಕಟಿಸಲು.

ಅಡಕಗಳು: ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ನಡವಳಿಗಳು ಮತ್ತು ಅನುಮೋದಿತ DCET ಪಠ್ಯಕ್ರಮಗಳ ಪ್ರತಿ.

(4) 04/4/18.

ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ನಡವಳಿಗಳು

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

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ಓದಲಾಗಿದೆ:-

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

JD(Ode)

ಪ್ರಸ್ತಾವನೆ:-

ಮೇಲೆ ಕ್ರಮಸಂಖ್ಯೆ (1) ರಲ್ಲಿ ಓದಲಾದ ಸರ್ಕಾರದ ಪತ್ರದಲ್ಲಿ ರಾಜ್ಯದ ಪಾಲಿಟೆಕ್ನಿಕ್‌ಗಳ ಡಿಪ್ಲೋಮೊ ಕೋರ್ಸುಗಳ ಪಠ್ಯಕ್ರಮವನ್ನು ಕೆಲವೊಂದು ಷರತ್ತಿಗೊಳಪಡಿಸಿ ಪರಿಷ್ಕರಿಸಲು ಸರ್ಕಾರದ ಅನುಮೋದನೆ ನೀಡಲಾಗಿರುತ್ತದೆ.

CDC-1
ಅಧಿಕ್ಯ ತ್ರೈಮಾಸಿಕ
04/4/18

ಮೇಲೆ ಕ್ರಮಸಂಖ್ಯೆ (2), (3) ಮತ್ತು (4)ರಲ್ಲಿ ಓದಲಾದ ಸರ್ಕಾರದ ಆದೇಶಗಳಲ್ಲಿ ರಾಜ್ಯದಲ್ಲಿನ ಎಲ್ಲಾ ಪಾಲಿಟೆಕ್ನಿಕ್‌ಗಳ ಡಿಪ್ಲೋಮೊ ಕೋರ್ಸುಗಳಲ್ಲಿ ಕ್ರಮವಾಗಿ 1 ಮತ್ತು 2ನೇ ಸೆಮಿಸ್ಟರ್‌ಗಳಲ್ಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು 2015-16ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ, 3 ಮತ್ತು 4ನೇ ಸೆಮಿಸ್ಟರ್‌ನ ಪಠ್ಯಕ್ರಮವನ್ನು 2016-17ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಹಾಗೂ 5 ಮತ್ತು 6 ನೇ ಸೆಮಿಸ್ಟರ್‌ಗಳಲ್ಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು 2017-18ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಪರಿಷ್ಕೃತ ಪಠ್ಯಕ್ರಮವನ್ನು ಅಳವಡಿಸಲು ಅನುಮೋದನೆ ನೀಡಲಾಗಿತ್ತು.

ಮೇಲೆ ಕ್ರಮಸಂಖ್ಯೆ (5)ರಲ್ಲಿ ಓದಲಾದ ನಿರ್ದೇಶಕರು, ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ ರವರ ಪತ್ರದಲ್ಲಿ ರಾಜ್ಯದ ಪಾಲಿಟೆಕ್ನಿಕ್ ಡಿಪ್ಲೋಮೊ ಸೆಮಿಸ್ಟರ್‌ಗಳ ಪಠ್ಯಕ್ರಮಗಳಲ್ಲಿ " ಫಲತಾಂಶದ ಆಧಾರಿತ ಪಠ್ಯಕ್ರಮ (Outcome Based Education)" ಪದ್ಧತಿಯನುಸಾರ ಹೊಸ ಪಠ್ಯಕ್ರಮಗಳನ್ನು 2015-16ನೇ ಸಾಲಿನಿಂದ ಅಳವಡಿಸಲಾಗಿದ್ದು, ಹೊಸ ಪಠ್ಯಕ್ರಮಗಳ ಪ್ರಕಾರ ಪ್ರವೇಶ ಪಡೆದ ಡಿಪ್ಲೋಮಾ ವಿದ್ಯಾರ್ಥಿಗಳು 2018ನೇ ಸಾಲಿನಲ್ಲಿ ಡಿಪ್ಲೋಮಾ ವ್ಯಾಸಂಗವನ್ನು ಮುಗಿಸಲಿದ್ದು, ಆಸಕ್ತ ಅರ್ಹ ಡಿಪ್ಲೋಮಾ ಅಭ್ಯರ್ಥಿಗಳು ಬಿ.ಇ (ಲ್ಯಾಟರಲ್ ಎಂಟ್ರಿ) ವ್ಯಾಸಂಗ ಮುಂದುವರೆಸಲು, ಕರ್ನಾಟಕ ಪರೀಕ್ಷಾ ಪ್ರಾಧಿಕಾರ ನಡೆಸುವ 2018ರ ಸಾಲಿನ DCET ಪರೀಕ್ಷೆಗಳನ್ನು ತೆಗೆದುಕೊಳ್ಳಬೇಕಾಗಿರುತ್ತದೆ. ಆದ್ದರಿಂದ 2018ರ ಸಾಲಿನ ಡಿಸಿಇಟಿ ಪರೀಕ್ಷೆಗಳಿಗೆ 2015-16ನೇ ಸಾಲಿನಿಂದ ಡಿಪ್ಲೋಮೊ ವ್ಯಾಸಂಗದಲ್ಲಿ ಅಳವಡಿಸಿರುವ "ಫಲತಾಂಶದ ಆಧಾರಿತ ಪಠ್ಯಕ್ರಮ (Outcome Based Education)" ಪದ್ಧತಿಯ ಹೊಸ ಪಠ್ಯಕ್ರಮಗಳನ್ನು ಅಳವಡಿಸಬೇಕಾಗಿರುತ್ತದೆ.

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 ಪಠ್ಯಕ್ರಮಗಳಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳು ಕಲಿತಿರುವ ತಾಂತ್ರಿಕ/ಜ್ಞಾನವನ್ನು ಪರಿಗಣಿಸಿ, 2018ರ ಸಾಲಿನಿಂದ ನಡೆಯುವ ಡಿಸಿಇಟಿ ಪರೀಕ್ಷೆಗಳಲ್ಲಿ ಅಳವಡಿಸಲು, ಈ ಕೆಳಗಿನಂತೆ ಹೊಸ ಪಠ್ಯಕ್ರಮವನ್ನು ಸಿದ್ಧಪಡಿಸಿದ್ದು, ಸದರಿ ಪಠ್ಯಕ್ರಮವನ್ನು 2018ನೇ ಸಾಲಿನಿಂದ ನಡೆಸುವ ಡಿಸಿಇಟಿ ಪರೀಕ್ಷೆಗಳಿಗೆ ಅಳವಡಿಸಲು ಸರ್ಕಾರದ ಅನುಮೋದನೆ ನೀಡುವಂತೆ ಮತ್ತು ಕರ್ನಾಟಕ ಪರೀಕ್ಷಾ ಪ್ರಾಧಿಕಾರಕ್ಕೆ ಸೂಚಿಸುವಂತೆ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಸಲ್ಲಿಸಿರುತ್ತಾರೆ.

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

ಅಂಕಗಳ ವಿಂಗಡನೆ:

ಎ) ಸಂಬಂಡಿಸಿದ ಇಂಜಿನಿಯರಿಂಗ್ ವಿಷಯಗಳು : 100 ಅಂಕಗಳು.
ಬಿ) ಗಣಿತ ಮತ್ತು ವಿಜ್ಞಾನ ವಿಷಯಗಳು : 80 ಅಂಕಗಳು
(ಗಣಿತದಲ್ಲಿ 40 ಅಂಕಗಳು ಹಾಗೂ ವಿಜ್ಞಾನದಲ್ಲಿ 40 ಅಂಕಗಳು)

ಸದರಿ **ಪ್ರಸ್ತಾವನೆಯನ್ನು ಕೂಲಂಕಷವಾಗಿ ಪರಿಶೀಲಿಸಿ, ಈ ಕೆಳಕಂಡಂತೆ ಆದೇಶಿಸಿದೆ.**

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಇಡಿ 23 ಟಿಪಿಇ 2018.

ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 03ನೇ ಏಪ್ರಿಲ್ 2018.

ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ವಿವರಿಸಿರುವ ಅಂಶಗಳ ಹಿನ್ನೆಲೆಯಲ್ಲಿ, ಸರ್ಕಾರವು, 2018ನೇ ಸಾಲಿನಿಂದ **ಡಿಪ್ಲೊಮಾ ಅಭ್ಯರ್ಥಿಗಳು ಬಿ.ಇ (ಲ್ಯಾಟರಲ್ ಎಂಟ್ರಿ) ವ್ಯಾಸಂಗಕ್ಕೆ ಪ್ರವೇಶ ಪಡೆಯಲು ಕರ್ನಾಟಕ ಪರೀಕ್ಷಾ ಪ್ರಾಧಿಕಾರ ನಡೆಸುವ** DCET ಪ್ರವೇಶ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಫಲಿತಾಂಶದ ಆಧಾರಿತ ಪಠ್ಯಕ್ರಮ **(Outcome Based Education)"** ಪದ್ಧತಿಯನುಸಾರ ಅನುಬಂಧ- 1 ರಿಂದ 11 ರಲ್ಲಿರುವಂತೆ ಹೊಸ ಪಠ್ಯಕ್ರಮಗಳನ್ನು ಅಳವಡಿಸಿಕೊಂಡು **Diploma CET** ಪ್ರವೇಶ ಪರೀಕ್ಷೆಗಳನ್ನು ನಡೆಸಲು ಅನುಮೋದನೆ ನೀಡಿ ಆದೇಶಿಸಲಾಗಿದೆ.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ
ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,

(ಎಸ್.ವೆಂಕಟೇಶ್)
ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ,
ಶಿಕ್ಷಣ ಇಲಾಖೆ (ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ).

ಪ್ರತಿ:-

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

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

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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	CH	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

Maximum Marks: 180 Test Duration: 3Hours

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 Questions: 180 (Multiple Choice)		

(S.Venkatesh)
Under Secretary to Government
Higher Education (Technical Section)

ANNEXURE-II

MECHANICAL ENGINEERING

Total Marks: 100

1. Manufacturing Technology: 25 Marks

Lathe -Construction- Various Operations- Taper Turning Methods- Lathe Attachments & Accessories- Capstan and Turret Lathes – Automats – Single Spindle- Swiss Type- Multi Spindle Automatic lathe.

Theory Of Metal Cutting- Chip Formation, Orthogonal Cutting- Oblique Cutting- Cutting Tools-Single point Cutting Tool Geometry-Cutting Tool Materials, Tool Wear, Tool Life, and Cutting Fluids-Functions and properties.

Drilling - operations- Twist drill geometry –Radial drilling machine.

Milling-Classification - Milling cutters and classification-Fundamentals of milling processes-Milling operations. Indexing methods-Simple and compounding. Cutting speed, feed, depth of cut and machining time.

Shaping- Various shaper operations- Planer -Principal parts and Various planer operations

Grinding- Abrasive Processes- Grinding Wheel – Specifications And Selection, Types Of Grinding Process – Cylindrical Grinding, Surface Grinding, Centre less Grinding–Super finishing process- Honing, Lapping, Super Finishing, Polishing And Buffing.

Unconventional Machining Process - Electron Beam Machining, Laser Beam Machining, Electric Discharge Machining, Ultrasonic Machining, Abrasive Jet Machining.

Casting- Moulding Sands- Patterns- Casting Processes- Special Casting Techniques.

Welding Techniques: basic working principles of -Arc Welding- Gas Welding- TIG- MIG-Resistance Welding.

Rolling-Hot and cold rolling- Sheet Metal Operation-Shearing, Blanking, Punching, Trimming, Drawing, Embossing- Powder metallurgy.

CNC part programming- Structure of part programme- -Preparatory function (G)-Miscellaneous function(M).

Robotics- Structure of a robot-Applications of industrial robot.

Jigs and Fixtures- Definition-Need of Jigs and Fixtures

Basics of Drawing- Conventions- Types of lines- Dimensioning-systems of dimensioning - Surface finish symbols.

2. Strength of Materials and Theory of Machines: 17 marks

Simple stresses & strains: viz. tensile, compressive, Shear, & corresponding strains, Hook's Law – factor of Safety. Elastic Constants - Lateral Strain ,Poisson's ratio, Bulk Modulus, Shear Modulus, Rigidity modulus.(Simple problems only on stress and strain, young's modulus).

Centre of Gravity& Moment of Inertia : its Importance -Parallel & Perpendicular Axis Theorem-C.G of Rectangle, Triangle, Circle, Semi-circle, Trapezium, Cone(Only formulae)-Moment of Inertia of solid & Hollow sections like Rectangle, Triangle, Circle. (Only formulae).

Shear Force and Bending Moment: Definition -Types of beams, types of load acting on beams-Concept of Maximum bending moment- Drawing S.F & B.M Diagram for Cantilever, Simply Supported Beams subjected to Point Load and U.D.L (No problems)

Torsion & bending :Introduction - Angle of Twist - Polar Moment of Inertia - Torsion equation- Assumptions in theory of Torsion -Power Transmitted by a shaft. (No problems)

Bending- Introduction, assumptions in theory of simple bending.-Bending stress. (No problems)

Basic Kinematics of Machines- Four bar chain-mechanism and inversion.

Transmission of power: Introduction to Belt Drives-types of flat belt drives-open& cross-idler pulley- cone pulley- fast and loose pulley. Velocity Ratio- Slip and creep of belt. Rope drive-applications- Chain drives-types- advantages-Gear drives- Classification of Gears-applications of different gears. Gear Trains-Types of Gear trains –Simple, Compound, Reverted and Epicyclic gear trains- applications (Only problems on velocity ratio of belts and gears).

Friction-Introduction-Types of Friction, Laws of solid friction, coefficient of friction, limiting angle of friction, angle of Repose. (No problems)

3. Thermal Engineering: 17 MARKS

Thermodynamic systems – closed, open and isolated systems with examples-Properties of system- Intensive and Extensive properties with examples.-Definitions for properties like Enthalpy (H), Entropy(s) Internal energy (U)- Specific heat at constant pressure(C_p), specific heat at constant volume(C_v)-, characteristic gas equation, - Universal gas constant, -Law of thermodynamics-Zeroth, first & second laws of thermodynamics. (No problems).

Thermodynamic processes- Constant pressure, Constant volume, Isothermal, Isentropic, Polytrophic, Free expansion and throttling processes & equations representing the processes. (No problems).

IC engine -definition-classification- - Working principle of Two Stroke petrol & Diesel engine - Working principle of Four Stroke petrol & Diesel engine. -Rope brake Dynamometer-Formulae for Brake power, Indicated power Mechanical efficiency, Indicated thermal efficiency, Brake thermal efficiency, Mean effective pressure-Air standard efficiency, Relative efficiency, Volumetric efficiency. (Only problems on BP, IP and Mechanical efficiency).

Gas turbine-Introduction-types-open & close cycle-applications.

Formation of steam: Wet steam-dry steam-superheated steam and its properties.

Air Compressors- types-single stage & multi stage -uses-applications.

Refrigeration: Vapour compression-vapour absorption refrigeration- unit of refrigeration-COP -types of refrigerants –properties.

4. Fluid mechanics and Pneumatics: **17 MARKS**

Properties of fluids-Fluid pressure-manometer-simple & Differential-Pressure gauges Types- Type of fluid flows-Bernoulli's equation-Limitations- venturi meter-orifice meter-hydraulic co-efficient-losses in pipes-Darcy's and Chezs equations-Hydraulic gradients-water hammer (No problems)

Pumps- classification of pumps – Need for priming of centrifugal pump–multistage centrifugal pump. Reciprocating pump-types- Air Vessel-Slip. Concept of Submersible pump (No problems)

Hydraulic systems- -. Components of Hydraulic systems- Vane pump, gear pump - Hydraulic Valves –Pressure control valves – pressure relief valve, Direction control valves - 3/2, 5/2 valves,-Sequence valves.-Flow control valves–Actuators- Linear Actuators – Cylinders - single acting, double acting - Hydraulic motors-Accumulators-Types.

Pneumatic system- Components of pneumatic system- working of FRL unit- Control Valves – Pressure regulating valves, Flow Control valves, Direction Control Valves.- Actuators - single acting and double acting - Air motors,- Pneumatic Symbols.

5. Management: **12 Marks**

Management-Henry Fayol's principles-organization types- Production and Productivity-Product Design and its Stages- Types of Production- Functions of Production- Planning and Control Department- Purchasing and its Procedure- methods of purchasing - Comparative statement-purchase order-Tender-Types of tender

Storekeeping- classification of stores - Functions of store keeper -Bin Card - Material Issue Requisition- Material Returned Note- Store ledgers . Inventory Management- Definition - functions of Inventory Control

Material Requirement Planning (MRP)-concept, applications -Just in Time (JIT)-concept benefits –FIFO(first in first out) concept-advantages.

Motivation-Leader and types-Logistics- Quality- Factors affecting quality Inspection-Types.

Total Quality Management-Meaning- Principles of total quality management-PDCA cycles-Quality Circles-definition-Function.

TQM Tools- Flow charts, Control charts, Histograms, Pareto charts, Cause and effect diagram-5-S- Kaizen, and Six-sigma

Quality Certification Systems- ISO 9000 series quality standards, QS14000– ISO 9000, ISO 9001,ISO9002,ISO9003 & ISO 9004- ISO9000 quality certification procedure.

Plant maintenance-Definition-Types of maintenance-Preventive maintenance- Break down maintenance.

Industrial safety –Meaning - Accident- causes for accident- Direct and indirect losses due to an accident- Safety department- role of safety officer

Environment - Definition and scope-Solid waste management- causes, effects and control measures of municipal solid wastes (hospital wastes, hazardous wastes and e-wastes)- Water conservation and rain water harvesting. Climate change- global warming, acid rain, ozone layer depletion

6.Material science and Measurements; 12 MARKS

Mechanical Properties: Mechanical properties of metals, properties and Uses of Pig Iron, Cast Iron , Steel, Copper, Aluminum, Lead, Zinc, Tin-Nickel and Iron.

Heat Treatment: Heat Treatment of Steel, Properties & Uses of Plastic, Ceramics, and Composite materials.

Measurements-methods-terms applicable to measuring instruments-Thread measurements-sine bar-plug gauges-ring gauges. Transducer- strain gauges-types-Proving ring-load cells-Tachometers-LVDT-optical-pyrometer-thermocouple-Hydrometer-density measurement-Hygrometer-liquid level sensors.

Interchangeability-limits and tolerance-fit and its classifications-system of fits-unilateral and bilateral system

REFERENCES

Sl. No	Contents	Reference Books
1	**Manufacturing Technology**	1. Rao, P.N., *Manufacturing Technology, Vol I & II*, Tata Mcgraw Hill Publishing Co., New Delhi, 1998 2. Seropekalpakjian, Steven R Schmid *Manufacturing Engineering and Technology*- Pearson Education-Delhi 3. Sharma, P.C., *A Textbook Of Production Technology – Vol I And II*, S. Chand & Company Ltd., New Delhi, 1996 4. HMT – *"Production Technology"*, Tata Mcgraw-Hill, 1998 5. *Elements of Workshop Technology* Vol-I&II Manufacturing Process edition-By Hajra Choudry 6. K.R.Gopalakrishna "Engineering Drawing" (Vol. I & II). Subhas Publications, 2014
2	**Strength of Materials and Theory of Machines**	1. Ramamurtham. S., *"Strength of Materials"*, 14th Edition, Dhanpat Rai Publications, 2011 2. Khurmi R S, *"Applied Mechanics and Strength of Materials"*, 5 Edition, S.Chandand company 3. Popov E.P, *"Engineering Mechanics of Solids"*. 2nd Edition, Prentice-Hall of India, New Delhi, 2002. 4. Nash W.A, *"Theory and problems in Strength of Materials"*, Schaum Outline Series, McGraw-Hill Book Co., New York, 1995. 5. Kazimi S.M.A, *"Solid Mechanics"*, Tata McGraw-Hill Publishing Co., New Delhi, 2003. 6. Ryder G.H, *"Strength of Materials"*, 3rd Edition, Macmillan India Limited, 2002. 7. Bansal R. K, *"Strength of Materials"*. Laxmi Publications, New Delhi, 2012. 8. Timoshenko S.P, *"Elements of Strength of Materials"*. Tata McGraw-Hill, Delhi,
3	**Thermal Engineering**	1. A Text book of Thermal Engineering by R S Khurmi& J K Gupta S Chand publication 2. Thermal Engineering by P. L. Ballaney, Khanna. Publishers 3. Thermal Engineering by R K Rajput, Laxmi. Publications
4	**Fluid mechanics and Pneumatics**	1. Bansal. R.K.,*"Fluid Mechanics and Hydraulics Machines"*, 9th Edition, Laxmi Publications Private Limited, New Delhi. 2011. 2. R.S.Khurmi, *"Fluid Mechanics and Machinery"*,S.Chand and Company, 2nd Edition, 2007. 3. *Hydraulics & Pneumatics* – Andrew Parr, Jaico Publishing House New Delhi: 4. *Hydraulic and Pneumatic Controls Understanding Made Easy*- K.S.Sundaram,-S.chand Company Delhi

5	**Management**	1. Industrial Organization and Engineering Economics T.R.Banga & S C Sharma 2. Khanna Publishers 3. Industrial management and organizational behavior K.K.Ahuja 4. Industrial management and engineering economics O.P.khanna Khanna publishers 5. Production and operations management -Dr .K.Aswathappa and Dr.Sreedhar Bhatt Himalaya publishers 6. Safety Management in Industry Krishnan.N V Jaico Publishing House, Bombay, 1997 7. Total Quality Management S Raja Ram, Shivashankar
6	**Material science and Measurements**	1. *Engineering Materials* by Er.R.K.RAJPUT of S.CHAND Publications 2. *Mechanical Engineering Measurement* - Thomas Beckwith, N.Lewis Buck, Roy Marangoni - *Narosa Publishing House, Bombay* 3. *Mechanical Engineering Measurements* - A. K. Sawhney - *DhanpatRai& Sons, New Delhi.* 4. *"Engineering Metrology"* by R.K.Jain, Khanna Publishers, 1994

(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 2^{nd} and 3^{rd} order determinants using expansion. Solving simultaneous linear equations using determinant method (Cramer's rule up to 3^{rd} order).

Matrices: Minors, Cofactors, Adjoint and Inverse of matrices of 2^{nd} 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→∞. 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:

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

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^v, 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 coûple ,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 dis-advantages 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

(S.Venkatesh)
Under Secretary to Government
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